



# **2023 Annual Report of Integrated Water Management Activities in the Republican Basin Within Tri-Basin NRD**

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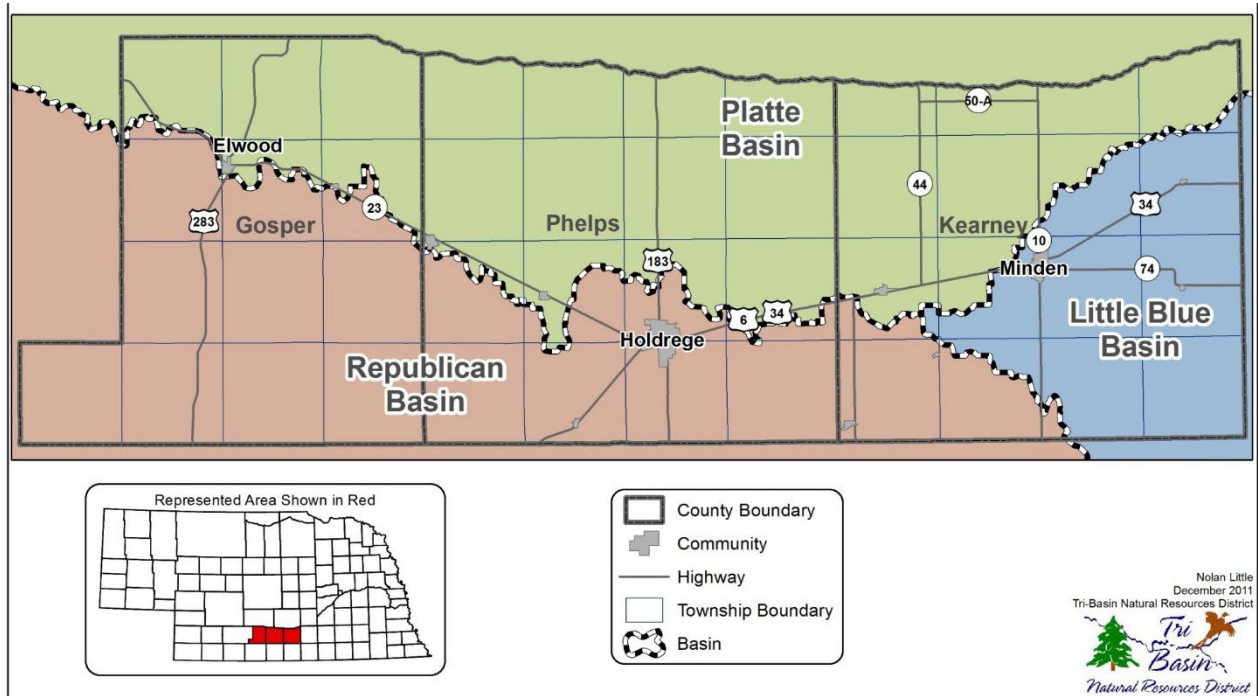
October 2024

**ANNUAL REPORT OF WATER USE ACTIVITIES  
IN THE REPUBLICAN BASIN WITHIN TRI-BASIN NRD  
TO MEET THE REQUIREMENTS OF THE JOINT INTEGRATED MANAGEMENT PLAN  
FOR THE 2023 JOINT INTEGRATED MANAGEMENT PLAN PROGRESS REVIEW MEETING**

I. SUMMARY

The purpose of this report is to convey information that Tri-Basin Natural Resources District (TBNRD) agreed to supply to the State of Nebraska as part of a joint Integrated Water Resources Management Plan for the Republican River Basin portion of the district.

**Map 1: Basin Reference Map**



II. INTRODUCTION

TBNRD encompasses portions of the Republican, Platte, and Little Blue River Basins (see **Map 1**, above). The district also contains an area commonly referred to as the “Groundwater Mound,” a large area spanning portions of all three basins that is characterized by groundwater levels that are generally higher than historic “pre-development” groundwater elevations.

More than 100,000 acres of cropland within the Platte Basin portion of TBNRD are irrigated with water diverted from the Platte River and distributed through the canals of the Central Nebraska Public Power and Irrigation District (CNPPID). Surface irrigation water and the canals that distribute it enhance recharge of groundwater supplies within the district. In addition to helping sustain groundwater supplies, this incidental recharge has increased streamflows in Platte and Republican tributaries.

### III. CERTIFIED IRRIGATED ACRES

The district began certifying irrigated acres in the Republican Basin in 2004. Development of additional certified irrigated acres in the Republican Basin was prohibited as of September 15, 2004. Since that time, corrections and revisions to the certified acre database have occurred with a net result of 189,715.00 certified irrigated acres in the Republican Basin portion of Tri-Basin NRD as of December 31, 2023. Data regarding certified irrigated acres can be found in **TABLE 1: Certified Irrigated Acres**, below. The commingled acres referred to in the table are acres that may be watered with either groundwater or surface water, or a combination of both. Detailed information about locations and distribution of certified irrigated acres is available in the Tri-Basin NRD office.

	Year	Groundwater	Commingled Acres	Surface Water	Totals
Gosper	2014	56,494.37	1,013.68	123.48	57,631.53
	2015	56,671.20	1,013.68	123.48	57,808.36
	2016	56,707.83	1,013.68	88.48	57,809.99
	2017	56,590.81	1,017.11	87.98	57,695.90
	2018	56,605.10	1,017.11	87.98	57,710.19
	2019	56,604.94	1,017.11	87.98	57,710.03
	2020	56,531.46	888.89	87.98	57,508.33
	2021	56,531.46	888.09	87.98	57,507.53
	2022	56,404.69	888.09	87.98	57,380.76
	2023	56,427.64	888.09	87.98	57,403.71
Kearney	2014	40,937.45	427.59		41,365.04
	2015	40,918.57	427.59		41,346.16
	2016	40,922.16	427.59		41,349.75
	2017	40,938.16	427.59		41,365.75
	2018	40,941.91	427.59		41,369.50
	2019	40,975.52	427.59		41,403.11
	2020	40,975.52	427.59		41,403.11
	2021	40,996.36	427.59		41,423.95
	2022	40,996.36	427.59		41,423.95
	2023	40,999.86	427.59		41,427.45
Phelps	2014	85,926.68	4,562.66	161.23	90,650.57
	2015	86,090.68	4,488.25	235.65	90,814.58
	2016	86,100.60	4,488.25	235.65	90,824.50
	2017	86,098.12	4,488.25	235.65	90,822.02
	2018	86,071.22	4,645.38	74.42	91,180.93
	2019	86,093.19	4,645.38	74.42	90,812.99
	2020	86,227.27	4,521.34	74.70	90,823.31
	2021	86,079.90	4,670.57	74.70	90,825.17
	2022	86,137.74	4,670.57	74.70	90,883.01
	2023	86,138.57	4,670.57	74.70	91,273.75
Basin Totals	2014	183,358.50	6,003.93	284.71	189,647.14
	2015	183,680.45	5,929.52	359.13	*189,969.10
	2016	183,730.59	5,929.52	324.13	*189,984.24
	2017	183,627.09	5,932.95	323.63	*189,883.67
	2018	183,618.23	6,090.08	162.40	*189,870.71
	2019	183,673.65	6,090.08	162.40	*189,926.13
	2020	183,734.25	5,837.82	162.68	*189,734.75
	2021	183,607.72	5,986.25	162.68	*189,756.65
	2022	183,538.79	5,986.25	162.68	*189,687.72
	2023	183,566.07	5,986.25	162.68	189,715.00

\*Total does not include 342.2 Harlan County acres.

IV. APPROVED CERTIFIED ACRE AND GROUNDWATER TRANSFERS

A. TBNRD allows certified irrigated acres to be transferred from one parcel to another within the Republican Basin portion of the district, with some limitations. Certified irrigated acres cannot be transferred from parcels with surface water or commingled water resources to parcels that have groundwater wells as their only water source. The NRD also prorates certified acre transfers in which acres are transferred from low to high streamflow depletion zones. Between January 1, 2023, and December 31, 2023, the district approved six certified irrigated acre transfer in the Republican Basin. A total of 71.01 certified irrigated acres were involved in these transfers. Data regarding the location, amount, and conditions associated with each transfer can be found in **TABLE 2: Republican Basin Transfers-Acres** (below).

TABLE 2: Republican Basin Transfer Acres																
NRD Permit Number	Legal Description						New Irrigated	Legal Description						Acres Dried Up		
TBAT-0409	Section	10	-	6	-	23	W	11.98	Section	9	-	6	-	23	W	11.98
TBAT-0410	Section	10	-	6	-	23	W	12.52	Section	10	-	6	-	23	W	12.52
TBAT-0411	Section	10	-	6	-	23	W	47.03	Section	6	-	6	-	22	W	47.03
TBAT-0412	Section	10	-	6	-	23	W	6.39	Section	3	-	6	-	23	W	6.39
TBAT-0421	Section	34	-	6	-	19	W	7.02	Section	27	-	6	-	19	W	7.02
GWT-0357	Section	1	-	5	-	17	W		Section	1	-	5	-	17	W	

B. TBNRD regulates groundwater pumping off of overlying land by requiring landowners to secure groundwater transfer permits before they can pump groundwater to parcels that are not under the same ownership. Groundwater transfer permits can only be used to supply groundwater for irrigation of certified irrigated acres. Landowners are required to install flowmeters on wells that are permitted for transfers and to report pumping from these wells annually to TBNRD. There were no groundwater transfer permits in TBNRD issued in the Republican Basin between January 1, 2023, and December 31, 2023.

TABLE 3: Groundwater Transfers				
NRD Permit Number	Legal Location	Neighboring Certified Acres to be watered with well	Well Registration	Well ID

V. WELL CONSTRUCTION PERMITS

A. Since 1989, TBNRD has required landowners to secure well construction permits before they drill wells capable of pumping more than 50 gallons per minute. The district issues three categories of well permits: New well permits, Conditional Replacement well permits, and Replacement well permits.

TBNRD requires landowners to agree to several conditions on the operation of new wells and conditional replacement wells before permits are issued. These conditions are listed in an agreement that is signed by landowners when they apply for these types of well permits. A copy of that agreement is attached to this report as **Appendix A**.

Table 4: TBNRD Well Permits	
Permit Type	Number
New (variance) irrigation	
Replacement irrigation	6
Conditional replacement irrigation - supplemental to groundwater	1
Conditional replacement irrigation - supplemental to surface water	
Dewatering	
New Commercial/industrial (Acre transfer involved)	1
Domestic (over 50 gallons per minute)	

B. **TABLE 4: TBNRD Well Permits** (above) is a breakdown of well permits TBNRD issued in the Republican Basin between January 1, 2023, and December 31, 2023. A detailed listing of well permits issued by TBNRD in 2023 is found in **TABLE 5: Well Permit Summary** (below).

Table 5: Well Permit Summary										
NRD Permit Number	Well Permit Type	Legal Description							Registration Number	DNR Well ID Number
TBTF-1547	Acre Transfer Well	NW 1/4	Section	10	-	6	-	23	G-197103	272439
TBRP-G028049	Replacement Well	SE 1/4	Section	19	-	5	-	19	G-028049	272704
TBRP-G066573	Replacement Well	Pt SW 1/4	Section	35	-	6	-	18	G-066573	273002
TBRP-G069956	Replacement Well	SW 1/4	Section	1	-	5	-	17	G-069956	273030
TBRP-G074141	Replacement Well	NE 1/4	Section	9	-	5	-	16	G-074141	273359
TBRP-G074706	Replacement Well	NE 1/4	Section	8	-	5	-	18	G-074706	273789
TBSG-1554	SG Supplemental to Ground	SE 1/4	Section	14	-	6	-	22	G-199822	275763
TBRP-G036462	Replacement Well (In Suspense)	NW 1/4	Section	25	-	5	-	23	G-036462	275929

VI. VARIANCES

TBNRD considers variances to district rules regarding certified irrigated acre transfers. District directors approved no variances allowing wells being replaced to be modified to stock wells rather than abandoned. Variance information is found in **TABLE 6: Republican Basin Certified Irrigated Variances** (below).

Table 6: Republican Basin Well and Certified Irrigated Variances				
Date	Variance Type	Location	Affected Acres	IMP Comments

VII. MUNICIPAL AND INDUSTRIAL ACCOUNTING

TBNRD collects water use data annually from all municipalities and industries within the district. Municipal and industrial water use data for communities and industries located in the Republican Basin reported to TBNRD in 2023 are shown in the next two tables. A summary of municipal water use may be found in **TABLE 6: Republican Basin Municipal Water Use Data** (below) and **TABLE 7: Industrial and Commercial Water Use Data** (below).

<b>Table 6: Republican Basin Municipal Water Use Data (in gallons)</b>						
<b>Municipality</b>	<b>2018</b>	<b>2019</b>	<b>2020</b>	<b>2021</b>	<b>2022</b>	<b>2023</b>
Atlanta	10,210,500	9,046,300	17,806,800	18,086,500	26,315,800	25,977,900.00
Arapahoe	90,286,000	83,598,000	115,461,000	98,284,000	114,453,000	98,145,000.00
Holdrege	402,611,800	373,071,300	491,922,000	407,154,200	523,254,000	439,112,600.00
Wilcox	26,343,100	28,349,000	34,895,000	30,091,000	33,539,000	30,527,000.00
<b>Total</b>	<b>529,451,400</b>	<b>494,064,600</b>	<b>660,084,800</b>	<b>553,615,700</b>	<b>697,561,800</b>	<b>593,762,500.00</b>

<b>TABLE 7: Republican Basin Industrial and Commercial Water Use Data</b>				
<b>DNR Well Registration Number</b>	<b>DNR Well ID Number</b>	<b>Owner</b>	<b>Legal Description</b>	<b>Gallons Used</b>
G-030619	37512	City of Holdrege	Section 9-5- 18	0
<b>G-025572</b>	<b>32122</b>	<b>City of Holdrege</b>	<b>Section 9-5- 18</b>	0
<b>G-096786</b>	<b>109719</b>	<b>City of Holdrege</b>	<b>Section 34-6- 18</b>	1,474,800
<b>G-135221</b>	<b>169721</b>	<b>Geer Utility</b>	<b>Section 27-6- 18</b>	216,970
<b>G-135220*</b>	<b>171309</b>	<b>Geer Utility</b>	<b>Section 27-6- 18</b>	0
<b>G-069908</b>	<b>78071</b>	<b>Holdrege County Club</b>	<b>Section 29-6- 18</b>	24,107,200
<b>G-009687</b>	<b>14429</b>	<b>Holdrege County Club</b>	<b>Section 29-6- 18</b>	28,388,700
<b>G-070168</b>	<b>78331</b>	<b>Holdrege Well Service</b>	<b>Section 34-6- 18</b>	303,460
<b>G-070393</b>	<b>78555</b>	<b>NE Game &amp; Parks, Sac-Wilcox WMA</b>	<b>Section 27-5- 17</b>	16,252,200
<b>G-184679</b>	<b>250906</b>	<b>Norder Supply Inc</b>	<b>Section 12-6- 23</b>	1,856,000
<b>G-071934</b>	<b>80096</b>	<b>Sargent Irrigation Co Inc</b>	<b>Section 34-6- 18</b>	80,600
<b>G-179201</b>	<b>241336</b>	<b>Tri-Basin NRD</b>	<b>Section 7-6- 21</b>	11,042,445

\*Series Well with G-135221

VIII. FLOWMETER DATA

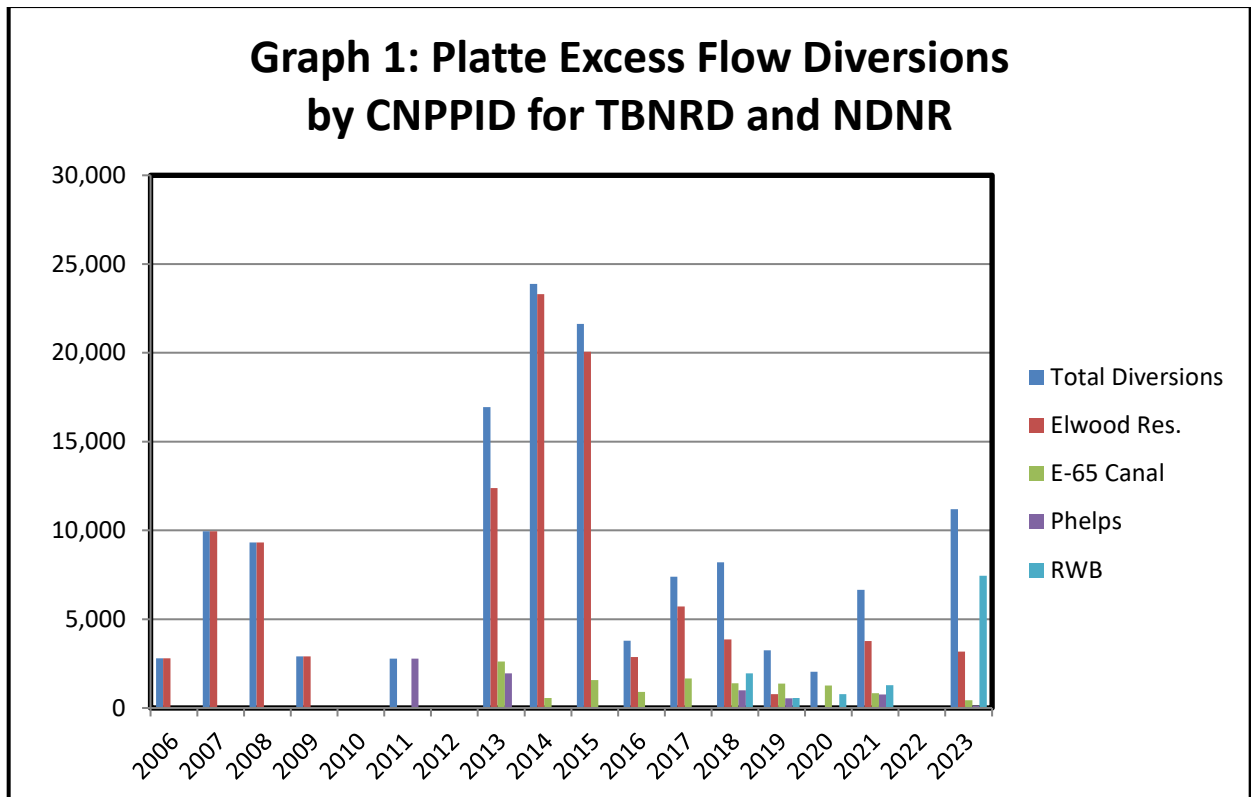
TBNRD requires flowmeters to be installed on all irrigation, commercial, and industrial wells in the Republican Basin portion of the district. Annual water use is reported to TBNRD. In 2023, landowners reported data from 1,607 metered wells in the Republican Basin, which provided irrigation for 177,966.98 certified irrigated acres. All district flowmeter data is reported annually to the Nebraska Department of Natural Resources (NDNR) for Republican River Basin Compact Administration accounting. A summary of Republican Basin water use data is included in this report as **Appendix B**. Detailed Republican Basin flowmeter data is available from the Tri-Basin NRD office.

IX. WATER BANKING ACTIVITIES

TBNRD has initiated the Water Conservation Incentive Program (see program summary in **Appendix D**). Participants in this program sign contracts agreeing to limit irrigation to the UNL Average Corn Crop Irrigation requirement. In exchange, Tri-Basin NRD agrees to pay them if they use less water than their allocated amount. Participants will be provided with credit accounts that track available water use credits for participating fields. A total of 1970.05 certified irrigated acres in the Republican Basin portion of the district were approved in 2023 for this program. The TBNRD Board of Directors has committed funds sufficient to pay incentives for as many as 8,000 acres to be enrolled in the program.

X. RETIRED ACRES AND OTHER STREAMFLOW ACCRETION ACTIVITIES

Tri-Basin NRD started utilizing the facilities of Central Nebraska Public Power District (CNPPID) to provide groundwater recharge and to augment streamflows when the district and the NE Game and Parks Commission paid CNPPID to divert 9,551 acre-feet of water from the Platte River into Elwood Reservoir in Gosper County in 2006. Additional diversions (see **Appendix C** and **Graph 1**) have been made regularly over the ensuing years. In all these instances, diversions were made when Platte streamflows exceeded target flows, or when irrigation deliveries were suspended because of heavy rainfall in the CNPPID irrigated area. Diversions into Elwood Reservoir and E-65 Canal provide ground water recharge and “imported water” to augment Republican Basin water supplies.



Tri-Basin and Lower Republican NRDs commissioned a feasibility study to examine directly diverting excess flows from the Platte via E-65 Canal to Turkey Creek, a Republican tributary in Gosper County. That study concluded that the diversion project is feasible both hydrologically and economically. The partners have purchased a 330-acre parcel of pasture at the upper end of Turkey Creek Canyon. We have also applied for a water right for the project. Construction is anticipated in 2025, assuming that water right is approved this year.

Tri-Basin NRD also constructed a streamflow augmentation well on the east branch of Turkey Creek. This augmentation well is capable of pumping as much as 1,000 acre-feet per year. The well has been tested and is fully functional. It hasn't been used yet for augmentation.

Tri-Basin NRD records indicate that 1,669.06 irrigated acres are enrolled in USDA Conservation Reserve Enhancement Program (CREP) in the Republican Basin portion of the district.

On district water use reports, landowners reported to TBNRD that conservation tillage practices have been adopted or continue to be utilized on 52,260.9 certified irrigated acres in the Republican Basin portion of the district during 2023 (no-till data is available from the Tri-Basin NRD office). University research (Klocke, et al, 2009) indicates that evapotranspiration (ET) is reduced by as much as 3 inches per acre on minimally tilled irrigated cropland, as compared to conventional tillage systems. If the estimates of no-till acres are accurate, as much as 13,065.22 acre-feet of water was conserved in the Republican Basin in TBNRD in 2023 through this conservation practice.

#### XI. GROUNDWATER LEVELS

TBNRD has an extensive network of 137 dedicated groundwater observation wells (45 in the Republican Basin) and 91 irrigation wells (60 in the Republican Basin) that are used to measure groundwater levels (see **Map 2**). TBNRD also works cooperatively with CNPPID to gather groundwater level data. Data from 10 wells in the Republican Basin that are measured by CNPPID are included in TBNRD's groundwater observation well data base. District water level data is reported semi-annually to U.S. Geological Survey and UNL Conservation and Survey Division. Groundwater level data for the district is available from the Tri-Basin NRD office.

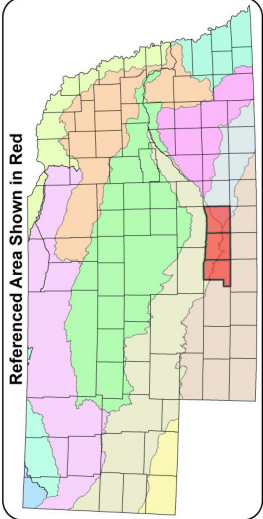
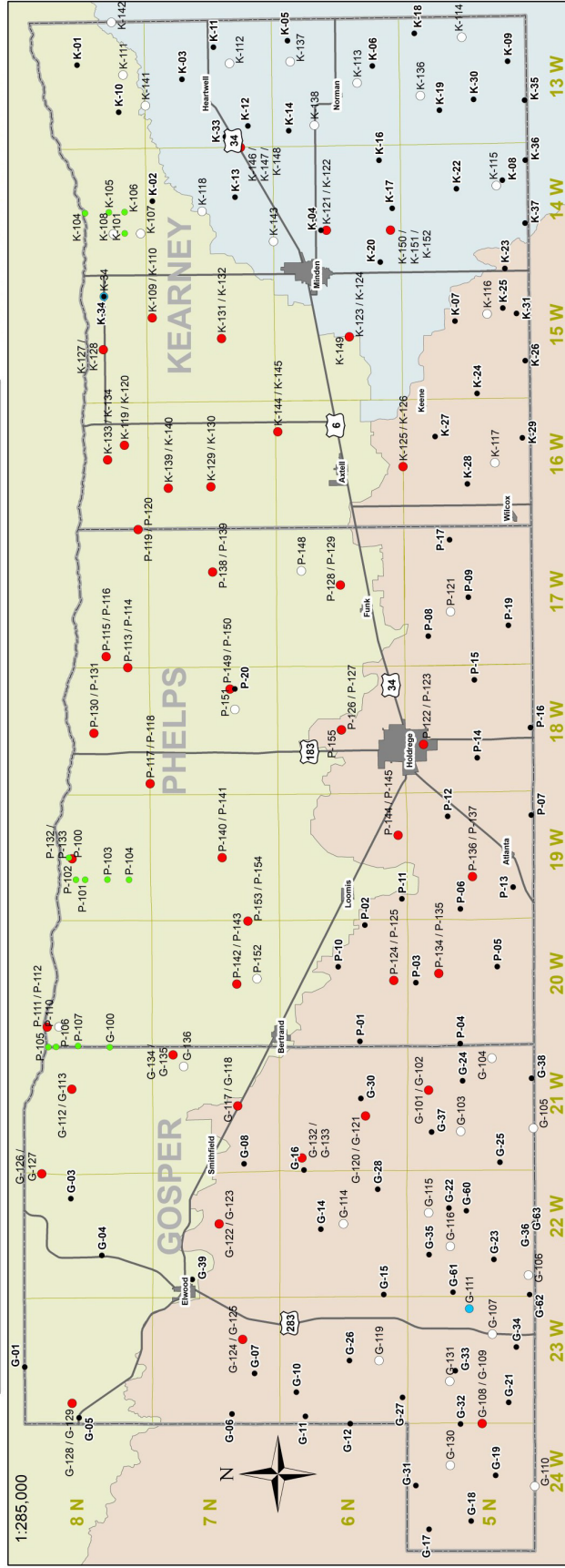


Map 2: Dedicated Groundwater Observation Wells



# Tri-Basin Natural Resources District

## Static Water Measurement Wells



**Well Types:**

- Irrigation Well
- Transect Well
- Nested Well
- Single Well
- Other Well
- Community

**Basins:**

- Little Blue Basin
- Republican Basin
- Platte Basin

**Boundaries:**

- Highway
- County Boundary
- Township

- Observation Well Stats:**
- 93 Sites
  - 43 Nested Wells
  - 137 Data Loggers
  - 12 Hour Interval
- Irrigation Well Stats:**
- 10 Platte Basin
  - 21 Little Blue Basin
  - 59 Republican Basin
  - 90 Measured Wells
  - Spring & Fall

Nolan Little  
May 2021  
Tri-Basin Natural Resources District

## Appendix A: Tri-Basin NRD – Republican Basin

### Tri-Basin Natural Resources District New Well and Conditional Replacement Well Permit Applicant Certification and Agreement

Applicant Certification and Agreement to be bound by Conditions and Limitations on operation of a Well permitted as a New Well or as a Conditional Replacement Well pursuant to Rule 1.13, Tri-Basin Natural Resources District Rules and Regulations for Management of Land and Water Resources

NRD Permit # \_\_\_\_\_ Applicant \_\_\_\_\_

Applicant is the owner of the following- described real estate:

\_\_\_\_\_ ¼ Section T N - R W

\*\*\*\*\*

Applicant accepts and agrees to be bound by the following conditions and limitations on the operation of a well that is constructed under the authority of a permit issued by the Tri-Basin Natural Resources District (“NRD”). The conditions and limitations are (check the box and initial those that apply):

1.  Applicant agrees to offset any “new depletions” to streamflows of the Platte River, Little Blue River, Republican River, or their tributaries that may be determined to be associated with use of this well. Applicant agrees to use methods to offset those depletions that are deemed acceptable by the NRD and the State of Nebraska. Applicant understands and agrees that Applicant’s failure to offset said new depletions may result in closure of this well or restrictions being imposed by the NRD on the number of acres of land that can be irrigated by this well.
2.  Applicant agrees to abide by well spacing and pumping capacity limitations that apply to the well that is the subject of this permit, whether such limitations arise pursuant to federal or state law or by rule or regulation of the NRD. Applicant understands and agrees that Applicant’s failure to comply with all rules and regulations of the NRD that pertain to this well may result in closure of this well and civil or criminal prosecution and other penalties.
3.  Applicant agrees to comply with all current and future rules and regulations of the NRD that pertain to this well. Applicant understands and agrees that Applicant’s failure to comply with all rules of regulations of the NRD that pertain to this well may result in closure of this well and civil or criminal prosecution and other penalties.
4.  Applicant agrees to maintain any and all surface water rights associated with the land to be irrigated by this well for the lifespan of the permitted well. Applicant understands and agrees that Applicant’s failure to comply with all rules and regulations of the NRD that pertain to this well may result in closure of this well and civil or criminal prosecution and other penalties.
5.  Applicant agrees to irrigate only land that has been certified for irrigation by the NRD (no new irrigated acres will be allowed). Applicant understands and agrees that Applicant’s failure to prevent irrigation of land not certified for irrigation by the NRD may result in closure of this well and prosecution by the State of Nebraska.

Applicant certifies that Applicant is familiar with the information contained in this instrument and that to the best of Applicant’s knowledge and belief, such information is true, complete and accurate. Applicant further acknowledges and agrees that the NRD and/or the State of Nebraska may impose additional conditions, limitations and restrictions on operation of the well that is the subject of this permit. Applicant further acknowledges and agrees that the conditions and limitations agreed to herein shall also be binding upon Applicant’s successors-in-interest to the well and/or the subject real estate.

**Appendix A: Tri-Basin NRD – Republican Basin**

I certify that I am familiar with the information contained in this application and that to the best of my knowledge and belief such information is true, complete and accurate. I further acknowledge that Tri-Basin Natural Resources District or the State of Nebraska may impose additional conditions, limitations and restrictions on operation of the well that is the subject of this permit.

\_\_\_\_\_  
Date

\_\_\_\_\_  
Signature of Applicant

\_\_\_\_\_  
Date

\_\_\_\_\_  
Signature of Applicant

\_\_\_\_\_  
Date

\_\_\_\_\_  
Signature of Witness

**Approval by Tri-Basin Natural Resources District**

\_\_\_\_\_  
Date

\_\_\_\_\_  
Signature of Tri-Basin NRD Representative

**Appendix B: Tri-Basin NRD – Republican Basin Water Use**

	Tri-Basin NRD	Republican Basin	Kearney County		
YEAR	2019	2020	2021	2022	2023
Certified Irrigated Acres	41,403.11	41,403.11	41,423.95	41,423.95	41,427.45
Pivots					
Actual Reported Acres	30,659.10	32,319.00	31,045.70	32,017.32	31,045.7
Gallons Used	3,331,595,134	9,934,337,498	5,391,603,175	9,690,502,959	5,391,603,175
Average acre Inches	4.00	11.32	6.40	11.15	6.40
Gravity					
Actual Reported Acres	1,858.60	2,360.80	2,217.50	1,669.22	2,217.5
Gallons Used	576,820,423	1,413,985,050	641,392,668	905,326,693	641,392,668
Average acre Inches	11.40	22.06	10.65	19.97	10.65
Combination					
Actual Reported Acres	5,075.90	5,171.50	5,038.20	4,544.68	5,038.2
Gallons Used	568,830,323	1,529,432,009	817,566,216	1,265,502,163	817,566,216
Average acre Inches	4.13	10.89	5.98	10.25	5.98
Drip Tape					
Actual Reported Acres	82.00	37.00	37.00	84.00	37.0
Gallons Used	13,702,512	15,770,700	6,864,200	33,968,074	6,864,200
Average acre Inches	6.15	15.70	6.83	14.89	6.83
Total Irrigation Use					
Actual Reported Acres	37,675.60	39,888.30	38,338.40	38,315.22	38,338.4
Gallons Used	4,490,948,392	12,893,525,257	6,857,426,259	11,895,299,889	6,857,426,259
Average acre Inches	4.39	11.90	6.59	11.43	6.59
Misc [gallons used]					
Wildlife Areas	8,000				
Other Uses			1,067,967	28,400	0
Total Gallons Used	4,490,956,392	12,893,525,257	6,858,494,226	11,895,328,289	0

**Appendix B: Tri-Basin NRD – Republican Basin Water Use**

	Tri-Basin NRD		Republican Basin		Phelps County
<b>YEAR</b>	<b>2019</b>	<b>2020</b>	<b>2021</b>	<b>2022</b>	<b>2023</b>
Certified Irrigated Acres	91,186.60	91,236.21	91,215.08	91,272.92	91,273.75
Pivots					
Actual Reported Acres	56,220.80	56,882.10	55,952.40	59,446.23	55,952.4
Gallons Used	7,482,177,323	15,603,732,760	9,512,532,893	19,393,427,297	9,512,532,893
Average acre Inches	4.90	10.10	6.26	12.01	6.3
Gravity					
Actual Reported Acres	5,184.00	5,960.70	5,526.90	4,645.68	5,526.9
Gallons Used	1,504,333,084	3,461,445,077	1,586,523,774	3,256,625,912	1,586,523,774
Average acre Inches	10.69	21.39	10.57	25.82	10.6
Combination					
Actual Reported Acres	21,745.80	22,997.00	22,214.60	20,028.09	22,214.6
Gallons Used	3,141,038,609	6,985,259,208	3,918,177,276	7,019,021,505	3,918,177,276
Average acre Inches	5.32	11.19	6.50	12.91	6.5
Drip Tape					
Actual Reported Acres	856.00	733.40	733.40	859.40	733.4
Gallons Used	135,178,288	200,010,610	151,954,526	251,337,109	151,954,526
Average acre Inches	5.82	10.04	7.63	10.77	7.6
Total Irrigation Use					
Actual Reported Acres	84,006.60	86,573.20	84,427.30	84,979.40	84,427.2
Gallons Used	12,262,727,304	26,250,447,655	15,169,188,469	29,920,411,823	15,169,188,469
Average acre Inches	5.38	11.17	6.62	12.97	6.6
Misc [gallons used]					
Wildlife Areas	21,822,300	96,073,100	92,973,100	133,187,900	92,973,100
Other Uses	5,000	349,200		40,100	40,100
Total Gallons Used	12,284,554,604	26,346,869,955	15,262,161,569	30,053,639,823	15,169,188,469

**Appendix B: Tri-Basin NRD – Republican Basin Water Use**

	Tri-Basin NRD		Republican Basin		Gosper County
<b>YEAR</b>	<b>2019</b>	<b>2020</b>	<b>2021</b>	<b>2022</b>	<b>2023</b>
Certified Irrigated Acres	57,710.03	57,495.14	57,507.53	57,380.76	57,403.71
Pivots					
Actual Reported Acres	35,626.34	36,422.80	36,512.90	40,466.96	36,512.87
Gallons Used	4,561,602,106	9,304,414,461	7,564,153,016	14,418,588,211	7,564,153,016
Average acre Inches	4.72	9.41	7.63	13.12	7.6
Gravity					
Actual Reported Acres	3,183.67	3,600.60	3,179.90	2,946.58	3,179.94
Gallons Used	712,867,325	1,892,260,153	964,522,659	1,672,294,959	964,522,659
Average acre Inches	8.25	19.35	11.17	20.90	11.2
Combination					
Actual Reported Acres	13,409.90	14,731.30	13,421.10	10,808.96	13,421.12
Gallons Used	1,809,296,480	4,508,068,545	2,950,413,821	4,583,139,808	2,950,413,821
Average acre Inches	4.97	11.27	8.10	15.62	8.1
Drip Tape					
Actual Reported Acres	622.80	623.80	538.80	800.76	538.76
Gallons Used	95,243,727	171,248,794	95,592,030	252,362,091	95,592,030
Average acre Inches	5.63	10.11	6.53		6.5
Total Irrigation Use					
Actual Reported Acres	52,842.71	55,378.50	53,652.70	55,023.26	53,652.7
Gallons Used	7,179,009,638	15,875,991,953	11,574,681,526	20,926,385,069	11,574,681,527
Average acre Inches	5.00	10.56	7.94	14.01	7.9
Misc [gallons]					
Wildlife Areas					
Other Uses					
Total Gallons Used	7,179,009,638	15,875,991,953	11,574,681,526	20,926,385,069	11,574,681,527

**Appendix B: Tri-Basin NRD – Republican Basin Water Use**

<b>Tri-Basin NRD      Total Republican Basin</b>					
<b>YEAR</b>	<b>2019</b>	<b>2020</b>	<b>2021</b>	<b>2022</b>	<b>2023</b>
Certified Irrigated Acres	190,299.74	190,134.46	190,146.56	190,077.63	190,104.91
Pivots					
Actual Reported Acres	122,506.24	125,623.90	123,511.00	131,930.51	123,510.9
Gallons Used	15,375,374,563	34,842,484,719	22,468,289,084	43,502,518,467	22,468,289,084
Average acre Inches	4.62	10.21	6.70	12.14	6.7
Gravity					
Actual Reported Acres	10,226.27	11,922.10	10,924.30	9,261.48	10,924.3
Gallons Used	2,794,020,832	6,767,690,280	3,192,439,101	5,834,247,564	3,192,439,101
Average acre Inches	10.06	20.91	10.76	23.20	10.8
Combination					
Actual Reported Acres	40,231.60	42,899.80	40,673.90	35,381.73	40,673.9
Gallons Used	5,519,165,412	13,022,759,762	7,686,157,313	12,867,663,476	7,686,157,314
Average acre Inches	5.05	11.18	6.96	13.39	7.0
Drip Tape					
Actual Reported Acres	1,560.80	1,394.20	1,309.20	1,744.16	1,309.2
Gallons Used	244,124,527	387,030,104	254,410,756	537,667,274	254,410,756
Average acre Inches	5.76	10.22	7.16	11.35	7.2
Total Volume Pumped					
Actual Reported Acres	174,524.91	181,840.00	176,418.40	178,317.88	176,459.7
Gallons Used	23,932,685,334	55,019,964,865	33,601,296,254	62,742,096,781	33,602,364,222
Basin IPA	5.05	11.14	7.01	12.96	7.0
Wildlife Gallons Used	21,830,300	96,073,100	92,973,100	133,187,900	92,973,100
Other Use [Non-Irrigation]	5,000	349,200	1,067,967	68,500	1,108,067
Basin Total Gallons Used	23,954,520,634	55,116,387,165	33,695,337,321	62,875,353,181	33,790,526,556
Basin Acre Feet	73,513.724	169,145.98	103,407.193	192,957.374	7.0
Harlan County Acres		342.20	342.20	342.200	250.00

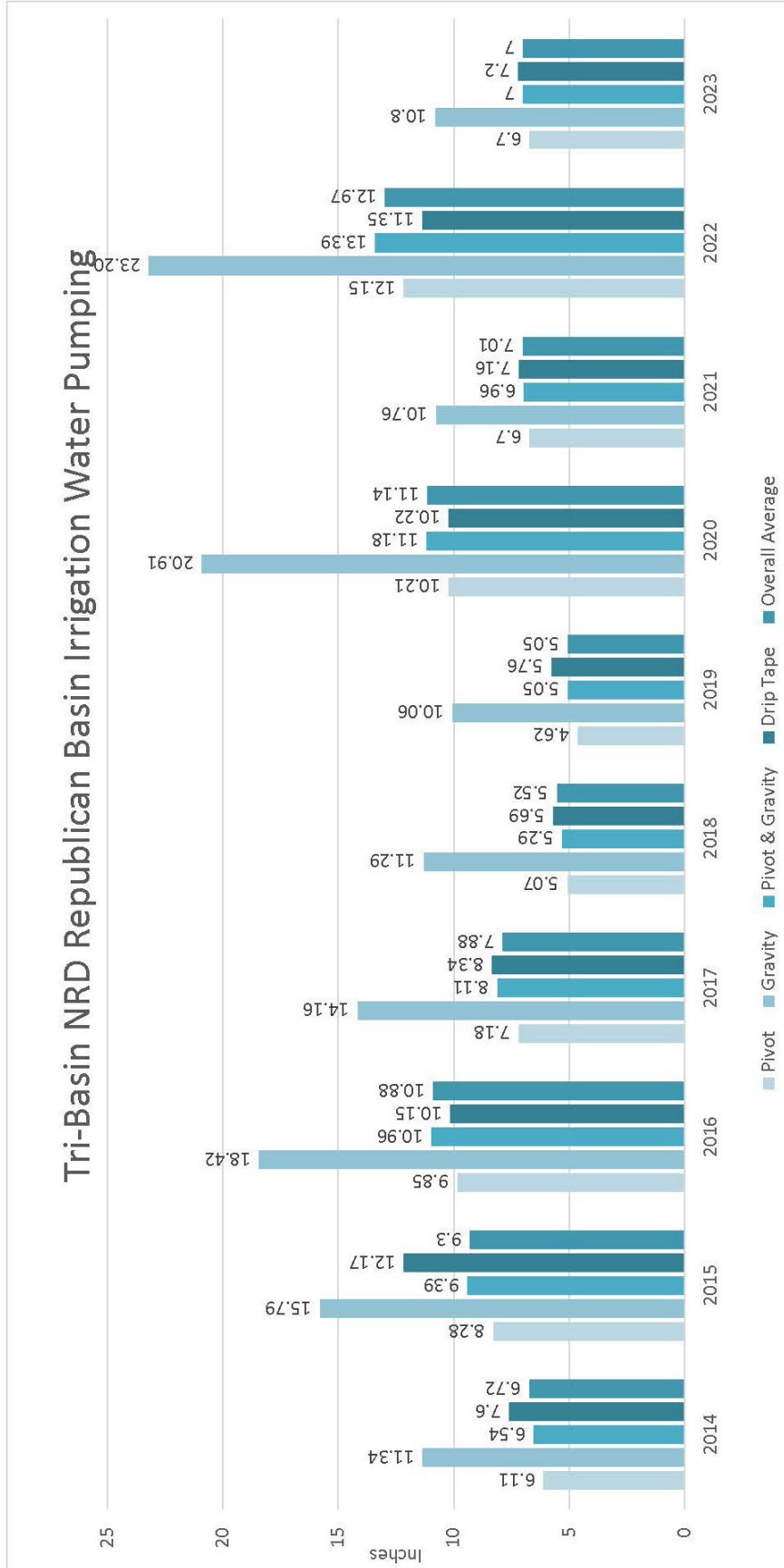
\* Lower Republican Reports volume on these wells

**Appendix B: Tri-Basin NRD – Republican Basin Water Use**

	Tri-Basin NRD		Republican Basin		Union Township	
YEAR	2019	2020	2021	2022	2023	
Certified Irrigated Acres	8,169.29	8,169.29	8,169.10	8,168.72	8,168.13	
Pivots						
Actual Reported Acres	6,941.00	6,802.90	6,940.20	7,307.15	6,940.2	
Gallons Used	1,024,037,708	1,767,525,855	1,463,271,083	3,001,950,119	1,463,271,083	
Average acre Inches	5.43	9.57	7.76	15.13	7.8	
Gravity						
Actual Reported Acres	45.00	45.00	45.00	45.00	45.0	
Gallons Used	6,333,100	11,486,400	9,116,700	14,457,300	9,116,700	
Average acre Inches	5.18	9.40	7.46	11.83	7.5	
Combination						
Actual Reported Acres	171.00	426.00	426.00	176.00	426.0	
Gallons Used	24,930,100	73,908,300	77,143,900	61,544,200	77,143,900	
Average acre Inches	5.37	6.39	6.67	12.88	6.7	
Drip Tape						
Actual Reported Acres						
Gallons Used						
Average acre Inches						
Total Irrigation Use						
Actual Reported Acres	7,157.00	7,273.90	7,411.20	7,528.15	7,411.2	
Gallons Used	1,055,300,908	1,852,920,555	1,549,531,683	3,077,951,619	1,549,531,683	
Average acre Inches	5.43	9.38	7.70	15.06	7.7	



Appendix B: Tri-Basin NRD – Republican Basin Annual Report



## Appendix C: CNPPID Groundwater Recharge Diversions Summary - 2023 Republican Basin

Dates	Elwood Reservoir Recharge Diversions		
	AF, in	\$/AF	Notes
1-1-19 to 1-28-19	7178.7	\$ 48.46	11-26-18 SWA Amendment No. 2, took limit to 30,000 af. All for PRRIP. NDNR and TBNRD wanted the remainder of their contract in E65 Canal
5-10-19 to 5-16-19	941.3	\$ 48.46	For PRRIP. 11-26-18 SWA Amendment No. 2, took limit to 30,000 af for PRRIP. 1-3-19 WSA Amendment to 1024 extends cost cap to \$402,247 for TBNRD-NDNR. 50% split until TBNRD-NDNR full then all to PRRIP. These deliveries fulfilled both amendments.
	123.2	\$ 53.77	For TBNRD. 11-26-18 SWA Amendment No. 2, took limit to 30,000 af for PRRIP. 1-3-19 WSA Amendment to 1024 extends cost cap to \$402,247 for TBNRD-NDNR. 50% split until TBNRD-NDNR full then all to PRRIP. These deliveries fulfilled both amendments. TBNRD 40%, NDNR 60% of their 50% of total diversions
	184.9	\$ 53.77	For NDNR. 11-26-18 SWA Amendment No. 2, took limit to 30,000 af for PRRIP. 1-3-19 WSA Amendment to 1024 extends cost cap to \$402,247 for TBNRD-NDNR. 50% split until TBNRD-NDNR full then all to PRRIP. These deliveries fulfilled both amendments. TBNRD 40%, NDNR 60% of their 50% of total diversions
7-9-19 to 7-29-19	4955.2	\$ 48.46	For PRRIP. 6-24-19 WSA (30,000 af limit annually)
9-12-19 to 9-28-19	5463.9	\$ 48.46	For PRRIP. 6-24-19 WSA (30,000 af limit annually)
2020			
3-15-21 to 3-24-21	2114.3	\$ 51.41	For PRRIP. 6-24-19 WSA (30,000 af limit annually)
	845.7	\$ 51.41	For TBNRD, Contract #1190
	1268.6	\$ 51.41	For NDNR, Contract #1190
5-19-21 to 5-30-21	1649.4	\$ 51.41	For PRRIP. 6-24-19 WSA (30,000 af limit annually)
	659.7	\$ 51.41	For TBNRD, Contract #1190
	989.6	\$ 51.41	For NDNR, Contract #1190
2022			
2023	3172.79		For NDNR, Contract #1190
<b>Total</b>	<b>160,404.4</b>		

**Appendix C: CNPPID Groundwater Recharge Diversions Summary - 2023 Republican Basin**

Dates of Recharge diversions	Elwood Recharge Releases		
	AF, in	\$/AF	Notes
2019			
2020			
2021			
2022			
2023			
<b>Total</b>	<b>1,119</b>		

Dates of Recharge diversions	Phelps Canal Recharge Releases		
	AF, in	\$/AF	Notes
1-1-19 to 1-24-19	712.10	\$ 31.91	10-20-17 WSA w/PRRIP, Diversions down to MP 13.3
3-19-20 to 4-14-20	910.40	\$ 32.87	9-25-19 WSA w/PRRIP, Diversions down to MP 13.3
9-21-20 to 9-22-20	20.90	\$ 32.87	9-25-19 WSA w/PRRIP, Diversions down to MP 13.3
11-17-20 to 12-3-20	1054.40	\$ 32.87	9-25-19 WSA w/PRRIP, Diversions down to MP 13.3
1-7-21 to 1-15-21	626.30	\$ 33.86	9-25-19 WSA w/PRRIP, Diversions down to MP 13.3
3-15-21 to 3-24-21	1168.30	\$ 33.86	9-25-19 WSA w/PRRIP, Diversions down to MP 13.3
3-15-21 to 3-24-21	307.80	\$ 33.86	For TBNRD, Contract #1190, From MP 13.3 to 34.2
3-15-21 to 3-24-21	461.80	\$ 33.86	For NDNR, Contract #1190, From MP 13.3 to 34.2
2022			
2023	136.78		For NDNR, Contract #1190
<b>Total</b>	<b>48,448.84</b>		

Dates of Recharge diversions	Cottonwood Ranch Recharge Releases		
	AF, in	\$/AF	Notes
2019			
7-20-20 to 9-22-20	360.6	\$ 26.53	EA water released to test Cottonwood Ranch Project. No recharge credit in Phelps Canal since irrigation season was underway. No charges as deliveries will be credited against Pipeline Construction cost until credit is gone.
2021			
2022			
2023	2384		For NDNR, Contract #1190
<b>Total</b>	<b>2,744.6</b>		

**Appendix C: CNPPID Groundwater Recharge Diversions Summary - 2023 Republican Basin**

Dates of Recharge diversions	Funk Lagoon Recharge Releases		
	AF, in	\$/AF	Notes
2019			
2020			
5-19-21 to 5-30-21	176.9	\$ 27.06	For TBNRD, Contract #1190
5-19-21 to 5-30-21	265.4	\$ 27.06	For NDNR, Contract #1190
2022			
2023	3062		For NDNR, Contract #1190
<b>Total</b>	<b>5,456.7</b>		

Dates of Recharge diversions	Johnson WPA Recharge Releases		
	AF, in	\$/AF	Notes
12-20-19 to 12-31-19			
2020			
5-19-21 to 5-30-21	66.3	\$ 27.06	For TBNRD, Contract #1190
5-19-21 to 5-30-21	99.5	\$ 27.06	For NDNR, Contract #1190
2022			
2023	787		For NDNR, Contract #1190
<b>Total</b>	<b>1,204.9</b>		

Dates of Recharge diversions	Victor WPA Recharge Releases		
	AF, in	\$/AF	Notes
12-20-19 to 12-31-19	312.3	\$ 38.75	For TBNRD, 11-15-17 WPAs WSA with TBNRD
1-1-20 to 2-23-20	778.3	\$ 39.53	For TBNRD, 11-15-17 WPAs WSA with TBNRD
3-15-21 to 3-31-21	136.2	\$ 40.32	For TBNRD, Contract #1190
3-15-21 to 3-31-21	204.4	\$ 40.32	For NDNR, Contract #1190
5-19-21 to 5-30-21	133.1	\$ 40.32	For TBNRD, Contract #1190
5-19-21 to 5-30-21	199.6	\$ 40.32	For NDNR, Contract #1190
2022			
2023	1207		For NDNR, Contract #1190
<b>Total</b>	<b>2,970.9</b>		

## Appendix D: Tri-Basin NRD Water Conservation Incentive Program

**Introduction:** Tri-Basin NRD launched the Water Conservation Incentive Program (WCIP) in March 2019. WCIP is intended to address two natural resources management issues: ensuring sustainability of groundwater supplies and protecting streamflows from diminishment due to groundwater pumping. When participating in the WCIP groundwater option, irrigators agree to accept an allocation on their certified irrigated acres in exchange for the NRD offering them flexibility on which acres they can irrigate. Financial incentives for water conservation are also available to participants.

The program was initially aimed at groundwater irrigators. One of the main benefits that is anticipated is that it will encourage participants to be more efficient irrigators and help sustain groundwater supplies. We initially excluded Central Nebraska Public Power and Irrigation District (CNPPID) customers from the WCIP because the incentives set up for groundwater irrigators don't encourage conservation on commingled fields.

Tri-Basin wants to encourage irrigators who have parcels that have both surface water turnouts and groundwater wells (commingled parcels) to use canal water rather than groundwater on those fields to the greatest extent possible. This has the dual benefit of reducing groundwater pumping and increasing groundwater recharge. For this reason, we developed a "commingled" option for CNPPID customers. The Nebraska Department of Natural Resources pays 60% of the cost of landowner payments through the Water Resources Cash Fund, because they recognize the benefits of incentivizing irrigators to become more efficient and of utilizing surface water, when available, to reduce groundwater withdrawals and increase groundwater recharge.

**The Program:** Tri-Basin will allow landowners to enroll up to 8000 NRD-certified irrigated acres in the program. The enrollment period will be open until the program acre enrollment limit is reached. Once the enrollment limit is reached, water savings to the district could reach 650 acre-feet per year. Incentives in this program will likely be most attractive to landowners in phase two and phase three groundwater quantity management areas, so the water-use reductions should be greatest where the need is greatest (there are approximately 30,000 certified irrigated acres in Tri-Basin's phase two and phase three townships).

In exchange for their participation, landowners will be paid for the equivalent of one acre-inch of water credit per acre per year, with the opportunity to sell additional credits to the NRD at a set price. In addition to NRD purchases, landowners will have the opportunity to sell water credits on the open market at any agreed-upon price (private transactions require NRD board approval). Landowners will also be granted flexibility to irrigate any acres within enrolled parcels and to share (pool) allocations between parcels. Pooling agreements will be required to enable sharing allocations between parcels under different ownership.

**The Contract:** The NRD and the landowner will sign a five-year agreement. The groundwater option agreement commits the landowner to limiting water use (allocation) on parcels that they select. The allocation will be equal to the UNL average corn crop consumptive irrigation requirement, which is nine inches per acre per year in Kearney County, ten inches per acre per year in Phelps County and eleven inches per acre per year in Gosper County (allocation will be limited to current allocation of nine inches per acre per year in Union Township in Gosper County). Landowners are required to have flowmeters installed on all wells serving participating parcels and to report water use annually to the NRD. Tri-Basin NRD offers cost share on flowmeters for participants. Tri-Basin NRD spot checks flowmeter readings on 20% of participating parcels annually. As a condition of their participation, landowners agree to subject enrolled parcels to (most of) the same rules that apply to all landowners in Phase three groundwater quantity management areas.

In exchange for their participation, the NRD agrees to buy one acre-inch per acre per year from every acre enrolled in the contract. Landowners have two payment options: an annual payment of \$5 per acre-inch credit for one acre-inch per year, or payment at the end of the contract period for up to five acre-inches of credits per acre (assuming the landowner has that

## Appendix D: Tri-Basin NRD Water Conservation Incentive Program

much unused allocation) at a rate of \$4 per acre-inch. The NRD may also choose to purchase additional credits from participants. NRD purchases of additional acre-inches will be prioritized in Groundwater Quantity Management Phase 2 and Phase 3 areas and 50%+ stream depletion zones. The NRD will have the right of first refusal to purchase unused allocations from landowners, so landowners would need NRD board approval before they make private sales.

Landowners will also have the option to irrigate any and all acres within participating parcels. They can also pool allocations between parcels under the same ownership (pooling water credits associated with parcels under different ownership, but the same management will require a separate NRD-approved pooling agreement). Pools are only allowed for multiple parcels in the same basin and with the same groundwater quantity management phase status. Water use will be deducted from landowner water credit "accounts."

If a producer overuses their allocation, they need to purchase credits from other landowners to eliminate their deficit. Otherwise, they will be prohibited from irrigating enrolled parcels until the deficit is eliminated. The only way a landowner can cancel a contract would be to pay the NRD for the full contracted amount (refund any payments that the NRD has already made and pay the NRD the amount we would have paid them at the end of the contract period).

**Commingled Option:** A different approach is needed to incentivize surface water use. We need to incentivize commingled water users to use canal water rather than groundwater. CNPPID customers and landowners with individual surface water rights are eligible to enroll commingled parcels in five-year contracts. Participants will be reimbursed by Tri-Basin NRD for the equivalent of the cost per acre of CNPPID water delivery, with the understanding that payments will be reduced by \$6 per acre inch of groundwater used in excess of one inch per acre during the contract period. If, however, CNPPID is unable to deliver the full amount of contracted water to a parcel for any reason, a landowner will be allowed to pump groundwater without penalty to make up the difference between what CNPPID is able to deliver and the full contract amount.

CNPPID charges \$42.00 to deliver nine inches of water to their irrigation customers (2024). Their prices are subject to annual increases. Tri-Basin will pay incentives to landowners based on the current delivery rate at the time of enrollment in WCIP, but payment rates won't be increased during the contract period if CNPPID raises rates.

WCIP incentives will be paid on CNPPID contracted acres. Because NRD funds are limited, we will initially approve contracts for 8000 acres. Because applications exceed the number of acres allowed for enrollment, applications are selected for approval using a ranking system.

The WCIP commingled option requires annual reporting of groundwater use. As of 2018, only 15,597 commingled acres (TBNRD definition) have flowmeters in place and are reporting water use to Tri-Basin NRD. Applications from landowners with flowmeters currently in place are favored in the ranking system.

Parcels in which CNPPID water service contracts are in the process of cancellation are not eligible for enrollment. Landowners are allowed to enroll additional acres on existing CNPPID water service contracts. Individual landowners are limited to enrolling a total of no more than 320 acres in the WCIP. In the case of fields with fewer CNPPID contract acres than NRD-certified irrigated acres, landowners need to agree to have seals installed on valves or risers that would enable use of groundwater on CNPPID contract acres. If the seals are broken, recorded groundwater use will be divided among all NRD-certified irrigated acres.

If you are interested in enrolling in WCIP, please call the Tri-Basin NRD office at (308) 995-6688, or email us at [jthorburn@tribasinprd.org](mailto:jthorburn@tribasinprd.org).

