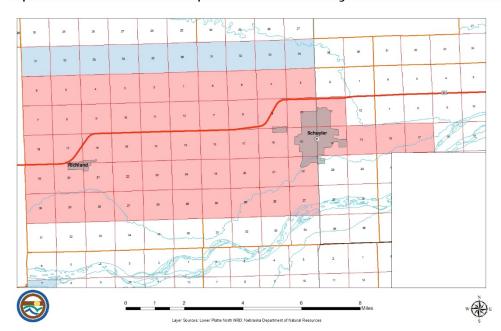# 2019
Lower Platte North Natural Resources District
Lower Platte Basin River Plan Report

Introduction

Report period is from January 1, 2019 to December 31, 2019.

Regulations/Management Activities

The District has been concentrating on the nitrate issues that has shown an upward trend. The map shows the Schuyler-Richland Water Quality Management Area within the District and is in the process of moving the area on the northern edge to higher level of nitrogen management. Communication between LLNRD indicates that they are proceeding with a nitrogen management to

Layer Sources: Lower Platte North NRD; Nebraska Department of Natural Resources

the west of this area. The LPNNRD received a NET grant in 2019 and has done extra water sampling, vadose sampling and will be creating a geological interpretation with the data collected.

Water Use Information for Irrigation Wells

Total Number of Reports from Flow Meters – 814
SQS #1 - 1.55 in/ac 3-year average – 1.55; SQS#2 – 2.25 in/ac, 3-year average – 2.31 in/ac
Other Meters within the District – 2.42 in/ac in 2019.

Municipal and Industrial Groundwater Uses

Water Demand Inventory

The District is in the third year for obtaining required water use reports for municipalities. Industries and other high capacity wells are reporting voluntarily other than irrigation.

Other Water Uses

At this time no reports have been received

Well Permits Issued

The Lower Platte North issued 31 new wells permits in 2019. There were 23 irrigation wells, which 11 were replacement; 5 stock wells (which 4 were in a series), 1 municipal well and 2 others.

Public Outreach

The District has expanded it outreach program in working with local stakeholders in the Nitrogen Management Areas. As discussed earlier, a grant was received to do some extensive nitrate analysis plus develop demonstration sites with producers. Staff has increased its youth education in numerous ways from presentations, demonstrations and other hands-on activities. The District has reached out and conducted two classes to urban residents in Fremont and Wahoo and looking to include more of these classes. The District is in the process of developing individual education on the online reporting site.

City	Total Gallons (2019)
Ashland	134,735,000
Bellwood	15,416,000
Newman Grove	27,469,700
Lindsay	48,878,300
Platte Center	15,949,100
David City	148,980,601
Wahoo	192,080,000
Yutan	38,400,000
Mead	19,395,000
Fremont	3,886,792,000
North Bend	70,831,770
Schuyler	318,200,000
Cedar Bluffs	17,006,949
Prague	9,145,000
Weston	14,050,950
Malmo	4,116,972
Ithaca	4,163,000
Abie	2,765,500
Memphis	6,324,000
Bruno	2,050,000
Colon	3,720,000
Lincoln	5,121,734,000
MUD West	8,351,265,000

Basin-wide Coordination

The District continues to work with UNL-CSD and NeDNR on a study utilizing the AEM information and permanent dataloggers in Platte-Colfax (SQS #2) Management Area. The study is designed to look at confining and unconfining aquifer layers and if AEM (Airborne Electromagnetic Survey) can distinguish these relationships. ENWRA conducted AEM flights throughout the District in 2018. Shown are 3 preliminary figures that Jacqueline Polashek, a UNL School of Natural Resources graduate student, has assembled for the initial data.
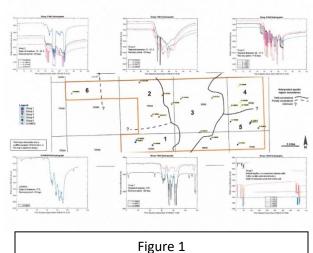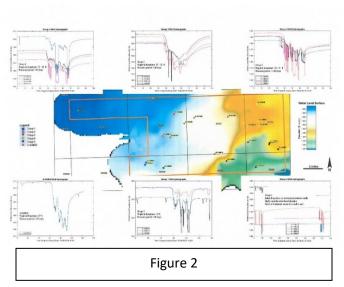

Figure 1

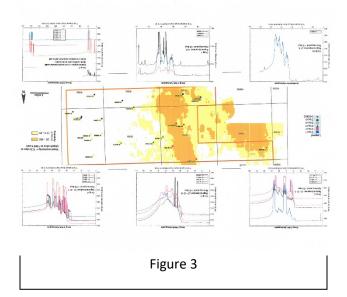Figure 1 shows 6 hydrographs within this area and how the area complexity has the potential of 6 different management approaches in the area.

Figure 2 shows the water levels within each of the 6 areas and again shows the correlation between the water levels and hydrographs.

Figure 3 shows the voxel resistivity and how the hydrographs are not showing the same information. It does show that groundwater might be

Figure 2

not following the Basin boundaries. Another student is continuing with this information and study area.

Figure 3

With the cooperation of all 3 agencies the LPNNRD received a WaterSmart Grant to installed remote reading equipment on the dataloggers. This will allow the District to be pro-active in its management during the irrigation season to prevent well conflicts, if smaller management areas are needed.

The District along with UNL-CSD drilled 3 monitoring wells down into the Dakota Aquifer. Each well was drilled to a least to a depth of 900 feet. Water samples were collected for water quality to determine if this aquifer could be used for potential development.
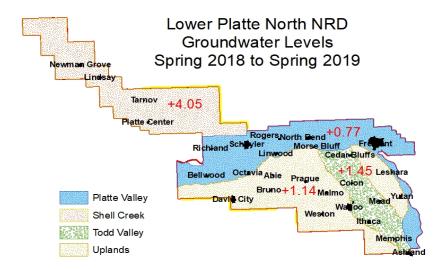
Certified Irrigated Acres

County	All Irrigated Acres		
	Groundwater	Surface Water	Commingled
Boone	27,906.34	0.00	0.00
Butler	56,550.01	674.85	373.27
Colfax	53,201.31	238.65	1,003.33
Dodge	51,073.63	84.53	599.10
Madison	5,604.44	0.00	0.00
Platte	90,488.42	793.79	1,090.89
Saunders	102,519.07	2,504.37	2,050.97
Totals:	387,343.23	4,296.19	5,117.56
County	HCA Irrigated Acres		
	Groundwater	Surface	Commingled
Boone	27,906.34	0.00	0.00
Butler	44,839.96	605.15	84.45
Colfax	46,337.73	202.35	1,003.33
Dodge	51,073.63	84.53	599.10
Madison	5,604.44	0.00	0.00
Platte	77,001.90	793.79	1,090.89
Saunders	78,278.52	2,432.48	1,819.39
Totals:	331,042.52	4,118.30	4,597.16
County	Non-HCA Irrigated Acres		
	Groundwater	Surface Water	Commingled
Boone	0.00	0.00	0.00
Butler	11,710.05	69.70	288.82
Colfax	6,863.59	36.30	0.00
Dodge	0.00	0.00	0.00
Madison	0.00	0.00	0.00
Platte	13,486.52	0.00	0.00
Saunders	24,240.55	71.89	231.58
Totals:	56,300.70	177.89	520.40

Water Supply Inventory

The District continues to collect static water levels districtwide with extra measurements taken in the water quantity and quality management areas. Water samples continue to be taken from the state network wells. All this information is being developed in a cloud base database for remote implementation.

Groundwater Levels 2018-19 – As shown by the map, groundwater levels are continuing to rise from a low on most of the Groundwater Energy Level (GWEL) wells in 2012-13.

Lower Platte North NRD
Groundwater Levels
Spring 2018 to Spring 2019

VI. New Depletions and Groundwater Consumptive Uses

Change ID	County	Township	Range	Section	Change type	Change date	Area	Wells	Use of irrigated acres	SDF	NIR feet	AF Peak Depletion
LPN-V-019-0492	Dodge	18	6	19	expansion	11/1/2019	20	G-136337	Crop Production	0.441425	0.75	1.98
LPN-V-019-0493	Saunders	17	6	31	New Well	11/1/2019	40		Crop Production	0.666876	0.75	6.03
LPN-V-019-0494	Dodge	18	7	27	New Well	11/1/2019	108		Crop Production	0.135479	0.75	3.402
LPN-V-019-0495	Saunders	16	7	6	New Well	11/1/2019	15	G-165841	Crop Production	0.54728	0.75	1.86
LPN-V-019-0496	Dodge	18	6	19	expansion	11/1/2019	20	G-136338	Crop Production	0.441425	0.75	1.782
LPN-V-019-0497	Boone	21	5	10	expansion	11/1/2019	65		Crop Production	0.534738	0.75	7.82
LPN-V-019-0498	Saunders	16	7	13	New Well	11/1/2019	130		Crop Production	0.899473	0.75	24.34
LPN-V-019-0499	Boone	22	5	10	expansion	11/1/2019	34	G-149834	Crop Production	0.335282	0.75	2.46
LPN-V-019-0500	Platte	19	2	28	New Well	11/1/2019	135		Crop Production	0.684809	0.75	20.7
LPN-V-019-0501	Boone	22	5	14	expansion	11/1/2019	35		Crop Production	0.372968	0.75	2.68
LPN-V-012-0159	Platte	20	3	6	New Well	11/1/2019	85		Crop Production	0.687565	0.75	13.14
LPN-V-012-0169	Platte	18	1	14	New Well	11/1/2019	80		Crop Production	0.748929	0.75	13.482
LPN-V-012-0219	Boone	21	5	25	expansion	11/1/2019	70	G-167733	Crop Production	0.753435	0.75	11.812
						Totals	837					111.488

Other Uses: Included only the active livestock wells.

The NRD has additional 11 well permits issued to new poultry operations.

NRD	ID	Type	x UTM zone 14	y UTM zone 14	Depletion peak
LPNNRD	G-185409	Poultry	41.50319	-97.31223	8.91
LPNNRD	G-185413	Poultry	41.50319	-97.31223	
LPNNRD	G-186141	Poultry	41.37523	-97.15658	8
LPNNRD	G-186142	Poultry	41.37523	-97.15658	