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

Annual Joint Meeting

Tuesday October 26, 2021, 10:00 AM-12:00 PM

Meeting via Zoom:

https://us02web.zoom.us/j/85416864946?pwd=bXcrRjZRWlkweGtNc3VhZlZCUm5Qdz09

Minutes

Participants: Dave Miesbach, Dave Rus, Dan Inman, Ryan Chapman, Thomas Buell, Josh Schnitzler, Sue Dempsey, Jennifer Swanson, Dana Divine, Jeff Gottula, Mike Itis, Dave Schumacher, Brian Bruckner, Dustin Wilcox, Mike Archer, Erik Prenosil, Elizabeth Esseks, Laura Johnson, Shuhai Zheng, Daryl Andersen, Rich Holland, Amanda Osborn, WIll Brueggeman, Katy Cameron, Michael Gude, Cory Kavan, Brad, Nathan Schaepe, D Dorey, Brenda Densmore, Tylr Naprstek, Michelle Hladik, Josh Wilhelm, Chittaranjan Ray, Brett Roberg, Thad Huenemann, Greg Michl, Tom Heatherly, Dave Bubb, Colleen Steele, Matt Moser, Ginny McGuire, Dave Ihrie, Jeff Jackson

1. Welcome
2. Presentations:
    a. Sue Dempsey (NDEE, Sue.Dempsey@nebraska.gov) will present “Mn in Nebraska”
        i. Sue is looking for sampling candidates
    b. Dave Rus (USGS, dlrus@usgs.gov) will demonstrate some of the upcoming changes to the USGS National Water Information System
        i. https://dashboard.waterdata.usgs.gov/app/nwd/?aoi=state-ne
        ii. https://waterdata.usgs.gov/blog/how-to-use-nextgen-pages/
        iii. Want to give some feedback? Take this survey.
        iv. Will tabulated data still be supported? Yes, and we’ll try to support during the transition
    c. Michelle Hladik (USGS, mhladik@usgs.gov) will present on neonicotinoid usage and monitoring in the environment
        i. Why is application allowed since they’re so toxic?
            1. USGS isn’t part of the process regulating pesticides;
            2. A goal to reduce runoff will help reduce these impacts
        ii. Where is it coming from when its in groundwater?
            1. These compounds are applied in nearly every field, so its important to consider their widespread use
            2. Finding it in GW doesn’t necessarily point to a plume from the Ethanol plant
        iii. Questions about registration and regulatory rules
            1. Treated seeds may be treated differently from a regulatory perspective.
            2. Regulations need to catch up with the technology
        iv. Are there other neonics to stay aware of?

1. There are neonic replacements being discussed, but there may be trading of one for another
2. New pesticides arrive frequently

v. Persistence: Neonics are not terribly persistent (On the order of months in the environment); They photolyze and degrade via microbial processes
   1. Toxicity of the degradates is unknown

vi. Soil drenching research? Some, but not much

vii. Dr. Hladik's slide deck is available upon request from dlrus@usgs.gov or dan.inman@nebraska.gov

3. Agency updates
   a. Nebraska Dept of Ag (Romary)
      i. Funding is still available from the Nebraska Buffer Strip Program for filter strips and riparian forest buffers intended to reduce sediment and agrichemicals from field runoff. Help spread the word!
      ii. Organizations having pesticide monitoring data that are not eventually stored in publicly available databases like STORET, NWIS, etc. should consider sending those data to EPA for potential use in pesticide registration risk assessments. Information on how they may be used can be found in US EPA - Evaluation and Use of Water Monitoring Data in Pesticide Aquatic Exposure Assessments.
         1. Where Should I Submit the Data?
            a. Submit to OPPWaterMonitoringData@epa.gov
            b. If file sizes are too large to send via e-mail, contact your EPA Regional office
         2. Who Do I Contact for Further Information? EPA Headquarters: Tracy L. Perry, Pesticide Re-Evaluation Division, Office of Pesticide Programs,(703) 308-0128; fax number: (703) 308-8090; email address: perry.tracy@epa.gov
      iii. The next Pesticide, Fertilizer, and Noxious Weed Newsletter will be coming out mid-December. Past issues and a subscription link can be found on this page.
   b. USACE (Dinkel)
      i. This summer we ran some preliminary tests to determine the viability of using the low-level releases at Conestoga, Wehrspann, Standing Bear, and Cunningham as a way to remove nutrient rich hypolimnetic water from the lakes. Preliminary data looks promising for Conestoga, Standing Bear, and Cunningham. Wehrspann not so much. We did a similar test at Zorinsky in 2020 but found the low level end of pipe was not sufficiently in the hypolimnion. Pending the data supports it, we will be looking into the potential of using a slow constant low level release throughout the summer at these reservoirs starting in 2020. The goal would be to crack the gates in May and close them back up in September or when the pool levels reaches one foot below the uncontrolled outlet.

ii. Monitoring plans for next year are the same. Monthly sampling along the Nebraska Missouri River and sampling all the Salts and Papios from May through September. We will continue to screen for zebra mussel eDNA in June at all the reservoirs.

c. USGS
   i. Sampling and Monitoring efforts include:
      1. NWQN,
      2. Continuous WQ, - Seasonal water quality and nitrate sites at 4 locations in the Lower Platte, Bow Creek near Wynot, and Nitrate at Bazile Creek near Santee.
      3. Missouri R @ Omaha; - Monthly sampling of the Missouri River at 4 locations along Omaha. Analysis for nutrients, e.coli, BOD, suspended solids. Continuous water quality monitoring at 3 locations.
      4. Groundwater sampling Papio NRD—In 2021, sampled wells screened in the Dakota aquifer and wells of interest screened in other aquifers; in 2022, will sample the Missouri River Valley alluvial aquifer and all the well clusters.
      5. Groundwater sampling for 20 ENWRA wells in the Papio NRD will occur in May 2022
      6. Groundwater sampling near Ashland: December upcoming sample, includes Ashland wellfield monitoring wells and additional wells near the FNOP site
      7. Surface-water sampling, Ashland area: Sampling and year-round continuous water-quality in the Ashland area for neonicotinoids, Arsenic, nutrients, and eDNA
      8. Camp Ashland flow and WQ - Chute water quality and flow monitoring are occurring on the Nebraska Army National Guard base at Camp Ashland.
      9. Niobrara sediment monitoring in response to Spencer Dam failure
   ii. Recent publication by Hobza and Flynn re: GW age in the ENWRA area - See ref list below

d. NDEE
   i. SW Monitoring:
      1. Ambient (101 sites monthly);
      2. Basin rotation (LPlatte and Nemaha last year);
      3. NRD Local Watershed sampling (Twin Lakes; Indian Cr; Wahoo Cr; Bow Cr)
      4. Public DW special study: Streams where GW under the influence – Trying to get background information – 2 yr study – Sampling through June 2023 at 26 sites
   ii. Beach and Lakes

1. Ongoing sampling – Ambient lake sampling has expanded to 56 lakes (LLNRD – Pibel lake; Nemaha at 3 lakes); Fremont state lakes sampling re: flood and renovations
2. Public beach monitoring: 56 beaches from 53 lakes; 8 ppb threshold impacted Calamus

iii. Fish Tissue
1. 2020 – Niob basin; 136 advisories statewide, mostly for mercury; A few PCB advisories
2. 2021 – 114 samples from Lower Platte and Nemaha

iv. Biological assessments
1. 35 bio assessments from L Platte and Nemaha; Teamed up with NGPC stream team;
2. Any streams of interest in Elkhorn or Mo Tribs, reach out to Erik or Tom
3. Analyzing the algal community data

v. GW
1. 1 sample this year
2. Clearinghouse is up and running – Ryan, Dave, and Colleen
3. Sampling supported for NGWMN – If NRDs need help/answers, please reach out to Ryan or Dave

vi. 401 certification on nationwide permits – NDEE is managing the Waters of the US permits
1. 401 rule was recently vacated

e. Nebraska Groundwater Quality Clearinghouse
i. A new user interface for the Nebraska Groundwater Quality Clearinghouse was moved into the production environment about 4 months ago (clearinghouse.nebraska.gov), and collaborators were notified of the new application and provided with a training guide on its use.
ii. Water quality results were migrated into the new application from the old Quality-Assessed database, ELISA (enzyme-linked immunoassay) database, and SDWIS (Safe Drinking Water Information System).
iii. The new application has about 1.7 million water quality results, with over 500,000 coming from the old Quality-Assessed database. So far, 12 agencies have provided input into the new application, and we are currently working to process the input we have received so far.

f. LENRD
i. Willow Cr reservoir still a HAB issue
ii. GW mgmt area sampled, proposed, and presented to the board last fall – in debate
iii. Isotope samples and baseline nitrate in some lower sampled areas
iv. Working to get the data into the Clearinghouse

g. NDNR
i. Streamgage network; Happy to answer questions

h. LLNRD:
    i. Recently completed initial analysis at dedicated monitoring well sites and select surface water sites associated with the Columbus Recharge Project, prior to its operation. Sampled for atrazine with NDEE, nitrate/nitrate and Kjeldahl N, Ammonia, and Total Kjeldahl Phosphorus with Water Science Lab, and a Ward Household complete collected at each site. A follow-up sample will be taken once the project has been completed and has a chance to operate.
    ii. Completed a nitrate isotope sampling study with Dan Snow for the Water Quality Management Area #30 northeast of Columbus, to determine origin of high nitrate readings. Going to conduct similar study in northeast Wheeler County in 2022. Follow-up study to include a potential vadose study that develops model to characterize nitrogen sources and denitrification potential as well as provide age dating.
    iii. Completed 43 of 49 identified sites associated with the National Groundwater Monitoring Network

i. NARD:
    i. Water Programs Conference on March 1, 2022 at Holiday Inn in Kearney
        1. Agenda set during planning meeting in November – Send agenda requests to Jennifer Swanson

j. LLCHD:
    i. GW: 673 permits (630 were renewals)
    ii. 537 inspections and 735 samples (420 were bacteria and 335 were nitrates); 6.5% of the nitrates coming back over 10 mg/L threshold; ~10% of bacteria coming back positive, but only ~5% coming back with a positive confirmation sample; Doing well given COVID limitations

4. Monitoring council(s) business
    a. SW council will be electing a new chair next spring
    b. GW council - Nothing new
    c. Meetings
        i. 2021 Water for Food Global Forum had several Nebraska talks that are available on demand
        ii. Nebraska GIS symposium next week in LaVista

Some recent Nebraska-related publications of possible interest:

Atkinson, J.C. Baseline evaluation of legacy hydrochemical data for the Republican River watershed, southcentral Nebraska, USA. Environ Earth Sci 80, 77 (2021). https://doi.org/10.1007/s12665-020-09358-9

Renys E. Barrios, Chin Lim, Megan S. Kelley, Xu Li,, 2021, SARS-CoV-2 concentrations in a wastewater collection system indicated potential COVID-19 hotspots at the zip code level: Science of The Total Environment, Volume 800, https://doi.org/10.1016/j.scitotenv.2021.149480.

Emma M. Brinley Buckley, Benjamin L. Gottesman, Andrew J. Caven, Mary J. Harner, Bryan C. Pijanowski, 2021, Assessing ecological and environmental influences on boreal chorus frog (Pseudacris maculata) spring calling phenology using multimodal passive monitoring technologies: Ecological Indicators, Volume 121, https://doi.org/10.1016/j.ecolind.2020.107171.

Hobza, C.M., and Flynn, A.T., 2021, Groundwater quality and age of secondary bedrock aquifers in the glaciated portion of eastern Nebraska, 2016–18: U.S. Geological Survey Scientific Investigations Report 2021–5055, 42 p., https://doi.org/10.3133/sir20215055 .

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

New-Aaron, M.; Naveed, Z.; Rogan, E.G., 2021, Estrogen Disrupting Pesticides in Nebraska Groundwater: Trends between Pesticide-contaminated Water and Estrogen-related Cancers in An Ecological Observational Study: Water, 13, 790. https://doi.org/10.3390/w13060790

Vitor S. Martins, Amy L. Kaleita, Brian K. Gelder, 2021, Digital mapping of structural conservation practices in the Midwest U.S. croplands: Implementation and preliminary analysis: Science of The Total Environment, Volume 772, https://doi.org/10.1016/j.scitotenv.2021.145191.

Puvvula, J.; Bartelt-Hunt, S.L.; Ouattara, B.S.; Kolok, A.S.; Bell, J.E.; Rogan, E.G. 2021, Association between Aqueous Atrazine and Pediatric Cancer in Nebraska: Water, 13, 2727. https://doi.org/10.3390/w13192727

Galen Richards, Troy E. Gilmore, Aaron R. Mittelstet, Tiffany L. Messer, Daniel D. Snow, 2021, Baseflow nitrate dynamics within nested watersheds of an agricultural stream in Nebraska, USA: Agriculture, Ecosystems & Environment, Volume 308, https://doi.org/10.1016/j.agee.2020.107223.

Robertson, D.M. and D.A. Saad. 2021. "Nitrogen and Phosphorus Sources and Delivery from the Mississippi/Atchafalaya River Basin: An Update Using 2012 SPARROW Models." Journal of the American Water Resources Association 1–24. https://doi.org/10.1111/1752-1688.12905 .

Jessica A. Satiroff, Tiffany L. Messer, Aaron R. Mittelstet, Daniel D. Snow, 2021, Pesticide occurrence and persistence entering recreational lakes in watersheds of varying land uses: Environmental Pollution, Volume 273, https://doi.org/10.1016/j.envpol.2020.116399.

Stackelberg, P.E., Belitz, K., Brown, C.J., Erickson, M.L., Elliott, S.M., Kauffman, L.J., Ransom, K.M. and Reddy, J.E. (2021), Machine Learning Predictions of pH in the Glacial Aquifer System, Northern USA. Groundwater, 59: 352-368. https://doi.org/10.1111/gwat.13063

Wells, M. J., Gilmore, T. E., Nelson, N., Mittelstet, A., and Böhlke, J. K., 2021, Determination of vadose zone and saturated zone nitrate lag times using long-term groundwater monitoring data and statistical machine learning, Hydrol. Earth Syst. Sci., 25, 811–829, https://doi.org/10.5194/hess-25-811-2021.

Wortmann, CS. Irrigation well water: Essential nutrient contents and other properties. Agrosyst Geosci Environ. 2021; 4:e20137. https://doi.org/10.1002/agg2.20137