Nebraska Ground Water Monitoring Advisory Committee (NGWMAC) & Nebraska Surface Water Monitoring Council (NSWMC)

Annual Joint Meeting

Tuesday November 1, 2022, 10:00 AM-12:00 PM

Meeting via Zoom:

https://us02web.zoom.us/j/82858830614?pwd=Z0VBZ3p0aDUyYlkvbjVsTmFadEZiUT09

Minutes

1. Welcome
    a. Attendees: Dave Rus, Dave Miesbach, Brad Routt, Dan Inman, Colleen Steele, Dan Snow, Greg Brekel, Justin Nelsen, Aaron Young, Amanda Osborn, Brett Roberg, Connor McFayden, Craig Romary, Cody Willnerd, Chittaranjan Ray, Crystal Powers, Dillon Vogt, Dustin Wilcox, Elizabeth Esseks, George Cunningham, Greg Brekel, Jeff Gottula, Jennifer Swanson, John Mohr, Justin Nelsen, Katie Cameron, Katie Pekarek, Laura Johnson, Logan Morgaridge, Luke Zakrzewski, Michael Gude, Mikaela Cherry, Mike Lorenz, Mike Archer, Ryan Chapman, Tara Anderson, Tatiana Davila, Thad Huenemann, Tim Thares, Tom Heatherly, Tony Martinez, Tylr Naprstek, Jason Moudry, Ginny McGuire
    b. CEU's
2. Agency updates
    a. USGS
        i. Probably wrapping up our Missouri River monitoring
        ii. Platte R eDNA sampling has had mixed results
        iii. Arsenic sampling in the lower Platte basin
        iv. USGS-UNL teams collected tap samples and food web samples in the AltEn area this summer
        v. GW sampling near the Lincoln wellfield and in the PMNRD
        vi. PFAS around Offutt AFB
            1. DOD doing work within the base, and USGS doing work surrounding the base
            2.
    b. NDEE
        i. GW
            1. Working to get the clearinghouse data into a use-able manner and the report to the legislature
            2. Laura Johnson took over the supervisor unit
            3. NWQMN sample data still intended to go into the clearinghouse, but isn't there yet.
        ii. Lots of new faces
        iii. Connor McFayden the PFAS coordinator for NDEE
        iv. SW
            1. Elkhorn and Mo Tribs basins this year
            2. In North Platte and White/Hat basins next year

3. 3 special studies
    a. Strategically monitor pollutants in sub-basins to support models
    b. Stream pesticide special study (pesticides and degradates in water and sediment)
    c. Cleaning up the SW drinking water data sets related to stream impairment designations

c. NDA
    i. Pesticides of interest evaluation
    ii. Any agency with pesticide data that isn't in a clearinghouse, please reach out to Craig Romary
d. Clearinghouse
    i. Testing to get some enhancements
e. University of Nebraska
    i. CSD GW: Working to get the maps completed
    ii. UNL water lab: Continue to analyze
    iii. SW, GW, and VZ monitoring at AltEN area to continue into the next year
f. LLNRD
    i. May adopt some new fertilizer rules related to GWQ management
    ii. Isotope work in the GW Mgmt zones: Travel times and fert sources
g. ENWRA
    i. WSF grant on focused areas and recharge
    ii. 3 Pilot sites with ongoing monitoring
    iii. Will have a booth at the NEWRA
h. LPN NRD
    i. Special study looking at nitrates and management areas
i. NDNR
    i. Moved to Fallbrook and
    ii. Have a recent retiree at 60 years, Tom Hayden
j. UNL Water Center
    i. Vadose Zone WQ model in development to include nitrogen transformation and geochemistry
    ii. GW Modeler on board to assist with modeling activities
        1. GW quantity modeling
        2. Transport of PFAS at the air/GW interface
    iii. Steve Comfort and Dan Snow studying PFAS
        1. Report coming out soon
    iv. Chem and Biological treatment/removal of PFAS
    v. VZ projects around Bazile, LENRD, and UBBNRD
    vi. 3 x 104G grants were successful
    vii. Hastings VZ work on the horizon
k. NARD
    i. March 7 is NRD Water Programs Conference

3. Monitoring council(s) business

a. 13th National Monitoring Conference – North American Lake Management Society (NALMS), April 24-28, Virginia Beach, VA
b. Recent publications
c. Please let Dan (GW) and Dave (SW)
d. Nebraska SW Monitoring Council
    i. Next meeting Tuesday March 28?
    ii. Hybrid format at USGS offices
    iii. Looking for someone to take over

4. Presentations
    a. Laura Nagengast (NDEE Source Water Protection Extension Educator) giving the presentation "Water Quality and Public Health."
        i. Questions: What are the economics of nitrate reduction? Possible that site-based RO units may be cheaper than systematic reductions;
        ii. What are the impacts to livestock? Not a lot of data here, so unsure.
        iii. Where does this rate on the public awareness spectrum?
            1. UNMC got several emails related to the Flatwater Press article; Requests for presentations to Extension Boards
            2. Lots of belief that economics (cost of fertilizer, for example) will supersede regulation, but high yield goals seem to still be driving the issue
            3. Nexus media will be doing a followup article
            4. UNL Water Center got questions about this on their survey of rural Nebraskans
            5. NDEE has gotten lots of questions about it. Lots of data, but legislators are the ones that set regulations related to this; NDEE reports these data to legislators every year;
                a. Any hypothesis testing of the data in the network?
                b. Shallow GW monitoring to illustrate mitigation impacts vs whole-aquifer assessments
                    i. Stratified sampling during non-irrigation season. Does the aquifer stay stratified during the irrigation season, too.
                c. GW report from NDEE has some statistical analyses. Moving to the National GW Monitoring Network model to tap into that metadata
        iv.
    b. Dave Rus (USGS): Recent national science and tools from the USGS, with a focus on data delivery changes
        i. Papers/tools referenced:
        ii. Kingsbury, J.A., 2021, Groundwater quality in selected Stream Valley aquifers, western United States: U.S. Geological Survey Fact Sheet 2021–3011, 4 p., https://doi.org/10.3133/fs20213011.
        iii. Kingsbury, J.A., Sharpe, J.B., Bexfield, L.M., Arnold, T.L., Musgrove, M., Erickson, M.L., Degnan, J.R., Tesoriero, A.J., Lindsey, B.D., and Belitz, K., 2020, Datasets of groundwater-quality and select quality-control data from the National Water-Quality Assessment Project, January 2017

through December 2019 (ver. 1.1, January 2021): U.S. Geological Survey data release, https://doi.org/10.5066/P9XATXV1.

iv. Laura M. Bexfield, Kenneth Belitz, Miranda S. Fram, Bruce D. Lindsey,2022, Volatile organic compounds in groundwater used for public supply across the United States: Occurrence, explanatory factors, and human-health context: Science of The Total Environment, https://doi.org/10.1016/j.scitotenv.2022.154313.

v. Peter B. McMahon, Andrea K. Tokranov, Laura M. Bexfield, Bruce D. Lindsey, Tyler D. Johnson, Melissa A. Lombard, and Elise Watson, 2022, Perfluoroalkyl and Polyfluoroalkyl Substances in Groundwater Used as a Source of Drinking Water in the Eastern United States: Environmental Science & Technology 2022 56 (4), 2279-2288, https://10.1021/acs.est.1c04795

vi. Roland II, V.L., Garcia, A.M., Saad, D.A., Ator, S.W., Robertson, D.M., and Schwarz, G.E., 2022, Quantifying regional effects of best management practices on nutrient losses from agricultural lands: Journal of Soil and Water Science, https://doi.org/10.2489/jswc.2022.00162

vii. 2012 SPARROW model nutrient mapper, https://sparrow.wim.usgs.gov/sparrow-midwest-2012/

viii. Tracking Water Quality in US Streams and Rivers, https://nrtwq.usgs.gov/nwqn/#/

ix. Ian R. Waite, Peter C. Van Metre, Patrick W. Moran, Chris P. Konrad, Lisa H. Nowell, Mike R. Meador, Mark D. Munn, Travis S. Schmidt, Allen C. Gellis, Daren M. Carlisle, Paul M. Bradley, Barbara J. Mahler, 2021, Multiple in-stream stressors degrade biological assemblages in five U.S. regions: Science of The Total Environment, https://doi.org/10.1016/j.scitotenv.2021.149350.

x. USGS National Water Dashboard: https://dashboard.waterdata.usgs.gov/

xi. Water Quality Portal: https://www.waterqualitydata.us/

Some recent Nebraska-related publications of possible interest:

Blank,, A.J., Barada, T.J., Katt, J.D. and Jackson, J.J. (2021), Evaluation of Habitat Use by a Catch-and-Release Regulated Flathead Catfish Population in Branched Oak Reservoir, Nebraska, USA. North Am J Fish Manage, 41: S95-S102. https://doi.org/10.1002/nafm.10521

Chen, M., Guenther, M., & Corman, J. R. (2022). Nutrient and sediment dynamics change following a major flood event on a large, grassland river. River Research and Applications, 38(6), 1199– 1205. https://doi.org/10.1002/rra.3982

Linsey Donner and Zachery R. Staley and Jonathan Petali and Jodi Sangster and Xu Li and Wayne Mathews and Daniel Snow and Adina Howe and Michelle Soupir and Shannon Bartelt-Hunt, 2022, The Human Health Implications of Antibiotic Resistance in Environmental Isolates from Two Nebraska Watersheds: Microbiology Spectrum, https://doi.org/10.1128/spectrum.02082-21

Hobza, C.M., and Solder, J.E., 2022, Age and water-quality characteristics of groundwater discharge to the South Loup River, Nebraska, 2019: U.S. Geological Survey Scientific Investigations Report 2022–5042, 57 p., https://doi.org/10.3133/sir20225042.

Jaimes-Correa, J.C.; Muñoz-Arriola, F.; Bartelt-Hunt, S. Modeling Water Quantity and Quality Nonlinearities for Watershed Adaptability to Hydroclimate Extremes in Agricultural Landscapes. Hydrology 2022, 9, 80. https://doi.org/10.3390/hydrology9050080

Jensen, C.R., Genereux, D.P., Gilmore, T.E. et al. Estimating groundwater mean transit time from SF6 in stream water: field example and planning metrics for a reach mass-balance approach. Hydrogeol J 30, 479–494 (2022). https://doi.org/10.1007/s10040-021-02435-8

Yaser Kishawi, Aaron Mittelstet, Troy Gilmore, Dirac Twidwell, Roy Tirthankar, Nawaraj Shrestha, 2022, Impact of Eastern Redcedar encroachment on water resources in the Nebraska Sandhills: Science of The Total Environment, https://doi.org/10.1016/j.scitotenv.2022.159696.

Nagengast, Laura, "A Survey and Analysis of Educational Materials Addressing the Health Consequences of Drinking Nitrate Contaminated Water in Medical Clinics Located in the Most At-Risk Areas of Nebraska: Are Healthcare Providers Equipped to Protect and Educate Their Patients?" (2022). Capstone Experience. 196. https://digitalcommons.unmc.edu/coph_slce/196

Balkissa Ouattara, and Eleanor Rogan, 2021, Age-adjusted pediatric cancer incidence related to nitrate concentration measured through citizen science in Nebraska watersheds: Int Public Health J 2021;13(4):461-469

Rowles, G., Wuellner, M. R., & Koupal, K. D. (2022). Spatial distinction and temporal stability of water microelements in the North Platte River and Lake McConaughy, Nebraska. River Research and Applications, 38(1), 36– 43. https://doi.org/10.1002/rra.3873

T. Wang, Y. Fan, Z. Xu, S. Kumar, B. Kasu, 2021, Adopting cover crops and buffer strips to reduce nonpoint source pollution: Understanding farmers' perspectives in the US Northern Great Plains: Journal of Soil and Water Conservation Jul 2021, 00185; DOI: https://doi.org/10.2489/jswc.2021.00185