

Jeffrey P. Westrop, Ph.D.

Assistant Geoscientist, Nebraska Conservation and Survey Division, University of Nebraska-Lincoln

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EDUCATION

Ph.D. in Geology (Earth and Atmospheric Sciences), May 2021 – University of Nebraska-Lincoln.

Dissertation: *Influence of Nitrate on Biogeochemical Uranium Redox Cycling in Fluvial Sediments*

Advisor: Karrie A. Weber, Professor and Director of the Microbiology Program, Department of Biological Sciences and Department of Earth and Atmospheric Sciences, University of Nebraska-Lincoln.

M.Sc. in Geology, May 2015 – University of Oklahoma.

Thesis: *Geochemistry of Chromium in the Central Oklahoma Aquifer*

Advisor: Andrew S. Elwood Madden, Director of the Center for Advanced Microscopy, Michigan State University.

B.Sc. in Environmental Geology (Chemistry Minor), May 2013 – University of Oklahoma

PROFESSIONAL APPOINTMENTS

Sept 2021 – Present. Assistant Geoscientist, Nebraska Conservation and Survey Division (Nebraska State Geological Survey), School of Natural Resources, University of Nebraska-Lincoln

May 2021-Sept 2021. Postdoctoral Researcher, School of Geoscience, University of Oklahoma

PUBLICATIONS

Peer Reviewed Manuscripts

Westrop, Jeffrey P., 2025. Qualitative screening for redox-sensitive elements in groundwater using the presence or absence of rust on irrigation center pivots. *Agrosystems, Environment, and Geoscience*. 8(2) DOI:10.1002/agg2.70098

Westrop, Jeffrey P.; Yadav, Pooja.; Nolan, P.J.; Campbell, Kate M.; Singh, Rajesh.; Bone, Sharon E.; Chan, Alicia H.; Kohtz, Anthony J.; Pan, Donald A.; Healy, Olivia; Bargar, John; Snow, Daniel D.; Weber, Karrie A. 2023 Nitrate-Stimulated Release of Naturally Occurring Sedimentary Uranium. *Environ Sci Technol*. DOI: 10.1021/acs.est.2c07683.

Westrop, Jeffrey P., Tomlinson, Zachary, D., Maples, Brandon M., Dee, Kato T., Swindle, Andrew L., Elwood Madden, Megan E., Hu, Quihong. and Elwood Madden, Andrew S., 2022. Dissolution of Mn-

bearing dolomite drives elevated Cr(VI) occurrence in a Permian redbed aquifer. *Environmental Science: Processes & Impacts*, 24(12), 2419-2436. DOI 10.1007/978-3-030-85728-8_12

Cherry, Mikaela L., Gilmore, Troy E., Messer, Tiffany, Li, Yusong, and **Westrop, Jeffrey P.** 2022. A Pivotal New Approach to Groundwater Quality Assessment. *ACS ES&T Water*. 2 (12), 2297-2304. DOI: 10.1021/acsestwater.2c00121

Westrop, Jeffrey P., Snow, Daniel D., and Weber, Karrie A. 2021. Mobilization of Naturally Occurring Uranium Under Intensely Managed Farmland. In *Food, Energy, and Water Nexus. A Consideration for the 21st Century*. Edited by Chittaranjan Ray, Sekhar Muddu, Sudhirendar Sharma. Springer Nature. DOI 10.1007/978-3-030-85728-8_12

Malakar, Arindam, Singh, Rajesh, **Westrop, Jeffrey P.**, Weber, Karrie A., Eloffson, Christopher N., Kumar, Manish, Snow, Daniel D. 2021. Occurrence of arsenite in surface and groundwater associated with a perennial stream located in Western Nebraska, USA. *Journal of Hazardous Materials*, Volume 416, <https://doi.org/10.1016/j.jhazmat.2021.126170>

In Review

Westrop, Jeffrey P., Elwood Madden, Andrew S., Swindle, Andrew L., Dee, Kato T, Larson, Preston R., Fox, Braden R. Colloidal Sources of Hexavalent Chromium in a Deep Clastic Aquifer System. *In Review - Journal of Hazardous Materials*.

Westrop, Jeffrey P., Corman, Jessica R, Nawaraj Shrestha. Spatial variation in groundwater nitrate and phosphate concentrations across an agricultural region. *In Prep -Environmental Research: Water*

Westrop, Jeffrey P. and Elwood Madden, Megan E. Trace Metal Distribution in and Mobilization from Iron-Oxide Rich Sediments in Irrigation Center Pivots. In Review – *ASA Journal of Environmental Quality*

Nebraska Conservation and Survey Division Reports

Young, Aaron R., Burbach, Mark E., Lackey, Susan O., Joeckel Robert M., Shrestha, Nawaraj, **Westrop, Jeffrey P.**, 2025, Nebraska Statewide Groundwater-Level Monitoring Report 2024. University of Nebraska-Lincoln, Conservation and Survey Division, Nebraska Water Survey Paper

Young, Aaron R., Burbach, Mark E., Lackey, Susan O., Joeckel Robert M., Shrestha, Nawaraj, **Westrop, Jeffrey P.** 2024, Nebraska Statewide Groundwater-Level Monitoring Report 2023. University of Nebraska-Lincoln, Conservation and Survey Division, Nebraska Water Survey Paper 91, 24 pp

Young, Aaron R., Burbach, Mark E., Lackey, Susan O., Joeckel Robert M., **Westrop, Jeffrey P.** 2023, Nebraska Statewide Groundwater-Level Monitoring Report 2022. University of Nebraska-Lincoln, Conservation and Survey Division, Nebraska Water Survey Paper 91, 24 pp.

RESEARCH GRANTS AND FELLOWSHIPS

Active Grants

Impact of cropland conversion to tallgrass prairie on soil and water chemistry

- *Nebraska University Foundation - Collaborative Research Initiative (2025-2026)*

- **PI: Jeff Westrop**, Co-PIs: Keely MacNeill, Ashlee Dere, Kelly Deuerling,
- \$86,160

Empowering Future Scientific Leaders in Agriculture, Water Quality and Health

- *US Department of Agriculture NIFA - Agricultural Research Division Hatch Multistate Enhancement Program (2025-2030)*
- PI: Martha Rhoades, Co-PI: Kent Eskridge. Key Personnel: Troy Gilmore, Eric Peebles, Zhenya Tang, Janee B Gelineau-van Waes, **Jeff Westrop**
- \$250,000

Elucidating Groundwater Processes in 3D for Targeted Nitrogen Management

- *US Department of Agriculture NIFA - Agriculture and Food Research Initiative (AFRI) - Water Resources Grant (2024-2028)*
- PI: Jesse Korus; Co-PIs: **Jeff Westrop**, Troy Gilmore, Muhammad Khalil, Aaron Daigh, Kathleen Cameron
- \$750,000

Active Fellowships

Water Advanced Research and Innovation (WARI) Fellowship – US-India Science and Technology Forum (2025-2026)

- Funding to travel to India to conduct research with collaborators at the Indian Institute of Technology at Roorkee

Completed Grants

Seasonal fluctuations in trace metals from cropland and restored tallgrass prairie

- *Prem S. Paul New Faculty Scholar Award Fund (2023-2024)*
- PI: Jeff Westrop
- \$2000

Metal Oxide Precipitates on Irrigation Center Pivots as a Non-invasive Screening Tool for Redox Sensitive Trace Metals in Groundwater

- *United States Geological Survey 104b Water Resources Grant (2023-2024)*
- PI: Jeff Westrop
- \$11,299

Metal oxide precipitates on irrigation center pivots as a new and rapid screening tools for groundwater chemistry

- *Maude Hammond-Fling Faculty Research Fellowship (University of Nebraska-Lincoln Research Council Grant-in-aid) (2022-2023)*
- PI: Jeff Westrop
- \$7400

Effect of nitrate input rate on uranium mobilization from natural sediments

- *American Association of Petroleum Geologists Grant, Nebraska Chapter (2018-2019)*
- Matching funds for Yatkola-Edwards Award
- \$1000

Effect of nitrate input rate on uranium mobilization from natural sediments

- *Yatkola-Edwards Student Research Grant, Nebraska Geological Society (2018-2019)*
- Student Grant
- \$1000

Mobilization of naturally occurring uranium in agriculturally impacted aquifers

- *Geological Society of America Graduate Student Research Grant (2017-2018)*
- ExxonMobil Recognized Research Award (Top 10 of 785 submissions)
- Student Grant
- \$5000

PRESENTATIONS

Conference

Westrop, Jeffrey P. and Elwood Madden, Megan E. Using Rust on Irrigation Center Pivots to Predict Concentrations of Redox Sensitive Groundwater Contaminants in an Agricultural Aquifer. Geological Society of America Annual Meeting. Oct 21, 2025.

Gilmore, Troy E., Cherry, Mikaela L., **Westrop, Jeffrey P.** Center Pivot Irrigation Systems as Subsurface Redox Indicators. American Chemical Society – Midwest Region Annual Meeting. Omaha, NE. Oct 15, 2024

Westrop, Jeffrey P. A Pivotal New Method for Prediction Concentrations of Redox Sensitive Elements in Agricultural Aquifers. Goldschmidt Annual Meeting, Chicago IL, Aug 20, 2024

Westrop, Jeffrey P., Yadav, Pooja, Bargar, John H., Noel, Vincent, Van-Veelen, Arjen, Wu, Xiaoquen, Chakraborty, Romy, Weber, Karrie A. Influx of nitrate into reduced organic-rich sediments stimulates U(VI) reduction. 2020. AGU Annual Meeting. Virtual.

Westrop, Jeffrey P., Yadav, Pooja, Bargar, John H., Noel, Vincent, Van-Veelen, Arjen, Wu, Xiaoquen, Chakraborty, Romy, Weber, Karrie A. Uranium reduction in response to an influx of nitrate into organic-rich sediments. 2020. Goldschmidt. Virtual.

Westrop, Jeffrey P., Nolan, Jason P., Healy, Olivia, Snow, Daniel D., Weber, Karrie A. Nitrate Stimulated Uranium Mobilization into Groundwater. 2016. Nebraska Water Symposium: Managing and Essential Resource...Basin by Basin. Lincoln, NE. **1st Place Poster Presentation.**

Westrop, Jeffrey P., Weeks, Brent E., Hu, Quihong, Swindle, Andrew L., Madden, Andrew S.. Manganese bearing dolomite dissolution drives hexavalent chromium occurrence in the Central Oklahoma Aquifer. 2016. Geological Society of America Annual Meeting. Denver, CO.

Westrop, Jeffrey P., Swindle, Andrew L., Sexton, Molly R., Madden, Andrew S. Colloidal transport of nanoscale to microscale grains in the Central Oklahoma Aquifer. 2013. Geological Society of America Annual Meeting. Denver, CO.

Other

Westrop, Jeffrey P. Rust on irrigation center pivots as groundwater redox indicators. University of Tennessee-Knoxville Earth and Environmental Science Seminar. Nov 3, 2025.

Westrop, Jeffrey P. Occurrence of Common Groundwater Contaminants in Domestic Wells and Options for Treatment. Nebraska Water Industries Tradeshow, Kearney NE, Feb 13, 2024

Westrop, Jeffrey P. Groundwater Nitrate Geochemistry and Occurrence in Nebraska, Nebraska Water Industries Tradeshow, Kearney NE, Feb 16, 2023

Westrop, Jeffrey P. Uranium in groundwater in Nebraska. Nebraska Water Industries Conference. February 2022. Kearney, NE

SERVICE

Professional Service

Lower Elkhorn Nebraska Natural Resource District – Consulting on groundwater metals sampling (2024-Present)

Snowfox Discovery – Consulting on subsurface hydrogen in Nebraska (2024)

Nebraska Department of Health and Human Services – Consulting on groundwater arsenic occurrence in Southeast Nebraska (2016)

Manuscript reviewer for: *ACS Environmental Science and Technology*, *Frontiers – Environmental Science*, *ASA – Journal of Environmental Quality*, *ACS – Langmuir*

University Service

Member on the Nebraska Water Center Advisory Board (2022-Present)

Member of the School of Natural Resources Social Committee (2023-Present)

Reviewer for *University of Nebraska- Catalyst Planning Grant Proposal* Review Panel (2024)

Professional Development

Nebraska Well Drillers Association, Winter Workshop, Dec 6, 2024. Lincoln NE.

University of Nebraska-Lincoln Research Development Fellows Program (RDFP). Sept. 2023-April 2024. Lincoln NE

Nebraska Geological Society, Urban Geology of Omaha Field Trip, May 6, 2023. Omaha, NE.

Nebraska Geological Society, Geology of Western Nebraska Field Trip, July 28-29, 2022. Scottsbluff, NE.

Nebraska Geological Society, Geology of Northeastern Nebraska Field Trip, Oct 16-18, 2021. Niobrara, NE.

EXTENSION AND SCIENCE COMMUNICATION

Nebraska Watershed Aquifer Virtual Education System (WAVES; 2025)

- Collaboration with Nebraska Department of Energy and Environment to make short educational videos on nitrate and phosphate in groundwater

Nebraska East Campus Discovery Days (2023-Present)

- Assisted with running the University of Nebraska-Lincoln School of Natural Resources Booth and University of Nebraska-Lincoln Conservation and Survey Division Booth

Faculty advisor of UNL student chapter of the Soil and Water Resources (SWRC) club (2023-present)

- 15 active members
- Assisted club president with organizing events such as a wetland clean-up, tree planting, and study nights
- Reviewed applications for SWRC student fellowships

Build-a-Hut 4H competition (2023-2024)

- Assisted with creating material and running programs aimed at teaching youths basic water quality and water treatment skills
- Curriculum writer for the Civil Engineering team
- 67 youths participated in the program from 8 community partners.

Know-Your-Well (2023)

- Created informational Pamphlet on how stakeholders can interpret water quality reports from private laboratories

TEACHING

University of Nebraska-Lincoln

NRES 281 – Intro to Water Science (Fall 2024 – Present)

- 3 Credit hours
- Co-taught between 3 instructors
- Fall 2025: 38 students
- Fall 2024: 41 students

GEOL 101 – The Dynamic Earth (2017-2019)

- Graduate Teaching Assistant for Introductory Geology Lab

GEOL 3154 – Environmental Geology

GEOL 1114 – The Dynamic Earth (2017-2019)

MENTORING

Undergraduate

Chloe Bilen, University of Nebraska-Lincoln (2025-Present)

Sydney Kohl, University of Nebraska-Lincoln (2025-Present)

Deicy Navarro, University of Nebraska-Lincoln (2024)

HONORS / AWARDS

Geological Society of America - ExxonMobil Recognized Research Award (2017)

Ben Hare Excellence in Geology and Geophysics award, University of Oklahoma (2015)

PROFESSIONAL LICENCES

Nebraska Water Well Technician (2022-Present)

MEMBERSHIPS / AFFILIATIONS

Daugherty Water for Food Institute at the University of Nebraska (2025-Present)

Center for Great Plains Studies (2021-Present)

Nebraska Geological Society (2021-Present)

Goldschmidt Geochemical Society (2020-Present)

American Association of Petroleum Geologists (2017-Present)

Geological Society of America (2013-Present)
