



LOWER ELKHORN

Natural Resources District



Lower Platte River Basin Coalition Plan – (Final Version) Annual Report - March 2020

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CONTENTS

- 1.0 INTRODUCTION**
- 2.0 CERTIFIED IRRIGATED ACRES**
- 3.0 MUNICIPAL, COMMERCIAL/INDUSTRIAL, LIVESTOCK GW USES**
- 4.0 NEW GW CONSUMPTIVE USES**
- 5.0 TRANSFERS**
- 6.0 WELL CONSTRUCTION PERMITS GRANTED**
- 7.0 RETIREMENT OF GW CONSUMPTIVE USES**
- 8.0 FLOW METER DATA**
- 9.0 WATER BANKING ACTIVITIES**
- 10.0 STREAM FLOW ACCRETION ACTIVITIES**
- 11.0 GROUNDWATER ELEVATION DATA**
- 12.0 STREAM GAGE MEASUREMENTS**
- 13.0 NRD REGULATION AND MANAGEMENT ACTIVITIES**
- 14.0 NEW DEPLETIONS ACCOUNTING REPORT**
- 15.0 NEW DATA COLLECTED THROUGH MODELS OR STUDIES**

1.0 Introduction

The Lower Elkhorn Natural Resource District (LENRD) covers approximately 2,591,300 acres in northeast Nebraska; with predominant land uses divided among agriculture (76%), pasture/grassland (20%), and small areas of forests, open water, wetlands, and urbanized areas (<4%).

The District’s Board of Directors approved the interlocal agreement which effectively adopted the Lower Platte River Basin Water Management Plan on November 21st, 2017. This action, along with the six other Natural Resource Districts and the Nebraska Department of Natural Resources, set forth a collective effort to work cooperatively towards the management and development of the water resources within the Lower Platte Basin.

Since 2009, the Lower Elkhorn NRD has utilized a managed-growth philosophy when considering the decision to allow new groundwater uses for agricultural irrigation purposes. Prior to December of 2008, no restrictions were in place that limited property owners regarding the development of agricultural land for irrigation purposes. Current policy requires an approved variance from the District before expanding groundwater use for irrigation purposes. This requirement has been in place since April of 2009 within the LENRD. No limitations have been enacted on the approval of permits for high-capacity groundwater wells for other uses; such as commercial, industrial, livestock, or municipal wells, however, any request to construct a new well for any of those purposes is reviewed for any potential impacts to existing groundwater supplies and/or impacts to groundwater quality.

The Lower Platte River Basin Water Management Plan provides guidance to the partners in respect to the amount of (excess) available water that can be allotted for new uses (depletions). Coalition partners have, in return, agreed to adhere to the suggested limits for the first five-year increment of the plan, with recalculation and distribution of available increments occurring before the end of the first increment, which is scheduled to occur on December 31, 2021. 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 Resource District. As listed in Table 4.2, the amount of water available during the first five-year increment, to be shared between the Lower Elkhorn Natural Resource District and the Nebraska Department of Natural Resources is 4,514 Acre-Feet of allowable new depletions.

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 Loup NRD	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

¹The allowable new depletion is for all new uses. Apportionment between new surface water and groundwater uses will be made according to each individual NRD Integrated Management Plan.

This report and its enclosed content will serve to fulfill the annual data collection and reporting requirement of the Lower Platte River Basin Management Plan for the LENRD for the year 2019, as indicated in *Section 5.0 – Plan Review and Monitoring, Lower Platte River Basin Management Plan*.

2.0 Certified Irrigated Acres

The District did not formally begin the process of certifying irrigated acres until January of 2013. Since that date, the District has formally certified 7,992 irrigated tracts of private property that have associated irrigated acres and meet the pre-determined criteria for certification purposes.

Rule 14 of the Lower Elkhorn Districts Rules & Regulations for the Enforcement of the Nebraska Groundwater Management and Protection Act indicates that the District will certify, as irrigated, any tract of land greater than two acres that (1) has been irrigated any one out of ten years (from 1999 to 2008), (2) is currently enrolled in a federal, state, or local conservation program and was classified as irrigated land by the local County Assessor within one year prior to being enrolled in such a program, (3) has otherwise been allowed to develop under an approval granted by the District’s Board of Directors since 2007, (4) has otherwise been allowed to develop under an approval granted by the NDNR since 2007, or (5) is irrigated from a lagoon constructed in compliance with a Clean Water Act permit.

Table 1.

LENRD CERTIFIED IRRIGATED ACRES BY SOURCE				
COUNTY	GROUNDWATER	SURFACE WATER	WASTEWATER	TOTAL ACRES BY COUNTY
ANTELOPE	435.94	-	-	435.94
BURT	15,394.49	1,077.36	1,505.06	17,976.91
CEDAR	47,847.92	529.80	432.94	48,810.66
COLFAX	24,291.40	407.87	2,089.13	26,788.40
CUMING	55,927.54	2,040.74	14,171.63	72,139.91
DAKOTA	-	-	-	-
DIXON	14,957.89	422.12	191.79	15,571.80
DODGE	64,232.48	3,786.60	2,295.04	70,314.12
KNOX	11,122.15	70.00	-	11,192.15
MADISON	118,627.28	2,216.48	3,280.49	124,124.25
PIERCE	154,704.99	1,478.37	476.94	156,660.30
PLATTE	23,852.31	-	2,190.44	26,042.75
STANTON	38,126.38	2,490.03	1,780.61	42,397.02
THURSTON	10,790.00	373.87	503.76	11,667.63
WAYNE	47,529.88	913.42	1,761.00	50,204.30
TOTAL IRRIGATED ACRES BY SOURCE	627,840.65	15,806.66	30,678.83	
TOTAL IRRIGATED ACRES	674,326.14			

As indicated by the data in Table 1, groundwater is the primary water source for agricultural irrigation in the Lower Elkhorn NRD with current inventory totaling **627,840.65** acres irrigated by this source. The District is also home to many livestock operations; species include beef cattle (feedlot and cow/calf), dairy, swine, and poultry operations; for both egg and meat-bird production.

Current production trends for livestock and poultry operations indicate that large numbers of animals are situated on individual farms, which will require large volumes of water necessary for production. Many of these operations are also required to have operating permits to comply with the Clean Water Act requirements. Some of these locations will apply groundwater, as necessary, alongside animal waste/lagoon effluent for irrigation of growing crops.

To date, certification records show that surface water irrigation comprises the smallest increment of the total irrigated acreage in the District, estimated at **15,806.66**. Comingled sources of water have been tracked through the process of certification of acres, and current data indicates there are approximately **14,386** acres of land that are listed as utilizing both groundwater and surface water for irrigation sources.

3.0 Municipal, Commercial/Industrial and Livestock Uses

Prior to January 1, 2019, the District has only required the reporting of annual groundwater usage reports from *new* Municipal, Commercial/Industrial, and Livestock wells that were constructed with an approved permit, dated July 29th, 2007 or later. However, recent modifications to the Lower Elkhorn Natural Resource District Groundwater Management Plan Rules & Regulations requires the installation of a Flow Meter for wells classified as Commercial/Industrial, Livestock, and Municipal use by January 1st, 2019. Also required is the annual reporting of groundwater usage data on all wells classified for these other uses beginning January 1, 2020 (see **Appendix A**).

Appendix A

Commercial/Industrial, Livestock, and Municipal Wells

Owner	Legal Description	Well Registration Number	Well Use ID
Battle Creek Farmers Coop-Osmond	SE1/4 36-28-3W	G-095475	(C)
Cedar View Country Club	NW1/4 9-28-3E	G-066053	(C)
Central Sand & Gravel	SE 35-24-1W	G-184547	(C)
Central Valley Ag- Oakland	NE1/4 13-22-8E	G-142875	(C)
City of Clarkson	5-20-3E	G-046488	(C)
City of Stanton	NE1/4 28-23-2E	G-178508	(C)
Continental	NE1/4 32-24-1W	G-061139, G-119720, G-061138	(C)
Continental	NE1/4 32-24-1W	G-061138, G-061139, G-119720	(C)
Eldorado Hills Golf Course	N1/2 20-24-1W	G-076681	(C)
Elkhorn Valley Ethanol	SW 12-24-1W	G-136620, G-136619	(C)
Eveland Supply Company	SW1/2 32-20-7E	G-157552	(C)
Fairplay Golf Course	SW 16-23-1W	G-081316	(C)
Fairplay Golf Course	SW 16-23-1W	G-081315	(C)
Helena Chemical Company	NW 14-24-1W	G-184553	(C)
Husker Ag LLC	NW 6-27-3W	G-119048	(C)
Husker Ag LLC	NW 6-27-3W	G-119049	(C)
Indian Trails Country Club	NW1/4 2-22-5E	G-067518	(C)
James Pruss	SW1/4 36-21-4E	G-094804	(C)
Lone Star	SE 26-23-4E	G-180554	(C)
Louis Dreyfus Company	SW 12-24-1W	G-136620, G-136619	(C)
Lyman-Richey Corporation	SE1/4 35-24-1W	G-184547	(C)
Madison High/Middle School	NE1/4 5-21-1W	G-074715	(C)
Michael Foods Inc	32-27-5E	G-066234B	(C)
Michael Foods Inc	32-27-5E	G-135652	(C)
Nebraska DOR	NE1/4 36-24-1W	G-112989	(C)
Nebraska DOR	NW1/4 2-27-4W	G-108610	(C)
Nebraska DOR	NW1/4 30-23-9E	G-143219	(C)
Norfolk Iron & Metal	SE 11-24-1W	G-074328	(C)
Oakland Golf Club	SW 36-22-8E	G-055760	(C)
Oakland Golf Club	NW 36-22-8E	G-076375	(C)
Pierce Community Golf Course	SW1/4 21-26-2W	G-074312	(C)
Pierce Community Golf Course	SW1/4 21-26-2W	G-181014	(C)
Todd Zohner	NW1/4 26-22-1E	G-168539	(C)
Tyson Fresh Meats, Inc	32-22-1W	G-042591	(C)
Tyson Fresh Meats, Inc	32-22-1W	G-042590	(C)
Cardinal Health	SW 3-23-1W	G-102698	(P)
Cardinal Health	SW 3-23-1W	G-102699	(P)
City of Battle Creek	SW1/2 18-23-2W		(P)
City of Battle Creek	SW1/2 18-23-2W		(P)
City of Clarkson	SE 5-20-3E	G-056749B	(P)
City of Clarkson	SE 5-20-3E	G-117824	(P)
City of Hooper	17-19-8E	G-129110, G-030519, G-129111	(P)
City of Laurel	NW 4-28-3E	A-010579B	(P)
City of Laurel	SW1/2 5-28-3E	G-156087	(P)
City of Madison	SW 32-22-1W	G-030268A	(P)
City of Madison	SW 32-22-1W	G-089227	(P)
City of Madison	NW 32-22-1W	G-151070	(P)
City of Madison	SW 32-22-1W	G-030268B	(P)
City of Norfolk	NE 25-24-2W	G-029259	(P)
City of Norfolk	NE 25-24-2W	G-029258	(P)
City of Norfolk	SW 30-24-1W	G-049058	(P)
City of Norfolk	NW 26-24-1W	G-070115	(P)

City of Norfolk	NW 26-24-1W	G-070116	(P)
City of Norfolk	NE 31-24-1W	G-122246	(P)
City of Norfolk	NW 26-24-1W	G-070112	(P)
City of Norfolk	NW 31-24-1W	G-074818	(P)
City of Norfolk	NW 26-24-1W	G-070114	(P)
City of Norfolk	SW 30-24-1W	G-049057	(P)
City of Norfolk	SW 30-24-1W	G-049312	(P)
City of Norfolk	SW 30-24-1W	G-049313	(P)
City of Osmond	SW 31-28-2W	G-113667	(P)
City of Osmond	SE 31-28-2W	G-182760	(P)
City of Osmond	NW 31-28-2W	G-182762	(P)
City of Pierce	SW 27-26-2W	G-073291	(P)
City of Pierce	NE 27-26-2W	G-073290, G-032940	(P)
City of Pierce	NE 28-26-2W	G-139524	(P)
City of Plainview	NE 4-27-4W	G-115909	(P)
City of Plainview	SW 33-28-4W	G-028161	(P)
City of Plainview	SW 33-28-4W	G-028160	(P)
City of Plainview	SE 33-28-4W	G-028162	(P)
City of Randolph	30-28-1E	G-072698	(P)
City of Stanton	20-23-2E	G-130926	(P)
City of Stanton	28-23-2E	G-117626	(P)
City of Stanton	29-23-2E	G-090295	(P)
City of Tilden	SW 30-24-4W	G-067389	(P)
City of Tilden	24-24-5W	G-121103	(P)
City of Wayne	SE 1-26-3E	G-062208	(P)
City of Wayne	SE 12-26-3E	G-028981	(P)
City of Wayne	SW 6-26-4E	G-062209	(P)
City of Wayne	NE 14-27-3E	A-016927	(P)
City of Wayne	SE 12-26-3E	G-028980	(P)
City of Wayne	NE 14-27-3E	A-016525	(P)
City of Wayne	SW 12-27-3E	G-155312	(P)
City of Wisner	SW 1-23-4E	G-030087	(P)
City of Wisner	NW 1-23-4E	G-088652	(P)
City of Wisner	SE 2-23-4E	G-030086	(P)
Henningsen Foods Inc	SE 22-24-1W	G-099004	(P)
Logan East Rural Water District	SE 25-22-7E	G-099139	(P)
Logan East Rural Water District	NE 32-22-8E	G-074079	(P)
Logan East Rural Water District	NE 32-22-8E	G-075059, G-099139, G-074079	(P)
Logan East Rural Water District	NE 32-22-8E	G-075059	(P)
Sanitary & Improvement District 1	NW 16-24-1E	G-092157	(P)
Sanitary & Improvement District 1	SW 10-24-1E	G-120029	(P)
Sanitary & Improvement District 1	SE 8-24-1E	G-073386	(P)
Village of Bancroft	NW 36-24-7E	G-113468	(P)
Village of Bancroft	SW 36-24-7E	G-094051	(P)
Village of Belden	NW 16-28-2E	G-070579	(P)
Village of Coleridge	SW 9-29-2E		(P)
Village of Coleridge	NW 9-29-2E		(P)
Village of Craig	24-21-9E	G-099287, G-060974, G-099288	(P)
Village of Craig	30-28-1E	G-070063	(P)
Village of Dixon	SW 8-28-4E	G-063086B	(P)
Village of Dodge	NE1/4 8-20-5E	G-070575	(P)
Village of Dodge	NW1/4 8-20-5E	G-027475	(P)
Village of Hoskins	NW 27-25-1E	G-075808	(P)
Village of Hoskins	SW 27-25-1E	G-071973	(P)
Village of Leigh	SE 18-20-2E	G-170503	(P)
Village of Leigh	SE 18-20-2E	G-073168	(P)
Village of Meadow Grove	26-24-4W		(P)
Village of Meadow Grove	26-24-4W		(P)
Village of Meadow Grove	26-24-4W		(P)
Village of Pilger	SW 25-24-3e	G-080465	(P)
Village of Pilger	NW 2-23-3E	G-041187	(P)
Village of Snyder	18-20-6E	G-113687	(P)
Village of Snyder	18-20-6E	G-113688	(P)
Village of Wausa	NW 15-29-2W	G-125312	(P)
Village of Wausa	NW 15-29-2W	G-089662	(P)
Village of Winside	NE 3-25-2E	G-028002A	(P)

Village of Winside	NE 3-25-2E	G-114915	(P)
Bernhard Schole	E1/2 25-20-7E	G-157995	(O)
Michael Foods Inc	NW 20-27-5E	G-139882	(U)
Michael Foods Inc	SW 27-27-5E	G-139881	(U)
Michael Foods Inc	SW 27-27-5E	G-066183	(U)
Michael Foods Inc	SW 27-27-5E		(U)
Michael Foods Inc	NW 20-27-5E	G-032615	(U)
Michael Foods Inc	NW 20-27-5E	G-072033	(U)
Allen Meister	SE 13-21-5E	G-173781	(S)
Anderson Livestock LLC	NE1/2 15-26-2W	G-177894	(S)
Bellar Feedlot	SE1/2 7-23-5E	G-164607	(S)
Brad Maas	NE1/2 27-24-2E	G-148561	(S)
Diamond 6 Feeders	NW 25-21-6E	G-133186	(S)
Feyerherm Farm Inc	NE1/4 23-22-6E	G-180839	(S)
Harry Knobbe Feedyards	NE 8-21-6E	G-107762	(S)
Holland Feedlot Inc	NW 17-23-4E	G-052175	(S)
Holland Feedlot Inc	SW1/2 18-23-4E	G-156546	(S)
Holland Feedlot Inc	SE1/2 1-23-3E	G-163372	(S)
Kreikemeier Farms	SE 31-21-6E	G-144111, G-148039	(S)
Lone Star	SW 26-23-4E	G-180554	(S)
Muller Farms	NW1/2 28-20-7E	G-147266	(S)
Pat Nebuda	SE1/2 7-22-7E	G-148559	(S)
Patrick Meiergerd	SW1/4 29-22-5E	G-181904	(S)
Paul Ridder	NE1/2 7-21-6E	G-168667	(S)
SC Sows LLC	SW1/4 24-23-3E	G-184541	(S)
Tim Hunke	SE 30-22-6E	G-176689	(S)
Ulrich Cattle Co	NE 11-21-5E	G-162917	(S)
Ulrich Cattle Co	NE1/2 11-21-5E	G-162917	(S)
Urwiler Feedlots	NW 36-24-4E	G-115381	(S)
Weborg Farms	SE1/4 23-24-6E	G-181422	(S)

Listed are the respective owners for each Flow Meter located at the listed PLS Legal Description, Well Registration Number, and Well Use ID following NDNr code prompt: (C) Commercial/Industrial Use; (P) Public Water with Spacing Protection; (S) Livestock; (U) Public Water without Spacing Protection. End of the Year 2018 Water Use is not required to be reported until January 1st, 2020.

Wastewater Discharge

The District is also gathering an inventory of the methods utilized by various communities within its boundaries for wastewater treatment (Table 2) and will also be tracking the number of gallons that are discharged to a river or stream post-treatment.

Table 2.

Community	Discharge System	Land Application	Discharge Source	Total Discharge (2019)
City of Battle Creek	Mechanical Plant	N/A	Elkhorn River	7,000,000 Gal
Village of Bancroft	Mechanical Plant	Sometimes	Logan Creek	31,000,000 Gal
Village of Beemer	Mechanical Plant	Yes	Elkhorn River	22,000,000 Gal
Village of Beldon	Lagoon CR	N/A	N/A	-----
Village of Carroll	Lagoon CR	N/A	N/A	-----
City of Clarkson	Lagoon D	Yes	Maple Creek	3,700,000 Gal
Village of Concord	Lagoon CR	N/A	N/A	-----
Village of Cornlea	Septic Tank	N/A	N/A	-----
Village of Craig	Lagoon CR	Yes	N/A	-----
Village of Creston	Lagoon CR	Yes	N/A	-----

<i>Village of Dixon</i>	Lagoon CR	Yes	N/A	-----
<i>Village of Dodge</i>	Mechanical Plant	Yes	Trib. Pebble Creek	15,000,000 Gal
<i>Village of Emerson</i>	Mechanical Plant	Yes	Middle Creek	5,600,000 Gal
<i>Village of Foster</i>	Septic Tanks	N/A	N/A	-----
<i>Village of Hadar</i>	Lagoon CR	N/A	N/A	-----
<i>*City of Hooper</i>	Lagoon D	N/A	Elkhorn River	-----
<i>Village of Hoskins</i>	Lagoon CR	N/A	N/A	-----
<i>Village of Howells</i>	Lagoon D	N/A	Maple Creek	28,030,690 Gal
<i>City of Humphrey</i>	Lagoon CR	Yes	N/A	-----
<i>City of Laurel</i>	Mechanical Plant	Yes	Logan Creek	50,300,000 Gal
<i>Village of Leigh</i>	Lagoon CR	Yes	N/A	-----
<i>City of Lyons</i>	Lagoon D	N/A	Logan Creek	162,070,000 Gal
<i>City of Madison</i>	Mechanical Plant	N/A	Union Creek	12,915,142,000 Gal
<i>Village of McLean</i>	Lagoon CR	N/A	N/A	-----
<i>Village of Meadow Grove</i>	Mechanical Plant	N/A	Elkhorn River	13,105,200 Gal
<i>Village of Nickerson</i>	Lagoon D	N/A	Elkhorn River	4,838,726 Gal
<i>City of Norfolk</i>	Mechanical Plant	Yes	Elkhorn River	1,136,000,000 Gal
<i>City of Oakland</i>	Mechanical Plant	N/A	Logan Creek	76,977,488 Gal
<i>City of Osmond</i>	Lagoon D	N/A	North Fork Elkhorn River	19,390,000 Gal
<i>Village of Pender</i>	Mechanical Plant & Lagoon	N/A	Logan Creek	3,468,000 Gal
<i>City of Pierce</i>	Lagoon D	N/A	North Fork Elkhorn River	26,500,000 Gal
<i>*Village of Pilger</i>	Lagoon D	Yes	Elkhorn River	-----
<i>City of Plainview</i>	Lagoon D	N/A	Dried Creek	600,000 Gal
<i>City of Randolph</i>	Mechanical Plant	Yes	Logan Creek	46,041,107 Gal
<i>Village of Rosalie</i>	Lagoon CR	Yes	N/A	-----
<i>City of Scribner</i>	Mechanical Plant	Yes		
<i>Village of Sholes</i>	Septic Tanks	N/A	N/A	-----
<i>Village of Snyder</i>	Mechanical Plant	Yes	Trib. Pebble Creek	
<i>City of Stanton</i>	Mechanical Plant	N/A	Elkhorn River	20,094,000 Gal
<i>Village of Thurston</i>	Lagoon D	N/A	Trib. Logan Creek	4,500,000 Gal
<i>City of Tilden</i>	Lagoon CR	Yes	N/A	-----
<i>Village of Uehling</i>	Lagoon CR	Yes	N/A	-----
<i>City of Wakefield</i>	Lagoon D	N/A	Logan Creek	14,457,240 Gal
<i>Village of Wausa</i>	Mechanical Plant	Yes	North Fork Elkhorn River	41,393,000 Gal
<i>City of Wayne</i>	Mechanical Plant	N/A	Logan Creek	146,796,800 Gal
<i>City of West Point</i>	Mechanical Plant	Yes	Elkhorn River	169,644,000 Gal
<i>Village of Winside</i>	Lagoon D	N/A	Logan Creek	10,128,775 Gal
<i>Village of Winslow</i>				
<i>City of Wisner</i>	Mechanical Plant	Yes	Elkhorn River	69,067,400 Gal
<i>Woodland Park</i>	Lagoon CR	N/A	N/A	-----

Table 2: Discharge Method and Quantity by Community. “Lagoon D” are communities with lagoons that discharge; “Lagoon TE” are communities with lagoon systems that are totally enclosed (i.e. all water lost is due to land application/evaporation). “N/A” fields represent that the system does not comply with that data field

Approved Permits for New Wells

In compliance with the reporting requirement within the plan, listed below in Table 3 are wells that have been installed since January of 2019 within the District that would be classified as Livestock, Commercial/Industrial or Public Water Supply. Flow Meters have been or will soon be installed on any of the listed wells below that classify as a high-capacity well.

Table 3. Commercial/Industrial, Municipal, and Livestock Wells (2019)

<u>Well Reg. No.</u>	<u>Use</u>	<u>Status</u>	<u>Completion Date</u>	<u>Owners Name</u>
G-187303	(S)	(I)	5/16/2019	John Doernemann (poultry)
G-187304	(S)	(I)	5/16/2019	John Doernemann (poultry)
G-187429	(S)	(I)	5/14/2019	K & K Poultry (poultry)
G-187430	(S)	(I)	5/16/2019	K & K Poultry (poultry)
G-188779	(S)	(A)	6/13/2019	Right Wing Acres (poultry)
G-188993	(S)	(A)	9/17/2019	Dennis Jahnke (beef)
G-187948	(S)	(A)	6/18/2019	Craig Ebberson (beef)
G-188284-A	(S)	(I)	9/25/2019	Michael Ortmeier (poultry)
G-188285-B	(S)	(I)	9/26/2019	Michael Ortmeier (poultry)
Total			9 Wells Processed with NeDNR in 2019	

<u>Permit #</u>	<u>Use</u>	<u>Approval Date</u>	<u>Owners Name</u>
LE-19-23-L	(S)	7/23/2019	Roger Gall (poultry)
LE-19-28-L	(S)	7/31/2019	Maple Creek Poultry LLC (poultry)
LE-19-32-L	(S)	8/09/2019	Tom Knobbe Farms (beef cattle)

Table 3: Commercial/Industrial, Municipal, and Livestock Wells (2019). "Use" identification is defined from the Nebraska Department of Natural Resources: (P) Public Water Supply with Spacing Protection and (S) Livestock, "Status" identification is defined as follows: (A) Active, (I) Inactive. NA: – Well Registration is not yet assigned/available; the Well Identification (WellID) is served in its place. "---" symbol; information is missing from the database or does not follow "status" code prompt.
Source: [LENRD](#) & [NDNR](#)

4.0 New Groundwater Consumptive Uses

Previous to participation in the Lower Platte River Basin Management Plan, the only accounting for new groundwater consumptive uses by the Lower Elkhorn Natural Resource District would be for new irrigated acres located within the hydrologically connected areas authorized by an approved Variance from the District, and most importantly those acres approved under the prior requirements of LB 483. The District has required an approved variance to expand irrigated acres districtwide since early 2009. A variance is required for both the Hydrologically Connected and Non-Hydrologically Connected portions of the District, which under the current boundaries (as recognized by the District and the Nebraska Department of Natural Resources) equals approximately a 1/3rd (Hydrologically Connected) and 2/3rd (Non-Hydrologically Connected) split.

In August of 2019, the Lower Elkhorn Board of Directors once again authorized a sign-up period to receive applications for Standard Variances to Expand Irrigated acres within the District. This authorization would allow for the development of up to 450 AF of new peak season depletions within the hydrologically connected portion of the district and up to 2,500 new irrigated acres in the non-hydrologically connected area.

In November of 2019, the Board of Directors voted to allow up to 292.24 acre feet of new peak season depletions in the *hydrologically connected* portion of the District, and up to 2509.92 new groundwater irrigated acres in the *non-hydrologically connected* portion of the District.

For accounting purposes, only the new depletions located with the current hydrologically connected portion of the LENRD are accounted for and reported to the Coalition. Any future boundary amendment will require the LENRD to account for any new depletions approved outside of the current hydrologically connected area, dating back to the year 2016.

Table 4 (below) inventories the beginning allowable depletion (AF), and accounts for the new depletions within the Lower Elkhorn NRD approved by both the LENRD and NeDNR. As of January 1, 2019, 3785 AF was the remaining allowable 5 year depletion (AF).

TABLE 4- PEAK SEASON DEPLETIONS AND CONSUMPTIVE USE									
	PEAK SEASON 5-YR ALLOWABLE DEPLETION (AF)	NRD - Peak Season Depletion (AF)	NeDNR Reported Depletion (AF)	NRD - Peak Season Consumptive Use (AF)	NeDNR Reported Consumptive Use (AF)	Total New Peak Season Depletions	Total New Peak Season Consumptive Use	Remaining 5-YR Allowable Depletion (AF)	Percent of Remaining 5-YR Allowable Depletion
NRD	4514	515.0	214.0	1021.8	214.0	729.0	1235.8	3785.0	83.8%

3785 AF Available (Total:LENRD/NeDNR) – 292.24 New Depletions = 3472 AF Avail.

The data for each variance granted by the LENRD is available in the attached spreadsheet labeled *Attachment A*.

5.0 Transfers

The Lower Elkhorn Natural Resource District did not receive or approve any groundwater use transfer requests during this reporting period, therefore no data is provided for this section.

6.0 Permits for High Capacity Wells

Table 5 inventories the well permits issued for 36 high capacity wells in the Lower Elkhorn NRD between January 1, 2019 through December 31, 2019.

Table 5.

NRD Permit Number	County	Use	Replacement or New well	WellReg Number
LE-19-01	Dodge	(I)	New well	G-187370
LE-19-02	Colfax	(I)	New well	G-187320
LE-19-03	Wayne	(I)	New well	G-188858
LE-19-04	Pierce	(I)	New well	G-187132
LE-19-05	Cuming	(I)	New well	G-188603
LE-19-06	Cuming	(I)	New well	G-188699
LE-19-07	Pierce	(I)	New well	G-187448
LE-19-08-R	Stanton	(I)	Replacement	WNC
LE-19-09-L	Colfax	(S)	New well	WNC
LE-19-10-L	Colfax	(S)	New well	G-187303
LE-19-11	Colfax	(S)	New well	G-187304
LE-19-12	Dodge	(I)	New well	G-187373
LE-19-13	Pierce	(I)	New well	WNC
LE-19-14-L	Madison	(S)	New well	G-187429
LE-19-15	Stanton	(I)	New well	G-187206
LE-19-16-R	Cedar	(I)	Replacement	G-072830
LE-19-17	Cedar	(I)	New well	Reg. Pending
LE-19-18-L	Madison	(S)	New well	G-187430
LE-19-19-L	Stanton	(S)	New well	G-188779
LE-19-20	Dodge	(I)	New well	WNC
LE-19-21	Platte	(I)	New well	G-188794
LE-19-22-L	Cuming	(S)	New well	G-188993
LE-19-23-L	Stanton	(S)	New well	Reg. Pending
LE-19-24	Pierce	(I)	New well	G-188018
LE-19-25-R	Wayne	(I)	Replacement	G-054635
LE-19-26-R	Madison	(I)	Replacement	G-043545
LE-19-27-R	Pierce	(I)	Replacement	Reg. Pending
LE-19-28-L	Colfax	(S)	New well	Reg. Pending
LE-19-29	Cuming	(I)	New well	G-187903
LE-19-30-R	Wayne	(I)	Replacement	G-127820
LE-19-31-L	Cedar	(S)	New well	G-187948
LE-19-32-L	Cuming	(S)	New well	WNC
LE-19-33-L-A	Dodge	(S)	New well	G-188284
LE-19-33-L-B	Dodge	(S)	New well	G-188285
LE-19-34	Dodge	(I)	New well	G-188180
LE-19-35	Cuming	(I)	New well	WNC
LE-19-36	Burt	(I)	New well	G-188664

Total: 36 Permits Granted

7.0 Retirement of Groundwater Consumptive Uses

During the reporting period of January 1 – December 31, 2019, there were no retirements of groundwater uses inventoried or reviewed within the Lower Elkhorn NRD.

8.0 Flow Meter Data

As of January 1, 2019, all active, high capacity wells are required to be equipped with a flow meter to measure the total annual volume pumped, with water-use readings due to the LENRD by December 1 of each calendar year. The water-use information from the flow meters associated with wells classified for all types of uses is being inventoried into a central data management system that was developed for the LENRD by Phoenix Webgroup (PWG) of Waverly, NE. This data management system, which houses over 5,000 flow meters utilized throughout the District, also contains a user interface which allows well owners or operators the ability to submit their information remotely via an online reporting system. While the District still experiences numerous instances where the responsible party will want to utilize traditional reporting methods (paper copies), there continues to be an increase in use of the online reporting system each reporting season. The data management tool allows for easy access and management of technical information (serial number, producer information, annual water usage, etc.). For purposes of this report, the aggregate pumping data has not been included, given the sheer amount of data.

Quantity Management Subareas

In the Spring of 2013, the LENRD established several quantity management subareas to help protect existing groundwater users from experiencing water outages or shortages. Two of these management areas are subject to an annual groundwater allocation, with the available volume dictated by subarea, and irrigation application method. The District annually reviews the water-use data from the two subareas, and by the end of each calendar year, determines the groundwater allocation for the upcoming growing season for the irrigation wells impacted within the management area.

Average Water-use by Subarea

For the 2019 pumping season, there were 56 flow meter reports from the Eastern Madison County Subarea, ranges of water applications were from 0 (no water pumped) up to 13.37 acre inches, with the average application amount being 4.32 inches per acre.

In the Wayne County Subarea, there were 39 flow meter reports and ranges of water applications were from 0 (no water pumped) up to 6.38 acre inches, with the average application amount being 3.04 inches per acre.

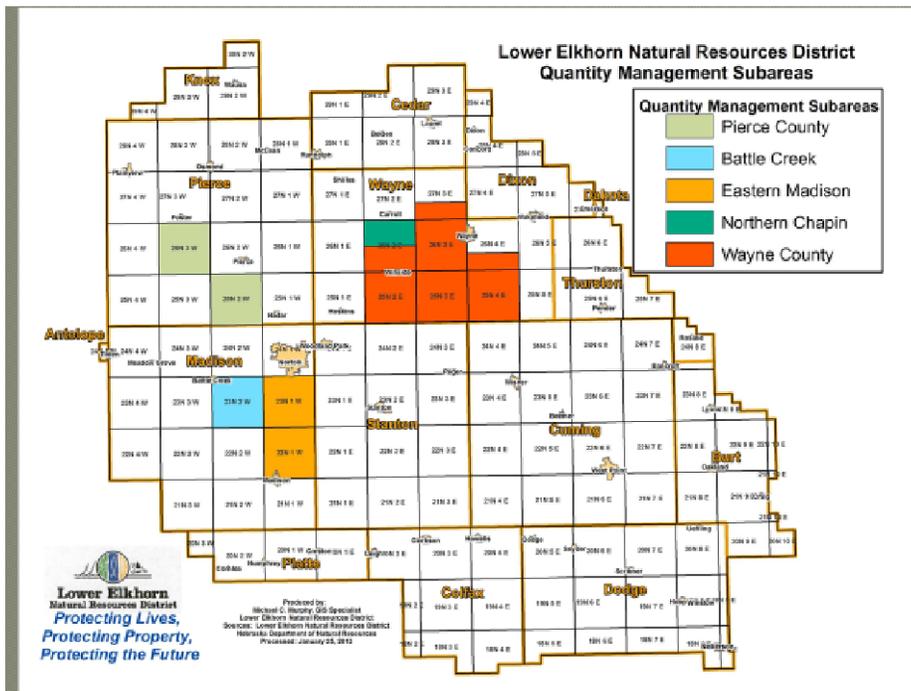
CURRENT GROUNDWATER ALLOCATIONS – LENRD QUANTITY MANAGEMENT SUBAREAS

EASTERN MADISON COUNTY –

- Gravity/Flood Irrigation **18 Acre Inches/Acre**
- Subsurface Drip Irrigation **13 Acre Inches/Acre**
- All other systems (center pivots) **14 Acre Inches/Acre**

WAYNE COUNTY –

- Gravity/Flood Irrigation **17 Acre Inches/Acre**
- Subsurface Drip Irrigation **12 Acre Inches/Acre**
- All other systems (center pivots) **13 Acre Inches/Acre**



9.0 Water Banking Activities

The Lower Elkhorn NRD does not operate or participate in any water banking activities (at this time) and therefore no data exists for this reporting requirement.

10.0 Stream-flow Accretion Activities

Within the Lower Elkhorn NRD there are currently no operating projects that would create reporting data associated with stream flow augmentation or to compensate for any conjunctive management requirements.

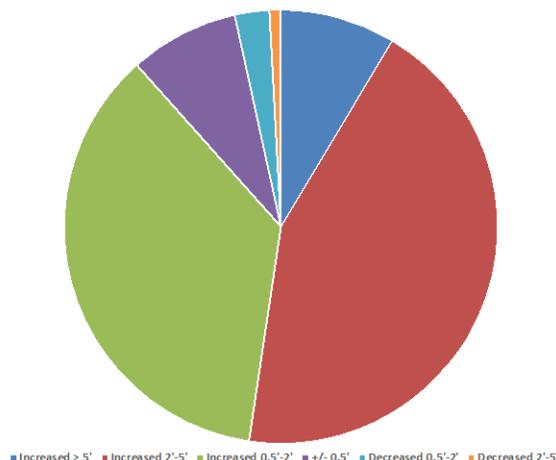
11.0 Groundwater Elevation Observations

The District collects annual water-level observations from approximately 234 privately owned irrigation wells. The District only collects groundwater elevation data during the spring of each calendar year, which is a deviation from previous practice. Given that the management triggers for groundwater quantity are attached to the data collected from the spring measurement event, the District made the decision to cease fall data collection events approximately five years ago.

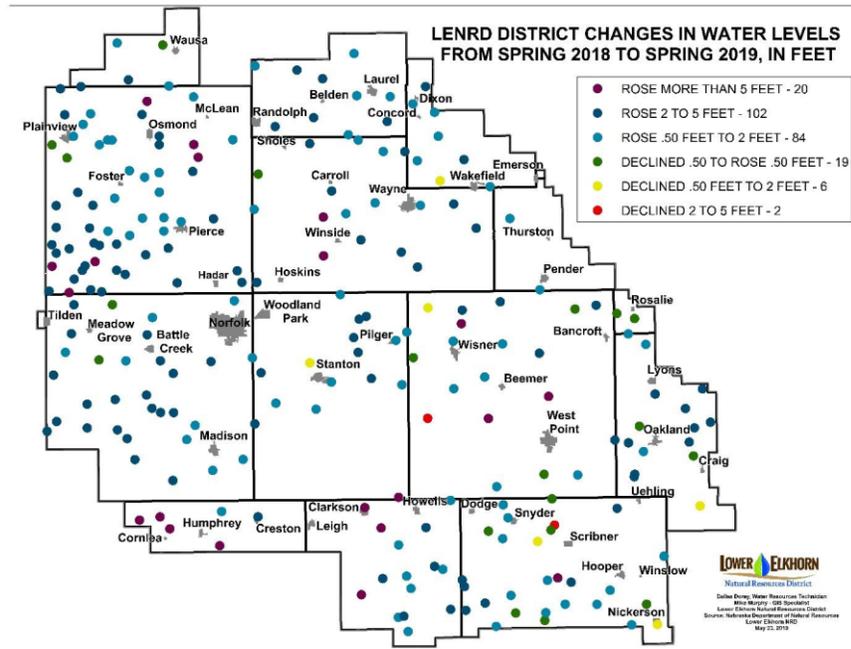
Collection of groundwater elevation observations was delayed in 2019 due to the conditions that existed from the March 2019 flooding event. Many fields and secondary roads were inundated, which subsequently made travel and entry into well locations more challenging. However, our staff was able to complete their work in a timely fashion, and as expected, groundwater supplies in the LENRD were sufficient to meet all demands for 2019.

LENRD Spring Static Water Level Measurements

*Measurements compared to Spring 2018 levels



LENRD Spring Static Water Level Measurements



12.0 Stream-gage Measurements

The Lower Elkhorn NRD does not maintain any stream gages within the District that are independent of gage-data collected by the United States Geological Survey (USGS) or the Nebraska Department of Natural Resources (NDNR).

13.0 NRD Regulations and Management Activities

The District modified its controls and boundaries for the groundwater quality management areas in July of 2019. The amendments approved added some additional penalties for enforcement of the LENRD Rules and Regulations for Groundwater Management, amended some terms in the Definitions portion, amended the rules to reflect changes in State law for Violators Alternatives, and integrated language to more accurately reflect the current management approach as part of the Lower Platte River Basin Coalition Plan, and the Lower Elkhorn Integrated Management Plan.

14.0 New Depletions Accounting Report

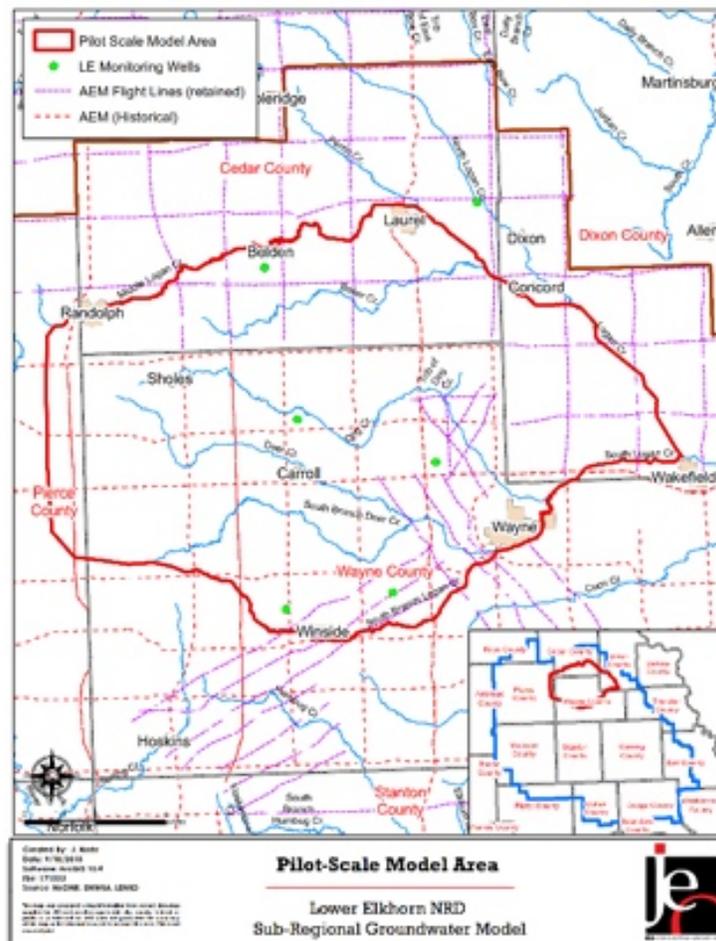
As previously reported, the Lower Elkhorn NRD approved 292.24 new peak season depletions for irrigation purposes during 2019. These and all other allowable depletions are reported in the document entitled *Attachment A*.

15.0 New Data Collected Through Models or Studies

Hydrogeologic Groundwater Modeling

The LENRD continues to invest in information and tools that will further the understanding of the groundwater resource in the District. This is currently being pursued by the development of a multi-dimensional hydrogeologic groundwater model which is an effort being led by JEO Consulting Group in cooperation with the Nebraska Department of Natural Resources.

A pilot-scale model was completed in parts of the District, touching parts of Wayne, Cedar, Dixon, and Pierce Counties. This effort was groundbreaking as it demonstrated the ability to integrate AEM interpretations into the hydrogeologic framework that supports the model.



In April of 2019, the LENRD was provided the results of the pilot-scale project, and decided to take the next step toward expansion of the modeling effort to the balance of the District. With the approval of Phase 2A of the Lower Elkhorn NRD Groundwater Model, the development of the hydrogeologic framework was set into motion, and is scheduled for completion by late March 2020. More recently, the LENRD was awarded a grant from the NeDNR Water Sustainability Fund which will provide 60% of the funds necessary to complete Phase 2B which includes the modeling, development of mapbook, graphic user interface, and final report to the District. At the February 2020 regular meeting of the LENRD Board of Directors, authorization was given to the General Manager to sign the contract which will effectively authorize completion of the model. Final delivery is expected sometime in early 2021.

Groundwater Quality Studies

The LENRD has been working to collect groundwater quality data in our portions of Dodge, Cuming, and Colfax counties. District samplers only collect water samples from irrigation wells that are operating when visiting the site. Efforts have been focused in this area during both the 2018, and 2019 irrigation pumping season. Insufficient data exists to determine whether there is a need for the delineation of a groundwater quality management area in this portion of the District, and we will once again be working to fill data-gaps in this area through the collection of additional samples in 2020. For your reference, the map below depicts groundwater nitrate concentrations using the available data and inverse distance weighted analysis through February of 2019.

