Nebraska Ground Water Monitoring Advisory Committee (NGWMAC)
&
Nebraska Surface Water Monitoring Council (NSWMC)
Annual Joint Meeting
Tuesday, October 27, 2015, 10:00 AM-1:00 PM
NDEQ Van Dorn Offices, 2717 S. 8th Street, Lincoln, Nebraska

Minutes

1. Welcome and introductions
    a. 45 in attendance (D. Rus; N. Harris; D. Griffith; G. Michl; D. Inman; L. Christensen; J. Chess; T. Naprstek; D. Ehrman; D. Snow; D. Schumacher; R. Chapman; J. Hammen; C. McCullough; R. Zelt; G. Zuerlein; F. Albrecht; L. Vogt; L. Zakrzewski; B. Densmore; D. Miesbach; J. Hargrave; B . Dinkel; P. Hay; J. Griffin; J. Wheeler; D. Ihrie; M. Krausnick; C. Christiansen; J. Bender; N. Schaepe; M. Moser; K. Hoagland; J. Garber; T. Heatherly; G. McGuire; C. Flaute; C. Romary; D. Bubb; D. Tunink; M. Archer; C. Madden; J. Newman; C. Steele; E. Traylor)

2. Presentation: Understanding Nutrients In Agricultural Streams: Biological Communities and Ecosystem Function; Mark D. Munn, USGS Research Ecologist, Washington Water Science Center, Tacoma, WA
    a. Talk based on information summarized at http://wa.water.usgs.gov/neet/

3. Agency Updates
    a. USGS
        i. Analytical results for ~227 pesticides recently became publicly available for samples dating back to 2013.
        ii. Recent or ongoing SW sampling on the Missouri, the Niobrara, NAWQA sites in E. Neb, and Willow Cr reservoir
        iii. Recent GW sampling across the state for NAWQA and ongoing sampling near the Lincoln wellfield and Papio NRD
        iv. National GW Monitoring Network (http://cida.usgs.gov/ngwmn/) trying to serve a national database of GW quality; They're providing some funding to set up a link to local db's (like the Ag Chem Clearinghouse) to a national db; RFP should be coming out soon
    b. NDEQ
        i. 2013-14 fish tissue reports available now (Nemaha and LPS basins were sampled in 2015)
        ii. Nutrient criteria: 6 sites; Looking at periphyton and DO to see how it relates to present nutrient levels
            1. Setting out tiles as well for algal assessment as part of the standard sampling

2. Based on the Ohio SNAP program http://www.epa.ohio.gov/Portals/35/wqs/nutrient_tag/Proposed_Final_SNAP.pdf

iii. 319 program
1. 2014 was the last year for watershed plans, and now applications need to be for efforts that support existing plans
2. Applications this year have been reduced, and most of the applications are likely to be funded at some level

c. Ag. Contaminant Clearinghouse
i. QA-assessed db: 474K results from 26K wells; 116K are nitrate results: http://data.dnr.nebraska.gov/Clearinghouse/Clearinghouse.aspx
1. Website will be updated in Nov. w/ 2014 sampling results;
2. Working to bring in 2009-present USGS data outside of the Papio NRD efforts
ii. Non-QA assessed db provides ELISA data http://data.dnr.nebraska.gov/Clearinghouse/ClearinghouseELISA.aspx

d. NGPC
i. LB142: Invasive species act passed; Program funded at $330K and hope to hire a inv. Species manager and support equipment;
1. Zebra mussels are present in the lower 1/3 of Lewis and Clark lake; Quagga mussels in Angostura in SD; Eurasian milfoil control plan on Lewis Lake;
2. Boaters should decon boats that are working in the Missouri River
ii. Cool-water stream plan in development
iii. In-stream flow protections on the Niobrara River (MOU at the Sparks gage for wildlife and recreation; in the lower Niobrara for wildlife); Purchasing Spencer Dam and still working on how management operations and water rights will shake out;

4. NSWMC items – Dave Rus
a. See list of upcoming conferences
b. See list of recent publications using Nebraska data
c. A few of us attended the recent Water Quality Markets workshop at UNL
i. Makes nutrient removal a *credit* that can be bought/sold if there is a supply (e.g. BMPs) and demand (e.g. entities trying to meet nutrient requirements, often associated with TMDLs)
ii. Some thoughts: An innovative approach, but it might be a long ways out from appearing in Nebraska; There is probably little to no demand (or at least from those willing to use this approach to meet permits); There might be some good analogies that could be applied to Water Quantity trading here; Importance of monitoring was mentioned, but the high cost of monitoring was also mentioned
iii. More info at http://www.usda.gov/oce/environmental_markets/water.htm

5. NGWMAC items - Dan Inman: None beyond that already mentioned

6. Short presentations:
    a. The Nebraska MEDS Coalition – Jessica Wheeler, The Groundwater Foundation
        i. How we can help – Let colleagues/citizens know that there is a place to dispose of their medications where it doesn't end up in streams
        ii. http://www.nebraskameds.org/
    b. New capabilities at the Water Sciences Lab – Dan Snow, Water Sciences Lab director, Daugherty Water for Food Institute
        i. http://unlcms.unl.edu/ianr/water-for-food/nebraska-water-center/water-sciences-laboratory

7. LUNCH!

Some upcoming meetings of possible interest:

November 4-6, 2015 Joint meeting of the NEWEA, APWA, and AWWA, Kearney, NE
April 24-26, 2016; 2016 Water for Food Global Conference, Lincoln, Nebraska

National/International

November 16-19, 2015 2015 Annual AWRA Conference Denver, Colorado
November 17-20, 2015 NALMS 35th International Symposium, Saratoga, New York
December 14-18, 2015 AGU Fall Meeting, San Francisco, CA
February 21-24, 2016 National Association of Clean Water Agencies 2016 Winter Conference, San Diego, California
May 2-6, 2016 10th National Monitoring Conference - Working Together for Clean Water, Tampa, Florida
June 19-22, 2016 ACE16 - American Water Works Association Annual Conference and Exposition, Chicago, Illinois

Some recent publications that use Nebraska monitoring data:

Ali JM, Kolok AS, 2015, On-site, serial exposure of female fathead minnows to the Elkhorn River, Nebraska, USA, spring agrichemical pulse: Environ Toxicol Chem. 2015 Jun;34(6):1354-61. doi: 10.1002/etc.2928. Epub 2015 Apr 9

Atkinson, Jon C., 2015, Impact of the Dakota Aquifer on major-ion chemistry of Rock Creek discharge, eastern Nebraska, Midwest region: Environmental Geosciences, v. 22, no. 1 (March 2015), pp. 19–33

Bigham Stephens, Dana L., Robert E. Carlson, Christine A. Horsburgh, Mark V. Hoyer, Roger W. Bachmann & Daniel E. Canfield Jr. (2015) Regional distribution of Secchi disk transparency in waters of the United States, Lake and Reservoir Management, 31:1, 55-63, DOI: 10.1080/10402381.2014.1001539

Boerner, Audrey R. , and John B. Gates, 2015, Temporal dynamics of groundwater-dissolved inorganic carbon beneath a drought-affected braided stream: Platte River case study: Journal of Geophysical Research: Biogeosciences, v. 120, p. 924-937, doi:10.1002/2015JG002950

Breeggemann, Jason J., Mark A. Kaemingk, Timothy J. DeBates, Craig P. Paukert, Jacob R. Krause, Alexander P. Letvin, Tanner M. Stevens, David W. Willis, Steven R. Chipps, 2015, Potential direct and indirect effects of climate change on a shallow natural lake fish assemblage: Ecology of Freshwater Fish, 13 p.

Edwards, Michelle L., 2015, Public Perceptions of the Legitimacy of Water Governance Organizations in Nebraska and Washington: Society & Natural Resources, 19 p.

Ferguson, Richard B., 2015, Groundwater Quality and Nitrogen Use Efficiency in Nebraska's Central Platte River Valley: J. Environ. Qual. 44:449–459

Juan C. Jaimes-Correa, Daniel D. Snow, Shannon L. Bartelt-Hunt, 2015, Seasonal occurrence of antibiotics and a beta agonist in an agriculturally-intensive watershed: Environmental Pollution, vol. 205, p. 87-96.

Jothikumar N, Mull BJ, Brant SV, Loker ES, Collinson J, Secor WE, Hill VR, 2015, Real-time PCR and sequencing assays for rapid detection and identification of avian schistosomes in environmental samples: Applied Environmental Microbiology: vol. 81, p. 4207–4215.

Moser, M.T., 2014, Microbial water quality during the northern migration of Sandhill Cranes (Grus canadensis) at the Central Platte River, Nebraska: U.S. Geological Survey Fact Sheet 2014–3094, 4 p., http://dx.doi.org/10.3133/fs20143094

Moustafa Ali Elrashidi, 2014, Effects of Precipitation on Nonpoint Sources of Nitrogen Contamination to Surface Waters in the U.S. Great Plains: Communications in Soil Science and Plant Analysis, Volume 46 (1), p. 16-32.

Ore, John-Paul, Sebastian Elbaum, Amy Burgin, and Carrick Detweiler, 2015, Autonomous Aerial Water Sampling: Journal of Field Robotics.

Rus, D.L., Galloway, J.M., and Alexander, J.S., 2015, Characteristics of sediment transport at selected sites along the Missouri River, 2011–12: U.S. Geological Survey Scientific Investigations Report 2015–5127, 34 p., http://dx.doi.org/10.3133/sir20155127

Schaepe, N.J., Soenksen, P.J., and Rus, D.L., 2014, Relations of water-quality constituent concentrations to surrogate measurements in the lower Platte River corridor, Nebraska, 2007 through 2011: U.S. Geological Survey Open-File Report 2014–1149, 16 p., http://dx.doi.org/10.3133/ofr20141149

Stets, E.G., V.J. Kelly, and C.G. Crawford, 2015, Regional and Temporal Differences in Nitrate Trends Discerned from Long-Term Water Quality Monitoring Data: Journal of the American Water Resources Association, 14 p.

UNDERSTANDING NUTRIENTS IN AGRICULTURAL STREAMS: BIOLOGICAL COMMUNITIES AND ECOSYSTEM FUNCTION

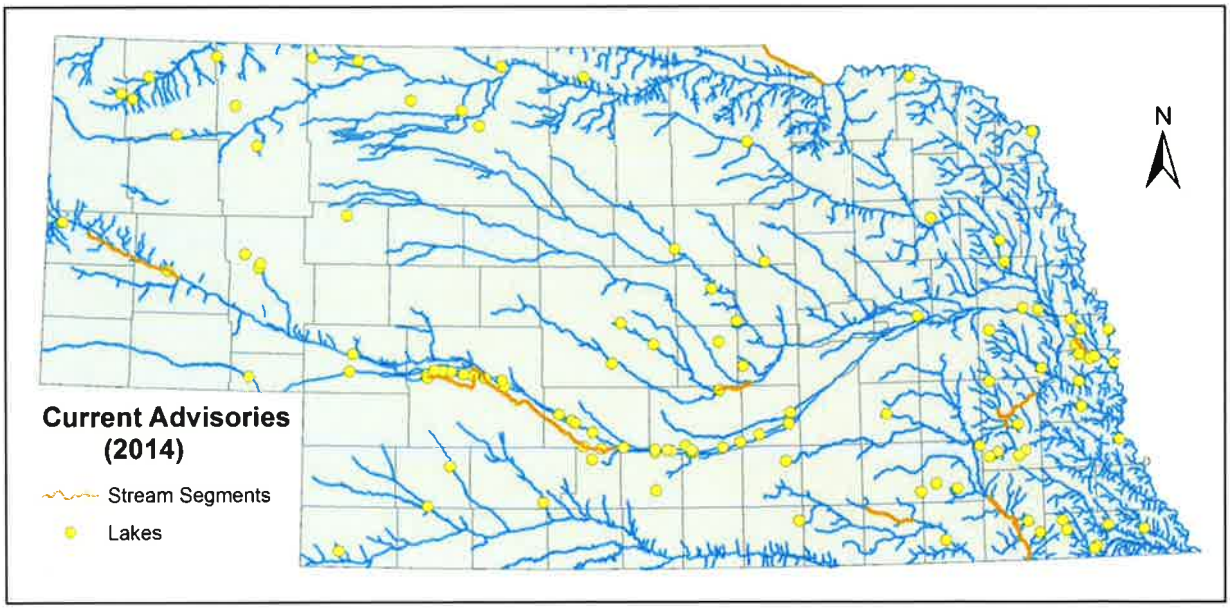
Mark D. Munn, USGS Research Ecologist, Washington WSC, Tacoma, WA

Nutrient (nitrogen and phosphorus) enrichment is a leading cause of water-quality impairment in the United States, with agricultural activities representing a major source of nutrients to surface waters. Although many public agencies work on nutrient issues, relatively few studies have assessed the effects of nutrients on both biological communities and ecosystem function. In 2002, the USGS National Water Quality Assessment Program began an intensive study in eight agricultural areas to improve our understanding of the effects of nutrients on stream ecosystems. Approximately 30 streams were examined in each area to capture gradients in nutrient concentrations. Synoptic data were collected on nutrient concentrations, benthic algal biomass, macrophyte cover, algal and invertebrate communities, and instream and riparian habitat. Ecosystem function was assessed by focusing on stream metabolism and nutrient transformations at a subset of sites. The study results indicated that although increased concentrations of nitrogen and phosphorous are associated with a shift in the composition of algal and invertebrate communities, the quality of instream and riparian habitat plays a key role in structuring biological communities. Because of habitat limitation, e*levated nutrient concentrations did not commonly result in extensive growth of aquatic vegetation. Consequently, the majority of the streams examined were heterotrophic rather than autotrophic. Owing to the effects of nearby agricultural activities, the stream water in many of these watersheds has little contact time with sediments in the streambed and streambank, limiting the natural uptake of nitrate from the water by stream biota. These reductions in nutrient removal rates result in greatly increased loads to downstream receiving waters.* This study shows that managing nutrients in agricultural streams requires an integrated approach that examines land use as well as instream processes, and that both factors should be considered as part of any proposed nutrient management plan.

Fish Tissue Monitoring Program — The NDEQ has been sampling and assessing toxins in fish tissue annually since 1978. In 2015, a total of 120 fish tissue samples were collected from 10 streams and 51 lakes within the Lower Platte and Nemaha River basin's for analysis of pollutants. This information is used to assess pollutant trends, identify potential problem areas and to inform the public about health risk concerns identified through fish consumption advisories. Nebraska began issuing fish consumption advisories in 1990. The data is received from the EPA lab approximately six months after collections and therefore, the final report on the 2015 is anticipated in the spring of 2016.

The report "Regional Ambient Fish Tissue Program – 2013-2014 Data Assessment Report" (contains 2013 and 2014 data) and current list of advisory sites can be found at DEQ's web site, http://deq.ne.gov. The report is located at Publications and Forms/Water Publications/Water Publications by Type/Reports. The direct URL is: http://deq.ne.gov/Publica.nsf/Pages/WAT225. A summary of fish advisory information is easily located at DEQ's web site by entering "fish" in the Search NDEQ Web box located on the right side of the Home page. The direct URL is: http://deq.ne.gov/NDEQProg.nsf/OnWeb/FCA.

Currently, Nebraska has 127 state-issued advisories. The primary contaminants of concern in fish tissue in Nebraska and most other states are mercury and polychlorinated biphenyl compounds (PCBs). See map below for current advisory locations.



The NDEQ's Policy for Issuing Fish Consumption Advisories uses an 8-oz weekly meal portion combined with a consumer body weight of 70 kg (154 lbs.), an absorption factor of 1.0 and an exposure period of 30 years for calculating health risks. Carcinogenic effects are still averaged over a lifetime of 70 years because it is assumed cancer can develop at any time during one's lifetime, even after the exposure to the carcinogen has ended. Health advisories are not intended to discourage people from eating fish in moderation. Actually, fish are a high quality protein, low in saturated fat, and high in omega-3 fatty acid. It is a primary goal of the program to ensure that the public have as much information as possible regarding the water bodies that they use for fishing. An immediate health risk is unlikely from an occasional meal of fish from waters where fish consumption advisories have been issued; however, in order to reduce health risks that may result from long-term consumption, it is

recommended that eating fish from advisory waters not exceed an average of eight ounces of fish per week.

Don't know what to do with your

LEFTOVERS?

We can help. Visit leftovermeds.com
Or call 1-800-222-1222

The Nebraska MEDS Coalition educates Nebraskans about drug disposal and provides safe disposal options to better safeguard the environment and protect public health.

Over 250 pharmacies across Nebraska collecting unwanted medications

10,325 pounds of medication collected in Nebraska thus far (Aug. 2012 - Aug. 2015)

Diverse agencies and organizations working together to take back medications

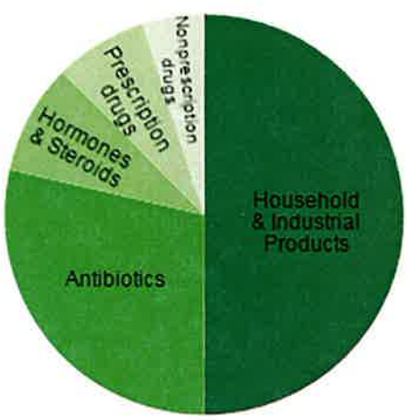
THE ISSUE

Trace amounts of prescription drugs have been found in 80% of U.S. waterways. (USGS)

Waterways included in the USGS study included 7 Nebraska streams and groundwater.

What's in the water?

2002 USGS Study



CAUSES & EFFECTS

Improper disposal, including flushing unwanted medications down toilets and drains.

Possible effects on wildlife, drinking water supplies, and human health.

Why?

Around 70,000 youth are seen in ERs each year due to accidental medication overdose.

Approximately 55% of the calls to the Nebraska Regional Poison Control Center involve medications.

56% of drug misuse/abuse ER visits are related to pharmaceuticals.

Approximately 59% of deaths related to drug overdoses were from prescription drugs.

THE SOLUTION

Return unwanted medications to participating pharmacies for proper disposal.

Help keep medications out of water supplies and helps prevent abuse and accidental ingestion.

What Can I Do?

DO take medications to a pharmacy or other approved collection center for disposal.

DO keep medications away from children.

DON'T flush unwanted or expired medications down toilets or drains.

DON'T toss old medications in the trash.

Find a participating pharmacy near you at:
www.leftovermeds.com

Nebraska Department of Environmental Quality | The Nebraska Environmental Trust | Nebraska MEDS Coalition

Lincoln/Lancaster County Health Department | Nebraska Pharmacists Association | Nebraska Department of Environmental Quality | The Nebraska Regional Poison Center | Nebraska Department of Health and Human Services | The Groundwater Foundation | WasteCap Nebraska

August 2015