

# Upper Loup Natural Resources District

Basin Water Management Plan Annual Report

Report Year: January 1, 2023 – December 31, 2023

Produced February 2024



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## **INTRODUCTION**

The Upper Loup NRD Board of Directors adopted the original Lower Platte River Basin Water Management Plan (LPBWMP), December 2017 and adopted the revised plan April 2022. The revised plan includes the second increment depletions for the next five years (2022-2026) in addition to a new objective to address drought effects in the basin.

This report is intended to satisfy the Lower Platte River Basin Coalition annual data collection and reporting requirements as described in section 5.0 Plan Review and Monitoring. The information in this report covers those activities required to be tracked for the period January 1, 2023 to December 31, 2023.

The below table lists the allowable depletions for each Natural Resources District.

<b>SECOND INCREMENT ALLOWABLE NEW DEVELOPMENT (ACRE-FEET DEPLETIONS) BY NRD</b>			
<b>NRD</b>	<b>New 2<sup>nd</sup> Increment</b>	<b>Carry over from 1<sup>st</sup> Increment</b>	<b>Total</b>
Upper LoupNRD	3,369	2,065	<b>5,435</b>
Lower Loup NRD	7,160	4,750	<b>11,910</b>
Upper Elkhorn NRD	1,831	1,134	<b>2,965</b>
Lower Elkhorn NRD	5,493	2,853	<b>8,346</b>
Papio-Missouri River NRD	1,058	768	<b>1,826</b>
Lower Platte South NRD	1,209	890	<b>2,098</b>
Lower Platte North NRD	2,770	966	<b>3,736</b>
<b>Total</b>	<b>22,889</b>	<b>13,427</b>	<b>36,316</b>

## **CERTIFIED IRRIGATED ACRES**

The Upper Loup Natural Resources District (ULNRD) completed certifying ground water irrigated acres in 2008. We have not certified any surface water acres and do not have any co-mingled certified acres. The ULNRD has two types of certified acres; active and inactive. Inactive acres are any certified acres associated with wells that do not contain a pump and therefore are not watering any land with ground water. Active acres are all certified acres that are being irrigated or watering land and have a flow meter installed.

Total number of certified agricultural irrigated acres for 2023 was 82,967 and of that total 72,616 are considered active.

<b>County</b>	<b>Certified Acres</b>	<b>Active Acres</b>
Blaine	15,797	13,568
Brown	7,033	3,810
Cherry	8,532	7,045
Grant	1,964	1,553
Hooker	4,081	3,593
Logan	35,006	33,205
McPherson	6,838	6,380
Thomas	3,716	3,462
<b>Total</b>	<b>82,967</b>	<b>72,616</b>

## **AGRICULTURAL USES**

Since 2009 the ULNRD has had agricultural ground water users submit annual ground water use amounts under the District's Groundwater Management Area Rules and Regulations. Meters have been installed on all high-capacity wells in the entire District since May 2021. \*\* 32 meters across district had stopped working in the 2023 growing season.

<b>County</b>	<b># of wells used</b>	<b>Acres watered in 2023</b>	<b>Average inches pumped</b>	<b>Mode inches pumped</b>	<b># of non-working meters</b>	<b>Primary crop</b>
Blaine	90	11,196	13	17	3	Grass
Brown	28	3,201	11	13	1	Grass
Cherry	52	6,536	12	13	4	Grass
Grant	9	1,303	9	7	2	Grass
Hooker	21	3,083	11	10	2	Grass
Logan	255	31,181	11	12	17	Corn
McPherson	50	6,853	8	10	0	Grass
Thomas	26	3,125	12	11	3	Grass
<b>TOTALS</b>	<b>531</b>	<b>66,478</b>	<b>11</b>	<b>12</b>	<b>32</b>	<b>Grass</b>

## MUNICIPAL, COMMERCIAL / INDUSTRIAL USES

All high-capacity wells associated with municipal and commercial / industrial ground water uses have flowmeters installed.

### Municipal Well Summary:

Municipality	2023 gallons	2023 AFD	2023 Population
Dunning	25,395,100	78	99
Hyannis	47,145,900	145	165
Mullen	112,801,100	346	504
Stapleton	26,975,800	83	305
Theford	51,675,000	159	211
<b>TOTALS</b>	<b>263,992,900</b>	<b>811</b>	<b>1,284</b>

### Commercial/Industrial Well Summary:

County	Well Reg #	Use	2023 gallons	2023 AFD	2022 AFD
Grant	G-170722	Community Golf Course Irrigation	15,379,700	47	62
Hooker	G-078662	Golf Course Irrigation	36,661,536	113	237
Hooker	G-076336	Golf Course Irrigation	18,112,476	56	116
Hooker	G-111905	Community Golf Course Irrigation	13,032,100	40	54
Hooker	G-141320	Golf Course – lawn / domestic / fire supp	41,133,500	126	262
Hooker	NR-9352	Golf Course – portable water	11,540,000	35	26
Hooker	G-162940	Golf Course Irrigation – Doak	81,879,700	251	238
Hooker	G-135198	Golf Course Irrigation - Nickalus	69,904,900	215	Non-working meter
Hooker	G-137707	Driving Range Irrigation	7,892,000	24	32
Hooker	G-141035	Turf Nursery	4,300	.01	31
Hooker	G-140590	Golf Course Air Strip	5,547,000	17	28
Hooker	G-158004	Drinking Water Bottling – Domestic	48,000	.15	.15
Logan	G-127099	Community Golf Course Irrigation	18,329,143	56	51
Thomas	G-104962	Community Golf Course Irrigation	17,088,700	52	58
Thomas	G-014205	Tree, shrub & cover crop irrigation	4,582,300	14	15
Thomas	G-014206	Tree, shrub & cover crop irrigation	7,957,400	24	58
Thomas	G-014204	Tree, shrub & cover crop irrigation	3,351,200	10	13
Thomas	G-059745	Tree, shrub & cover crop irrigation	13,006,200	40	61
Thomas	G-021694	Tree, shrub & cover crop irrigation	9,366,100	29	37
<b>TOTALS</b>			<b>374,816,255</b>	<b>1,149</b>	<b>1,379</b>

**NEW GROUNDWATER CONSUMPTIVE USES & NEW DEPLETIONS**

For the 2023 expansion of irrigated acres the ULNRD received 10 applications with 8 being approved and of those approved 3 choose not to drill wells and expand acres due to the cost. 755 acres were permitted and 433 acres were certified with an estimated groundwater depletion of 40-acre feet.

Use	County	Section	Township	Range	DNR Well Reg. #	New well	Acres Approved	AF Depletion
Crop Use	Brown	35	28	23	G-150584	No	39	3.8
Crop Use	Cherry	23	28	29	G-150584	Yes	230	31.6
Crop Use	Logan	28	17	27	G-197813	Yes	69	1.3
Crop Use	Logan	17	17	29	G-179771	No	25	.2
Crop Use	Logan	1	18	28	G-192323	Yes	70	2.6
<b>Total</b>							<b>433</b>	<b>39.5</b>

**TRANSFERS**

No water transfer permits were granted, cancelled or denied in 2023.

**WELL CONSTRUCTION PERMITS**

NRD Permit No.	County	Use	Status	Replacement	DNR Reg. No.
UL 199– 23	Logan	Irrigation	Approved	No	G-197813
UL 200 – 23	Blaine	Irrigation	Approved	Yes	G-030025
UL 201 – 23	Cherry	Irrigation	Approved	No	G-198726
UL 202 - 23	Logan	Irrigation	Approved	No	For '24 - Not drilled yet
UL 203 – 23	Logan	Irrigation	Approved	No	For '24 - Not drilled yet

**RETIREMENT OF GROUND WATER CONSUMPTIVE USES**

County	Well Reg #	Use	Legal S-T-R	Acres Retiring	AF Depletion (credit)
Cherry	G-040228	Crop Production	4-26-34	170	6.90

## **WATER BANKING ACTIVITIES**

To date the ULNRD does not have an established water banking system.

## **STREAM FLOW ACCRETIONS ACTIVITIES**

At the time of this report there are no new projects or conjunctive management projects in any stages of development.

## **STREAM GAGE MEASUREMENTS**

The ULNRD, along with USGS, operates 4 stream gauges within the District.

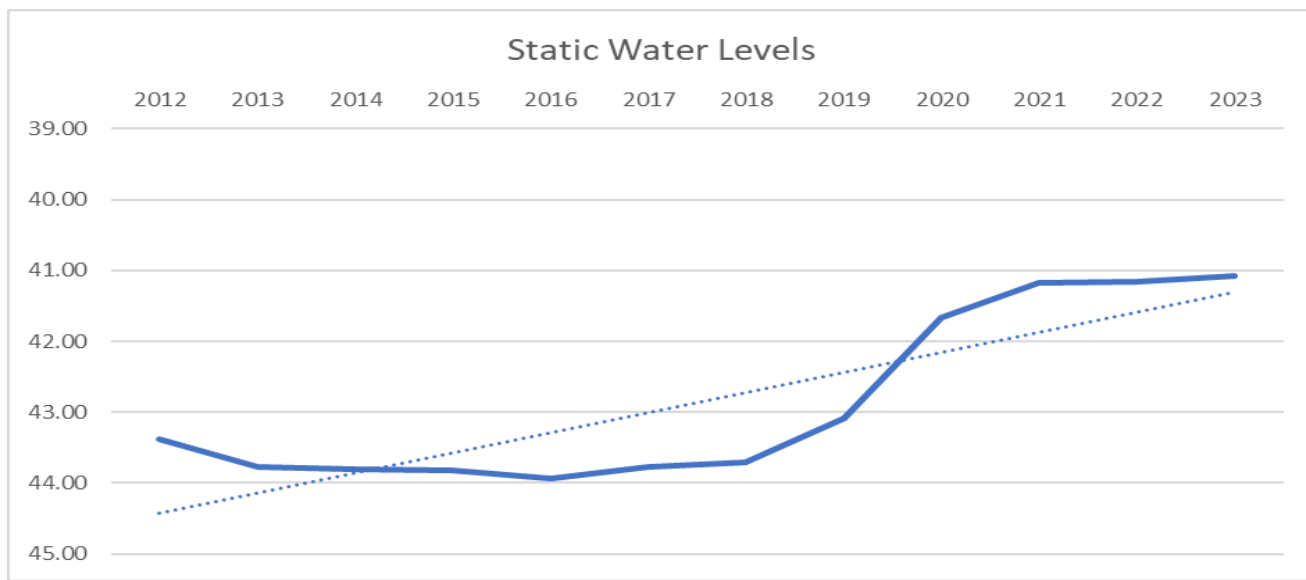
Station 06775500 Middle Loup at Dunning  
Station 06781600 South Loup at Arnold

Station 06775900 Dismal near Thedford  
Station 06785500 North Loup at Brewster

Streamflow data can be acquired from USGS's National Water Information System at <http://waterdata.usgs.gov/>

## **GROUND WATER ELEVATION DATA**

The ULNRD collected spring static water levels from 105 wells across the District in 2023. Water levels maintained pretty much across the District.



## GROUNDWATER QUALITY DATA

A ground water analysis for nitrate-nitrogen content in all registered active domestic, 10% of active irrigation, all active industrial and any requested non-registered domestic wells are performed once within a 5-year cycle, with the exception of those wells listed on DEQs Current Statewide Ground Water Monitoring Network which will be tested annually.

A minimum of 10% of all wells sampled annually will be sent to a reputable lab for analysis as a quality control measure. If a sample is found to contain 100% of the Maximum Contaminant Level 10 ppm or 10 mg/l of nitrate-nitrogen, a second sample is sent to a reputable lab for verification and quantification prior to any quality phase area designation.

ULNRD groundwater quality phase area criteria is as follows:

**Phase 1 Area** – areas that are not designated as either Phase 2 or Phase 3. 0 to 5.9 mg/L

**Phase 2 Area** – areas where 45% percent or greater of the nitrate nitrogen samples have tested between 6 to 8.5 mg/L for 4 consecutive years beginning in 2008.

**Phase 3 Area** – areas where 45% percent or greater of the nitrate nitrogen samples have tested between 8.6 to 10 mg/L for 4 consecutive years beginning in 2008.

Sub-District 3, which includes Cherry County east of Hwy 97 and north of Thomas County and Thomas County west of Hwy 83, was the area to be tested in 2023.

Sub-District	Year	Well Type 10% of Irrig.	Sample Count Registered wells	Sample Count Non Registered	Average Nitrate 0-10 ppm	Sample Count Manganese 10%	Average Manganese 0-0.5 ppm .3 mg/L EPA
1	2023	Domestic Irrigation	6 0	1	.97 w/o outlier 0	0	0
2	2023	Domestic Irrigation	2 0	1	1.10 0	0	0
* 3	2023	Domestic Irrigation	91 6	8	1.05 w outlier 0.98 w/o outlier .71	26	.034
4	2023	domestic Irrigation	4 0	3 0	1.97 w outlier 1.22 w/o outlier	0	0
5	2023	domestic Irrigation	1 0	1	1.10	0	0



## **NRD REGULATIONS / MANAGEMENT ACTIVITIES**

The entire ULNRD is in the same Ground Water Management Area and thus abide by the same Rules and Regulations district wide.

Management activities in the District include:

- Any ground water user who irrigates with ground water is required to have obtained certification
- Applications for the construction of a high capacity commercial / industrial wells shall provide a hydrological evaluation as well as the permit fee to the District
- No new high-capacity wells (> 50 gpm) shall be drilled within 300 feet from any active domestic well or within 1,320 feet of any other high capacity well
- All active high-capacity wells, irrigation / commercial / industrial wells shall be equipped with a flowmeter
- Annually approving not more than 2,500 acres across the entire District
- Annually collecting, tracking, evaluating, and reporting of: ground water level measurements; municipal, commercial, industrial, and agricultural water use; certified irrigated acres and any changes to certifications; well water construction permits approved, cancelled or denied; variances granted, cancelled or denied; and water transfer permits granted, cancelled, or denied

## **NEW DATA COLLECTED OR MODEL / STUDY RESULTS**

The District is not currently involved in any new studies. ULNRD Drought plan approved in 2022.