

# Upper Loup Natural Resources District

Annual Report on Water Activities in the Upper Loup NRD

Report Year: July 1, 2016 – December 31, 2017



## **INTRODUCTION**

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 report contains information on those activities required to be tracked for the period July 1, 2016 to December 31, 2017.

## **CERTIFIED IRRIGATED ACRES**

The Upper Loup Natural Resources District (ULNRD) began 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 that belong to wells that are inactive or 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 2017 was 82,858 and of that total 70,763 acres were active (~85%).

| <b>County</b> | <b>Wells w/certified acres</b> | <b>ACTIVE wells w/ certified acres</b> | <b>Certified acres</b> | <b>Active certified acres</b> |
|---------------|--------------------------------|--|------------------------|-------------------------------|
| Blaine        | 149                            | 106                                    | 15596                  | 12878                         |
| Brown         | 91                             | 37                                     | 6915                   | 4088                          |
| Cherry        | 98                             | 54                                     | 8775                   | 7166                          |
| Grant         | 26                             | 17                                     | 2786                   | 1673                          |
| Hooker        | 32                             | 23                                     | 3943                   | 3501                          |
| Logan         | 284                            | 261                                    | 34909                  | 32294                         |
| McPherson     | 50                             | 42                                     | 6561                   | 6054                          |
| Thomas        | 44                             | 37                                     | 3373                   | 3112                          |

## **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, Rule 23. In 2015 the ULNRD Board of Directors required flow meters to be installed on all high capacity wells with certified acres, in the entire District, incrementally through May 2020.

For the most accurate reporting purposes, we chose to only include the information obtained from irrigation wells that have flow meters installed. To date of this report 77% of the ULNRD is metered. Total acre feet of recorded water use equals ~ 437 AF.

| County    | Active wells | # of metered wells | Acres watered | Average inches pumped | Mode inches pumped | Total inches pumped | Primary crop  |
|-----------|--------------|--------------------|---------------|-----------------------|--------------------|---------------------|---------------|
| Blaine    | 106          | 55                 | 12878         | 13.38                 | 16                 | 736                 | corn          |
| Brown     | 37           | 15                 | 4088          | 12.59                 | 12.5               | 189                 | Grass         |
| Cherry    | 54           | 32                 | 7166          | 10.53                 | 7                  | 326.53              | corn          |
| Grant     | 17           | 3                  | 1673          | 9.39                  | 8                  | 28.16               | grass/alfalfa |
| Hooker    | 23           | 9                  | 3501          | 15.30                 | 14                 | 138.29              | grass         |
| Logan     | 261          | 261                | 32294         | 12.99                 | 11.5               | ** 3103.79          | corn          |
| McPherson | 44           | 44                 | 6054          | 13.10                 | 13                 | 576                 | corn          |
| Thomas    | 37           | 15                 | 3112          | 10.20                 | 13                 | 142.6               | alfalfa       |

\*\* at the time of this report Logan County is missing readings from 23 wells or 9% of metered wells

## **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, Rule 23. All active commercial wells were also required to have flowmeters installed by 2010. Total acre feet of recorded water use for Municipal wells is 710 and commercial wells is 1,453.

### **Municipal Well Summary:**

| Municipality | Baseline year | Baseline gallons | Baseline per capita use gal / person / day | 2017 gallons | 2017 per capita use gal / person / day |
|--------------|---------------|------------------|--|--------------|--|
| Dunning      | 2010          | 36,095,200       | 785  | 24,360,300   | 648                                    |
| Hyannis      | 2010          | 56,000,000       | 731  | 50,145,000   | 654                                    |
| Mullen       | 2010          | 73,992,060       | 398  | 73,519,100   | 396                                    |
| Stapleton    | 2010          | 31,427,580       | 282  | 26,157,500   | 235                                    |
| Theford      | 2010          | 47,118,000       | 612  | 57,201,000   | 742                                    |

**Commercial/Industrial Well Summary:**

| <b>County</b> | <b>Well Reg #</b> | <b>Use</b>                            | <b>Baseline year</b> | <b>Baseline gallons</b> | <b>2017 gallons</b> |
|---------------|-------------------|---------------------------------------|----------------------|-------------------------|---------------------|
| Grant         | G-104731          | Community Golf Course Irrigation      | 2011                 | 2,310,000               |                     |
| Grant         | G-170722          | Community Golf Course Irrigation      | New well 2016        |                         |                     |
| Grant         | G-182260          | Used as Domestic Well                 | Not Recorded         | Not Recorded            | Not Recorded        |
| Grant         | G-156372          | Used as Domestic Well                 | Not Recorded         | Not Recorded            | Not Recorded        |
| Hooker        | G-078662          | Golf Course Irrigation                | 2011                 | 51,104,100              | 50,767,500          |
| Hooker        | G-076336          | Golf Course Irrigation                | 2011                 | 28,039,700              | 26,260,500          |
| Hooker        | G-111905          | Community Golf Course Irrigation      | 2011                 | 19,068,600              | 15,925,400          |
| Hooker        | G-141320          | Golf Course – lawn / heat pumps       | 2014                 | 96,694,500              | 64,186,200          |
| Hooker        | G-141180          | Golf Course – Water for club & resort | 2014                 | 32,663,000              | 14,893,000          |
| Hooker        | G-134610          | Golf Course – emergency backup        | 2014                 | 0                       | 0                   |
| Hooker        | G-162940          | Golf Course Irrigation                | 2014                 | 19,026,777              | 90,228,000          |
| Hooker        | G-135198          | Golf Course Irrigation                | 2014                 | 118,634,300             | 105,500,250         |
| Hooker        | G-137707          | Driving Range & Vegetation Irrigation | 2014                 | 9,226,500               | 18,438,700          |
| Hooker        | G-141035          | Turf nursery / Wildlife habitat       | 2014                 | 18,464,100              | 16,398,700          |
| Hooker        | G-123215          | Inactive                              |                      |                         |                     |
| Logan         | G-127099          | Community Golf Course Irrigation      | 2011                 | 23,331,000              | 18,265,000          |
| Thomas        | G-116415          | Used as Domestic Well                 | Not Recorded         | Not Recorded            | Not Recorded        |
| Thomas        | G-117963          | Inactive                              |                      |                         |                     |
| Thomas        | G-104962          | Community Golf Course Irrigation      | 2014                 | 19,980,000              | 18,265,000          |
| Thomas        | G-014205          | Tree, shrub & cover crop irrigation   | 2014                 | 4,217,100               | 3,935,000           |
| Thomas        | G-014206          | Tree, shrub & cover crop irrigation   | 2014                 | 6,614,600               | 10,383,800          |
| Thomas        | G-014204          | Tree, shrub & cover crop irrigation   | 2014                 | 3,358,200               | 2,789,800           |
| Thomas        | G-059745          | Tree, shrub & cover crop irrigation   | 2014                 | 9,924,600               | 11,742,000          |
| Thomas        | G-021694          | Tree, shrub & cover crop irrigation   | 2014                 | 4,530,200               | 5,797,700           |

## **NEW GROUNDWATER CONSUMPTIVE USES**

In year 2016, 1,045 new irrigated acres were approved and certified. 329 acres in Blaine County, 128 acres in Brown County, 120 acres in Cherry County, 328 acres in McPherson County and 140 acres in Logan County.

In year 2017 no new irrigated acres were allowed. There were no new municipal or commercial / industrial uses in this reporting period.

| <b>County</b> | <b>Legal S-T-R</b> | <b>New Acres</b> | <b>New Well</b> |
|---------------|--------------------|------------------|-----------------|
| McPherson     | 24-17-31           | 150              | Yes             |
| McPherson     | 32-18-30           | 35               | No              |
| McPherson     | 1-17-30            | 25               | No              |
| McPherson     | 1-19-30            | 97               | Yes             |
| McPherson     | 18-19-30           | 21               | No              |
| Logan         | 17-17-29           | 108              | Yes             |
| Logan         | 13-17-28           | 11               | No              |
| Logan         | 35-18-26           | 13               | No              |
| Logan         | 5-17-29            | 8                | No              |
| Cherry        | 28-25-31           | 120              | Yes             |
| Brown         | 3-27-22            | 128              | No              |
| Blaine        | 6-22-21            | 69               | No              |
| Blaine        | 28-24-22           | 130              | Yes             |
| Blaine        | 21-24-22           | 130              | Yes             |

## **TRANSFERS**

No water transfer permits were granted, cancelled or denied.

## **NEW DEPLETIONS ACCOUNTING REPORT**

Depletions accounting – reference CENEb depletion map. Upper Loup NRD is allowed 2,768 AF of new depletions over the 5-year period. Running total new depletions as of this reporting period is 104 AF.

## **WELL CONSTRUCTION PERMITS**

The well permits ending with 16 are the permits for the approved acres in 2017. The 6 wells ending in 17 represent the wells drilled for approved acres in 2018.

| <b>NRD Permit No.</b> | <b>County</b> | <b>Use</b> | <b>Status</b> | <b>Replacement</b> | <b>DNR Reg. No.</b>      |
|-----------------------|---------------|------------|---------------|--------------------|--------------------------|
| UL 152 - 16           | Blaine        | Irrigation | Approved      | No                 | G-180450                 |
| UL 153 – 16           | Blaine        | Irrigation | Approved      | No                 | G-180451                 |
| UL 154 – 16           | Logan         | Irrigation | Approved      | Yes                | G-032069                 |
| UL 155 -17            | Logan         | Irrigation | Approved      | No                 | G-183877                 |
| UL 156-17             | McPherson     | Irrigation | Approved      | No                 | G-183961                 |
| UL 157- 17            | Logan         | Irrigation | Approved      | No                 | G-183958                 |
| UL 158 -17            | Logan         | Irrigation | Approved      | No                 | G-184196                 |
| UL 159 -17            | Thomas        | Irrigation | Approved      | No                 | G-184195                 |
| UL 160 – 17           | Brown         | Irrigation | Approved      | No                 | Construction not started |

## **RETIREMENT OF GROUND WATER CONSUMPTIVE USES**

There was no retirement of any agricultural, municipal or commercial groundwater uses.

## **WATER BANKING ACTIVITIES**

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

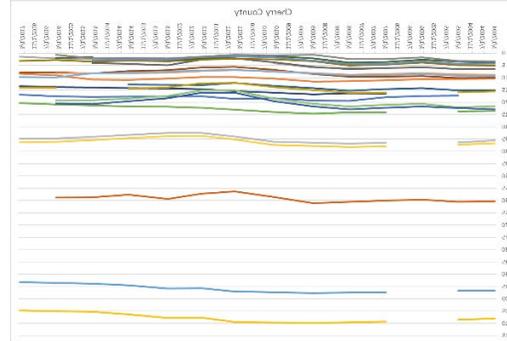
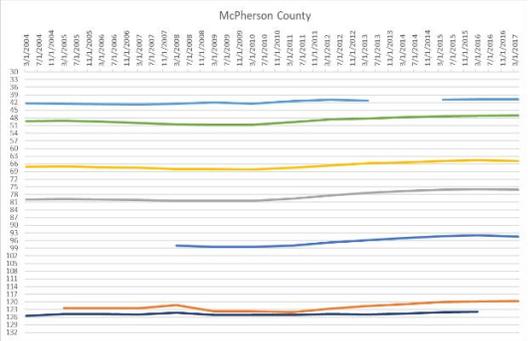
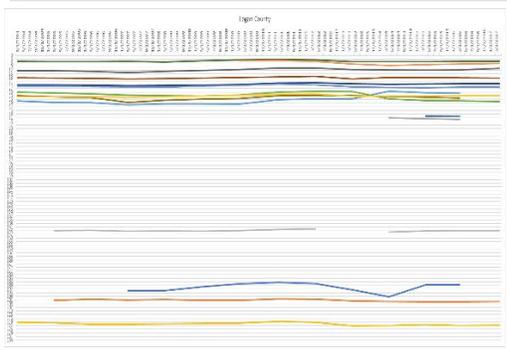
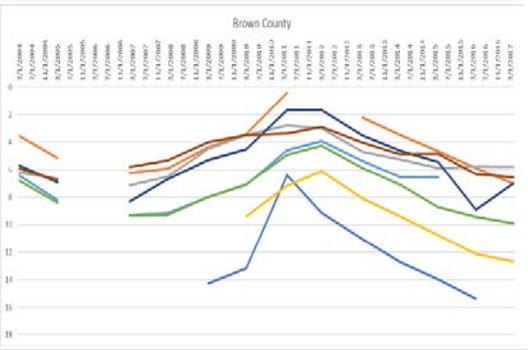
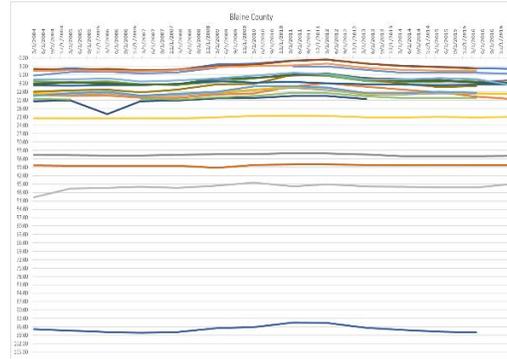
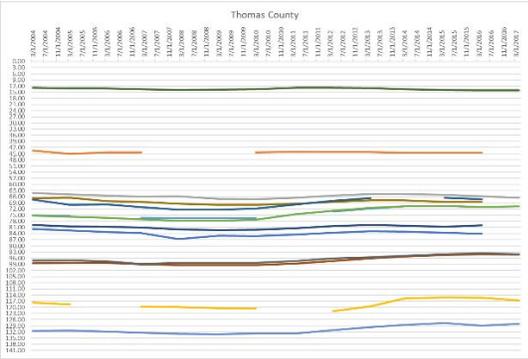
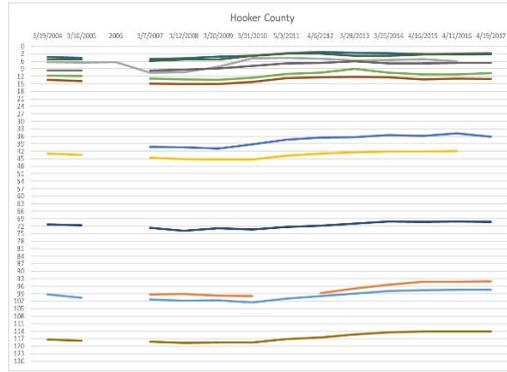
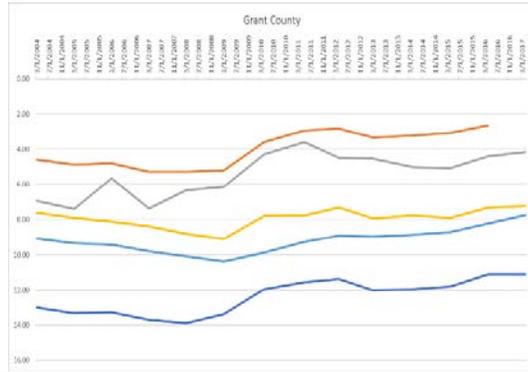
## **STREAM FLOW ACCRETIONS ACTIVITIES**

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. Water levels maintained across the District with the exception of Grant County where there has been a slight incline trend.

0.00 on the below graphs indicates ground level.



## **STREAM GAGE MEASUREMENTS**

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

Station 06775500 Middle Loup at Dunning      Station 06775900 Dismal near Thedford  
Station 06781600 South Loup at Arnold      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 ( $\geq 50$  gmp) shall be drilled within 300 feet from any active domestic well or within 1,320 feet of any other high capacity well
- All active commercial / industrial wells shall be equipped with a flowmeter
- All high capacity wells across the entire District shall be equipped with a flowmeter by May 1, 2020
- 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**

In 2017 the ULNRD collaborated with DNR and consultants to perform a District wide water budget study. Results will be available in 2018.