

Upper Loup Natural Resources District

Basin Water Management Plan Annual Report

Report Year: January 1, 2021 – December 31, 2021



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INTRODUCTION

The Upper Loup NRD Board of Directors adopted the Lower Platte River Basin Water Management Plan (LPBWMP), dated October of 2017, on December 14, 2017. As part of the Lower Platte River Basin Coalition, the six other NRD's and the Nebraska Department of Natural Resources also approved the LPBWMP and agreed to cooperatively implement the plan per Interlocal Agreement.

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. Table 4.1 (below) lists the allowable depletions for each sub-basin of the Lower Platte Basin and Table 4.2 of the Plan (below) breaks it down into the available amount for each Natural Resources District.

TABLE 4.1. FIRST 5-YEAR INCREMENT ALLOWABLE DEVELOPMENT (DEPLETIONS) BY BASIN

Basin	First 5-year Increment Allowable Development (Depletions) – Peak Season (AF) ^{1/2}
Loup Basin	8,651
Elkhorn Basin	6,018
Lower Platte Sub-basins	4,138

TABLE 4.2. FIRST 5-YEAR INCREMENT ALLOWABLE NEW DEVELOPMENT (DEPLETIONS) BY NRD

NRD	Sub-Basin	First 5-year Increment Allowable New Development (Depletions) – Peak Season ¹	
		% Sub-Basin	AF
Upper LoupNRD	Loup River	32%	2,768
Lower Loup NRD	Loup River	68%	5,883
Upper Elkhorn NRD	Elkhorn River	25%	1,504
Lower Elkhorn NRD	Elkhorn River	75%	4,514
Papio-Missouri River NRD	Lower Platte River	21%	869
Lower Platte South NRD	Lower Platte River	24%	993
Lower Platte North NRD	Lower Platte River	55%	2,276

The report contains information on those activities required to be tracked for the period January 1, 2021 to December 31, 2021.

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 are inactive and 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.

The Table below indicates the total number of wells associated with certified acres as well as the total number of certified acres that are currently irrigated. Total number of certified agricultural irrigated acres for 2021 was 83,104 and of that total 70,669 acres were active (~85%).

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 2020. ** 20 meters across district had stopped working in the 2021 growing season.

County	# of certified acres	# of metered wells	Acres watered	Average inches pumped	Mode inches pumped	Total inches pumped	AF depletions	Primary crop
Blaine	16,153	109	11,745	12	12	1183	99	Grass
Brown	7,074	37	2,574	13	14	315	26	Grass
Cherry	8,208	53	6,330	13.5		638	53	Grass
Grant	2,065	13	1,430	11	7	112.81	9.4	Grass
Hooker	4,127	25	3,068	12	13	280	23	Grass
Logan	34,886	264	29,113	13	13	3,140	262	Corn
McPherson	7,104	50	6,305	13	11	587	49	Grass
Thomas	3,487	30	3,097	11	8	295	25	Grass
TOTALS	83,104	581	63,662	12		6,551	546	Grass

MUNICIPAL, COMMERCIAL / INDUSTRIAL USES

Since 2009 the ULNRD has had municipal and commercial / industrial ground water users submit annual ground water use amounts under the District's Groundwater Management Area Rules and Regulations. All active high-capacity commercial wells were also required to have flowmeters installed by 2010. ** Water bottling facility in Mullen uses municipal well – not separated – skewed gallons for Mullen.

Municipal Well Summary: * Usage includes schools, nursing home, arboretum and park facilities.

Municipality	Baseline year	Baseline gallons	Baseline per capita gal / person / day	2021 gallons	2021 AFD	2021 per capita gal / person / day
Dunning	2012	36,511,300	961			
Hyannis	2013	46,106,000	601	61,209,800	188	986
Mullen	2010	73,992,060	398	73,487,300	226	401
Stapleton				98,321,500	302	898
Thedford	2010	47,118,000	612	55,588,000	171	732
TOTALS				288,606,600	886	754

Commercial/Industrial Well Summary:

County	Well Reg #	Use	Base line year	Baseline gallons	2021 gallons	2021 AF
Grant	G-170722	Community Golf Course Irrigation		New meter 2020	17,411,800	53
Hooker	G-078662	Golf Course Irrigation	2011	51,104,100	43,727,250	134
Hooker	G-076336	Golf Course Irrigation	2011	28,039,700	24,857,700	76
Hooker	G-111905	Community Golf Course Irrigation	2011	19,068,600	11,746,500	36
Hooker	G-141320	Golf Course – lawn / domestic / fire supp	2014	96,694,500	90,539,500	278
Hooker	NR-9352	Golf Course – portable water	2014	32,663,000	8,564,000	26
Hooker	G-162940	Golf Course Irrigation – Doak	2018		57,977,000	178
Hooker	G-135198	Golf Course Irrigation - Nickalus	2014	56,200,000	40,742,000	125
Hooker	G-137707	Driving Range Irrigation	2014	9,226,500	12,150,200	37
Hooker	G-141035	Turf Nursery	2014	7,920,000	2,460,300	8
Hooker	G-140590	Golf Course Air Strip	2009	8,640,000	5,178,300	16
Hooker	G-158004	Drinking Water Bottling – Domestic	NA		48,000	.15
Logan	G-127099	Community Golf Course Irrigation	2011	23,331,000	17,376,028	53
Thomas	G-104962	Community Golf Course Irrigation	2014	19,980,000	83,611,300	47
Thomas	G-014205	Tree, shrub & cover crop irrigation	2014	4,217,100	4,711,000	14
Thomas	G-014206	Tree, shrub & cover crop irrigation	2014	6,614,600	10,440,900	32
Thomas	G-014204	Tree, shrub & cover crop irrigation	2014	3,358,200	3,700,900	11
Thomas	G-059745	Tree, shrub & cover crop irrigation	2014	9,924,600	11,793,600	36
Thomas	G-021694	Tree, shrub & cover crop irrigation	2014	4,530,200	15,840,800	48
TOTALS					462,877,078	1,421

NEW GROUNDWATER CONSUMPTIVE USES & NEW DEPLETIONS

For the 2021 expansion of irrigated acres the ULNRD received 5 applications with all 5 being approved. 593 acres were permitted to be developed with an estimated groundwater depletion of 81-acre feet.

County	Number of Expansion Permits	Number of Approved Permits
Blaine	3	3
Brown	0	0
Cherry	0	0
Hooker	0	0
Logan	0	0
McPherson	2	2
Thomas	0	0
TOTALS	5	5

County	Use	New Well	Legal S-T-R	New Acres	AF Depletion
Blaine	Crop Production	Yes	33-22-24	55	15.525
Blaine	Crop Production	No	4-21-24	15	4.234
Blaine	Crop Production	Yes	23-24-25	70	19.759
Blaine	Crop Production	Yes	29-24-24	117	30.983
McPherson	Crop Production	Yes	8-18-31	100	1.613
McPherson	Crop Production	Yes	16-19-30	236	9.133
TOTALS				593	81.247

TRANSFERS

No water transfer permits were granted, cancelled or denied in 2021.

WELL CONSTRUCTION PERMITS

NRD Permit No.	County	Use	Status	Replacement	DNR Reg. No.
UL 185 – 21	Logan	Irrigation	Approved	No	G-191820
UL 186 – 21	McPherson	Irrigation	Approved	No	G-192253
UL 187 – 21	Blaine	Irrigation	Approved	Yes	G-059062
UL 188 – 21	Blaine	Irrigation	Approved	Yes	G-040010
UL 189 – 21	Brown	Irrigation	Approved	Yes	G-048935
UL 190 – 21	Logan	Irrigation	Approved	No	Not yet drilled
UL 191 – 21	Cherry	Irrigation	Approved	No	G-193860
UL 192 – 21	Logan	Irrigation	Approved	No	Not yet drilled
UL 193 – 21	Logan	Irrigation	Approved	No	Not yet drilled
UL 194 – 21	Logan	Irrigation	Approved	No	Not yet drilled

RETIREMENT OF GROUND WATER CONSUMPTIVE USES

County	Well Reg #	Use	Legal S-T-R	Acres Retiring	AF Depletion (credit)
Thomas	G-039405	Crop Production	4-22-26	75	21.21
Cherry	G-002517	Crop Production	33-26-30	187	11.67
Cherry	G-151917	Crop Production	24-26-31	80	3.74
Cherry	G-031856	Crop Production	12-27-29	140	24.08
Cherry	G-061068	Crop Production	2-26-28	80	17.47
Cherry	G-058209	Crop Production	9-25-26	130	38.93
Hooker	G-040008	Crop Production	29-21-34	184	8.30
Grant	G-060467	Crop Production	31-21-37	167	1.00
Grant	G-060468	Crop Production	32-21-37	347	2.08
Grant	G-060013	Crop Production	25-23-37	134	6.83
Cherry	G-047940	Crop Production	18-27-25	41	3.71
Cherry	G-033806	Crop Production	24-26-28	125	17.94
Cherry	G-068865	Crop Production	23-26-31	151	3.12
TOTALS				1,841	166.12

WATER BANKING ACTIVITIES

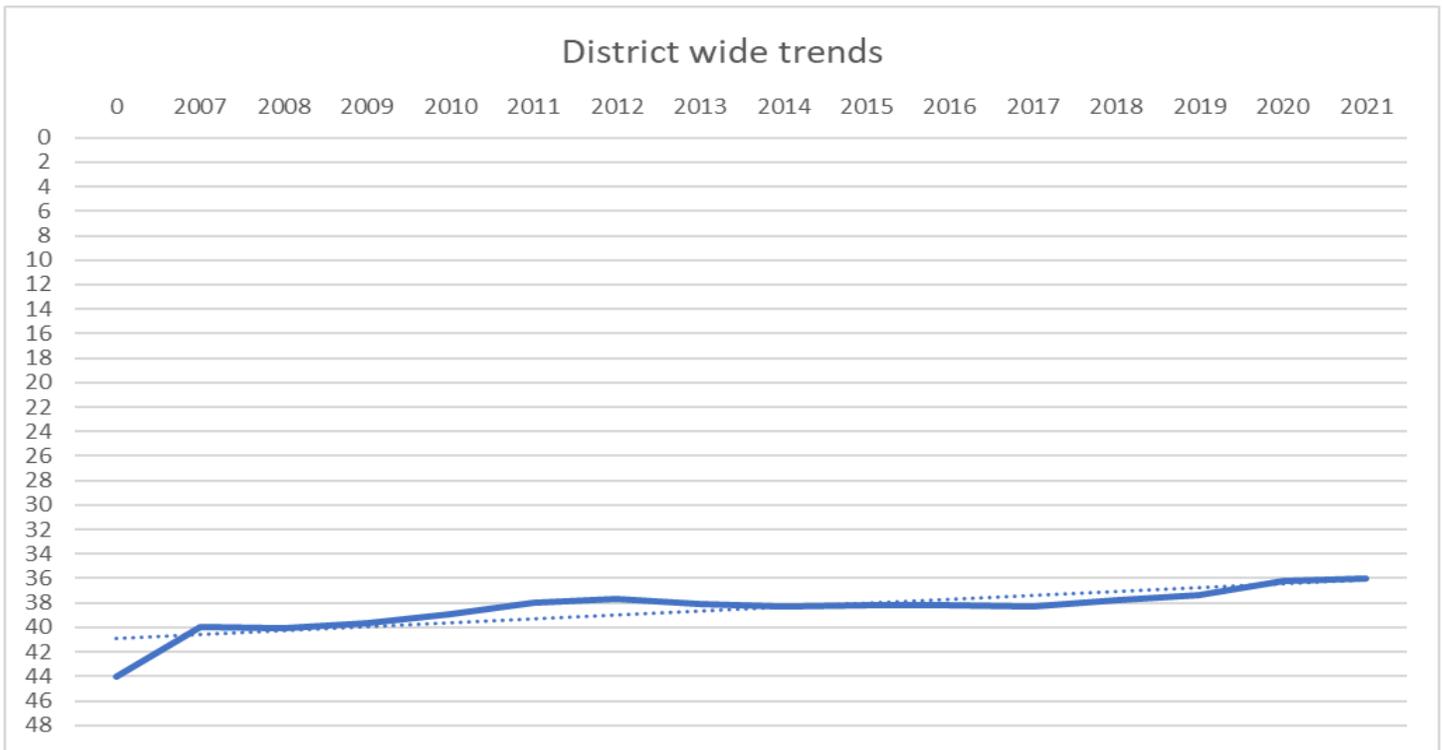
To date the ULNRD doesn't not have an established water banking system.

STREAM FLOW ACCRETIONS ACTIVITIES

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

GROUND WATER ELEVATION DATA

The ULNRD collected spring static water levels from 131 wells across the District. The number of wells data collected from was down 10 wells due to challenging entry into well locations as a result of standing water. Water levels maintained in each of the five sub-districts with some slight increases noted District wide.



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/>

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 – high water use 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 reviewing static water levels, climate conditions, water quality conditions then deciding to approve not more than 2,500 new 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

In 2021 the Upper Loup began developing a Drought Mitigation Plan. The plan will: refine a collective understanding of drought risk and vulnerabilities, identify and prioritize mitigation efforts, and define drought response measures that will be utilized during future drought events.

In 2022 the Upper Loup began updating its Ground Water Management Plan.