

WSF 2026 Status Report # 10064

PROJECT: LLNRD/LPNNRD – Nitrates Legacy Assessment Project –
WSF Application #10064 (awarded August 23, 2023)

DATE: MARCH 27, 2026
(FIRST ANNUAL REPORT DUE ON
OR BEFORE APRIL 1, 2025)

See Application 10064, Part 7 For Project Tasks Summary and Timeline

PROJECT PROGRESS UP TO APRIL 2026

In late summer 2023, the Lower Loup NRD and Lower Platte NRD worked with the USGS to sample selected wells for water-quality and age tracer isotopes. A total of 12 monitoring wells were sampled in Platte and Nance Counties within the Lower Loup NRD, and 12 domestic wells were sampled in Platte, Colfax, and Dodge Counties in the Lower Platte North NRD. Samples from selected wells were sent to labs for nutrients, major ion, trace elements, stable isotopes, and selected age tracer analyses. Apparent ages indicated an inverse relationship between nitrate concentration and groundwater age. As expected in locations that had paired monitoring wells, shallower wells had higher concentration of nitrate compared to deeper wells. Geochemical modeling determined that sampled groundwater from shallow wells was primarily modern recent recharge from precipitation and irrigation flow whereas groundwater from deeper wells is a mixture of two modern (post-1950) waters, likely with variable nitrate concentrations. Dissolved gas modeling indicated that denitrification was reducing nitrate concentrations at many wells, with the largest reductions in nitrate occurring in deeper wells with low concentrations of dissolved oxygen.

ANTICIPATED ACTIVITIES FROM NOW UNTIL THE NEXT ANNUAL REPORT DUE APRIL 1, 2027

The USGS will continue conducting geochemical modeling to determine groundwater age distributions and publicly share the results of this study for peer review. A draft scientific investigative journal is being created by USGS personnel, and a draft will be submitted to the LL & LPNNRDs for review. Anticipated completion of the report and study is fall 2026.

ANTICIPATED CASH FLOW FOR REMAINDER OF THE PROJECT:

\$274,250 – The USGS (\$137,000), LLNRD (\$54,000), LPNNRD (\$54,000) and WSF (\$163,200) all have funding obligations towards this project under grant #10064. A second request of \$23,400 is being submitted as part of the Annual Report.

LIKELIHOOD THAT BENEFITS PROJECTED IN APPLICATION 10020 WILL BE REALIZED:

Based on the previous project results and LLNRD's and LPNNRD's experience with working through the WSF, the project is on target for achieving all benefits described in the original application.