

**NEBRASKA WATER SUSTAINABILITY FUND  
2024 ANNUAL REPORT  
WSF APPLICATION NO. 10014  
LOWER PLATTE NORTH NRD**

**Developing a Truly Sustainable Solution to Nitrate Contamination  
in the Drinking Water Supply throughout Lower Platte North NRD**

**Description of the Project / Annual Report 2024**

The Water Sustainability Fund (WSF) grant for the Lower Platte North NRD (LPNNRD) was approved in December 2022 for \$388,500 with grant funding of \$233,100 as a cost share program along with a hydrogeologic assessment. LPNNRD has a range of management and education requirements for the nitrate phase area. Even with these requirements nitrate contamination continues to increase, threatening the drinking water supplies for both rural and urban residents. The solutions to these problems are input intensive and provide very little economic gain for producers. Without cost share opportunities to offset the cost of the best management practices nitrates in the groundwater will continue to increase. LPNNRD rules and regulations do not allow for the kinds of restrictions regulating fertilizer application and irrigation until a Phase IV area is declared, 50% of wells +15ppm. By this time the level of nitrates in the groundwater will be high enough to constitute an emergency. Decreasing the nitrates in the groundwater supply before they reach this level is a far less expensive option than continuing the current path which will require heavy handed restrictions and the development of treatment facilities to ensure a safe drinking water supply. Treating the root cause of the issue before it becomes an emergency leads to true sustainability of the water resource.

The hydrogeologic assessment will define the bedrock layer, which is the bottom layer of the model grid placed into MODFLOW. The top five layers are derived from AEM (completed in 2021), the sixth layer is derived from the hydrogeologic assessment. The hydrogeologic assessment will also aid the contractor in 'filling gaps' in the AEM flights.

The best management practices that will be offered are Iron Chlorosis – for the purpose of neutralizing the PH so crop rotations can be utilized, Cover Crops – to help in the uptake of residual nitrogen, Fertigation – to allow for split applications of nitrogen, Variable Rate Nitrogen – to allow for nitrogen application on right part of the field when the crop needs it, Gravity to Pivot/SDI conversion – over irrigation can contribute to nitrate leaching, Grid Soil Sampling – to assist in variable rate nitrogen management, Soil Moisture Sensors – to determine when irrigation is needed, and Water Flow Meters – manage the amount of water being pumped.

**PROJECT PROGRESS APRIL 2023 TO MARCH 2024:**

The firm contracted by LPNNRD completed the hydrogeological assessment in October 2023. The assessment has updated the GIS files showing aquifer vulnerability, confined – unconfined aquifers, saturated sands, transmissivity, and development risks. This information has been utilized in meetings where quality and quantity problems exist, along with the Lower Platte Basin modeling effort.

Promotion of the cost-share practices continue with a second open house conducted in the area February 2024 with 50 producers in attendance. Staff have sent out letters, postcards and utilized the NRCS for promotions. At the present time the NRD has received 101 flow meter cost share applications and 9 gravity to SDI/pivot conversions. A few applications have been received for cover crops, soil moisture sensors and iron chlorosis.

Staff have done education in the schools and reached out to the local health departments. Staff have increased the domestic water sampling in the area for awareness and encourage filtration systems for individual drinking water wells.

ANTICIPATED ACTIVITIES FROM NOW UNTIL NEXT ANNUAL REPORT DUE APRIL 1, 2025:

The LPNNRD will prioritize the cost share items to flow meters and irrigation conversion practices in the upcoming year because of their popularity. LPNNRD will coordinate with local health organizations to promote water testing in this area. Staff will be going door to door to collect water samples from drinking water sources. The NRD developed door hangers to put on citizens doors to promote the water sampling event. NRD staff will also have other educational opportunities with producers by conducting demonstrations with UNL on irrigation and nitrogen management.

LIKELIHOOD THAT BENEFITS PROJECTED IN APPLICATION 10014 WILL BE REALIZED:

The Hydrogeological Assessment is complete, and all data has been received. Cost share applications on flow meters are due April 1, 2024, so should have a good idea on total dollars available on this practice. If applications continue to be received the grant could be completed by April 1, 2025. The project is on target for achieving the benefits to the LPNNRD as described in the application.