

Upper Loup Natural Resources District

Basin Water Management Plan Annual Report

Report Year: January 1, 2020 – December 31, 2020



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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, 2020 to December 31, 2020.

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 2020 was 82,341 and of that total 70,876 acres were active (~86%).

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 2020 growing season.

County	# of metered wells	Acres watered	Average inches pumped	Mode inches pumped	Total inches pumped	AF depletions	Primary crop
Blaine	108	11,345	8	8	766	64	Grass
Brown	40	2,357	13	14	277	23	Alfalfa
Cherry	53	5,529	10	8	425	35	Grass
Grant	13	1,462	13	7	143.6	12	Grass
Hooker	25	3,068	14	17.5	309	26	Grass
Logan	265	27,903	11	12.5	2,640	220	Corn
McPherson	48	5,742	13	13	573	48	Grass
Thomas	31	3,305	9	6	269	23	Grass
TOTALS	583	60,711	11.4	10.8	5,403	451	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 and park facilities.

Municipality	Baseline year	Baseline gallons	Baseline per capita gal / person / day	2020 gallons	2020 AF D	2020 per capita gal / person / day
Dunning	2012	36,511,300	961	23,667,550	73	655
Hyannis	2013	46,106,000	601	49,988,000	154	652
Mullen	2010	73,992,060	398	77,308,800	237	420
Stapleton				69,189,600	212	622
Thedford	2010	47,118,000	612	56,820,000	174	738
TOTALS				276,973,950	850	

Commercial/Industrial Well Summary:

County	Well Reg #	Use	Base line year	Baseline gallons	2020 gallons	2020 AF
Grant	G-170722	Community Golf Course Irrigation		Broken meter	-	-
Hooker	G-078662	Golf Course Irrigation	2011	51,104,100	55,644,750	171
Hooker	G-076336	Golf Course Irrigation	2011	28,039,700	31,899,000	98
Hooker	G-111905	Community Golf Course Irrigation	2011	19,068,600	12,893,400	40
Hooker	G-141320	Golf Course – lawn / domestic / fire supp	2014	96,694,500	50,818,900	156
Hooker	NR-9352	Golf Course – portable water	2014	32,663,000	8,864,000	27
Hooker	G-162940	Golf Course Irrigation – Doak	2018		New meter	
Hooker	G-135198	Golf Course Irrigation - Nickalus	2014	56,200,000	24,800,300	76
Hooker	G-137707	Driving Range Irrigation	2014	9,226,500	10,160,900	31
Hooker	G-141035	Turf Nursery	2014	7,920,000	New meter	
Hooker	G-140590	Golf Course Air Strip	2009	8,640,000	5,454,000	17
Hooker	G-123215	Redi-mix cement plant	NA			
Hooker	G-158004	Drinking Water Bottling – Domestic	NA		48,000	.15
Logan	G-127099	Community Golf Course Irrigation	2011	23,331,000	18,176,878	56
Thomas	G-104962	Community Golf Course Irrigation	2014	19,980,000	186,963,500	52
Thomas	G-014205	Tree, shrub & cover crop irrigation	2014	4,217,100	3,974,000	12
Thomas	G-014206	Tree, shrub & cover crop irrigation	2014	6,614,600	9,891,800	30
Thomas	G-014204	Tree, shrub & cover crop irrigation	2014	3,358,200	1,709,900	5
Thomas	G-059745	Tree, shrub & cover crop irrigation	2014	9,924,600	12,503,200	38
Thomas	G-021694	Tree, shrub & cover crop irrigation	2014	4,530,200	1,379,700	4
TOTALS					435,182,228	813

NEW GROUNDWATER CONSUMPTIVE USES & NEW DEPLETIONS

For the 2020 expansion of irrigated acres the ULNRD received 10 applications with all 10 being approved. 403 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	6	6
McPherson	1	1
Thomas	0	0
TOTALS	10	10

County	Use	New Well	Legal S-T-R	New Acres	AF Depletion
Blaine	Crop Production	No	22-24-22	36	6.588
Blaine	Crop Production	No	21-24-22	40	7.8
Blaine	Crop Production	No	18-24-25	133	36.708
McPherson	Crop Production	No	12-19-31	24	.936
Logan	Crop Production	Yes	36-17-29	93	.837
Logan	Crop Production	No	28-17-28	14	.21
Logan	Crop Production	No	27-17-28	21	.378
Logan	Crop Production	No	13-17-28	11	.231
Logan	Crop Production	No	32-17-28	16	.192
Logan	Crop Production	No	32-17-28	15	.18
TOTALS				403	54.06

TRANSFERS

No water transfer permits were granted, cancelled or denied in 2020.

WELL CONSTRUCTION PERMITS

NRD Permit No.	County	Use	Status	Replacement	DNR Reg. No.
UL 178 – 20	Logan	Irrigation	Approved	No	G-189383
UL 179 – 20	Brown	Irrigation	Approved	No	G-190104
UL 180 – 20	Cherry	Irrigation	Approved	Yes	G-073671
UL 181 - 20	Blaine	Irrigation	Approved	No	To date not registered
UL 182 - 20	Blaine	Irrigation	Approved	No	To date not registered
UL 183 - 20	Blaine	Irrigation	Approved	No	To date not registered
UL 184 - 20	McPherson	Irrigation	Approved	No	To date not registered

RETIREMENT OF GROUND WATER CONSUMPTIVE USES

County	Well Reg #	Use	Legal S-T-R	Pumping gpm	Acres Retiring	AF Depletion (credit)
Blaine	G-017316	Crop Production	4-24-22	500	200	34.92
Grant	G-042257	Crop Production	35-21-41	1,742	90	27
TOTALS					290	61.92

WATER BANKING ACTIVITIES

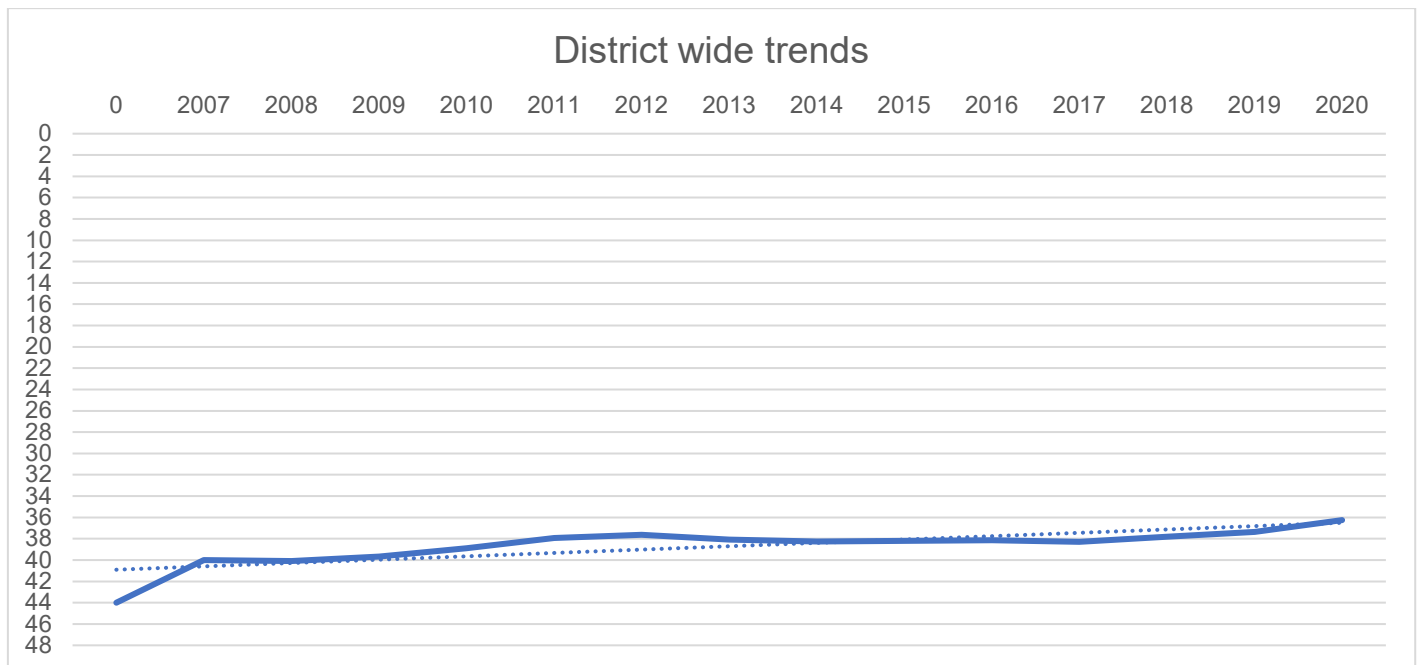
To date the ULNRD doesn't not have an established water banking system.

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 115 wells across the District. The number of wells data collected from was down due to challenging entry into well locations as a result of standing water. Water levels maintained across the District 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 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 ULNRD is in the last year of a three-year study that will look at the availability of the springs along the South Loup River and its tributaries to maintain consistent flow over periods of prolonged drought. Helping us to better evaluate management strategies needed to mitigate low flow periods along the South Loup.

In 2021 the Upper Loup will begin 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 2021 the NRD will also be investing in a feasibility study of remote flowmeter data collection.