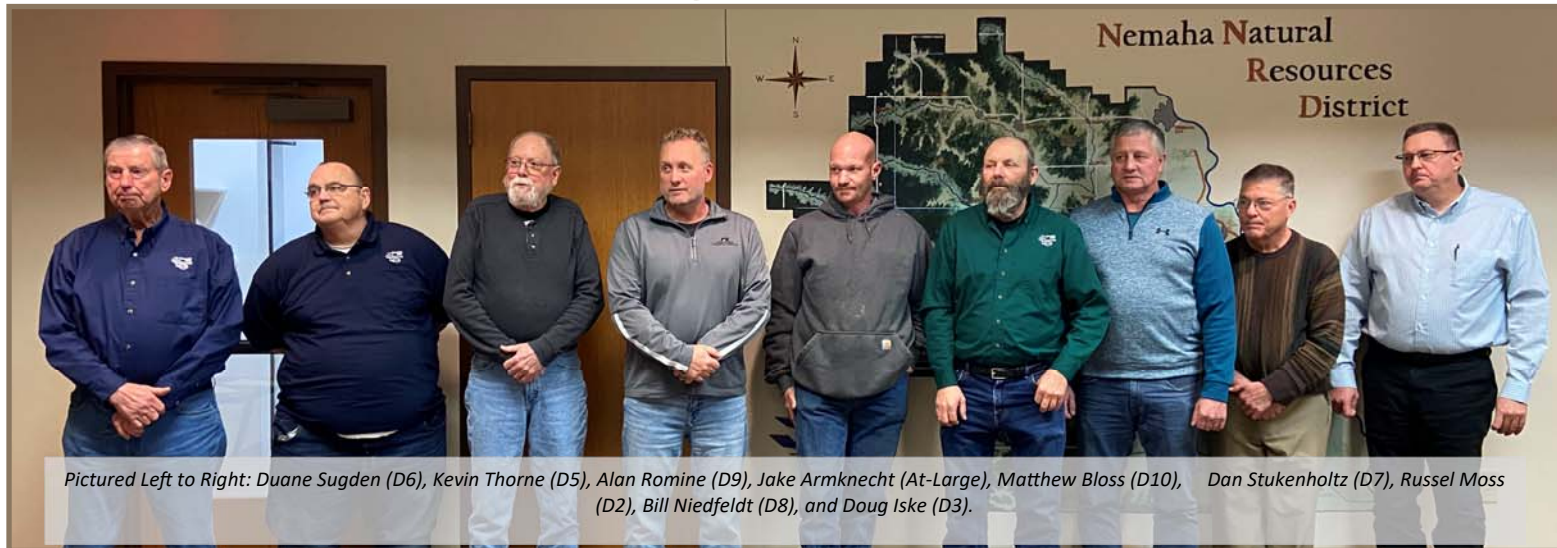


Insight

Nemaha Natural Resources District

Directors Change at The Nemaha NRD



Pictured Left to Right: Duane Sugden (D6), Kevin Thorne (D5), Alan Romine (D9), Jake Armknecht (At-Large), Matthew Bloss (D10), Dan Stukenholtz (D7), Russel Moss (D2), Bill Niedfeldt (D8), and Doug Iske (D3).

2023 is the end of one chapter and the start of a new one for the Nemaha Natural Resources District. At the December 2022 Board of Directors meeting thank yous and goodbyes were said to three outgoing directors. Don Siske (Table Rock), served on the board for 20 years, Lisa Beethe (Elk Creek) served 16 years and Dan Giittinger (Nebraska City) served 2 years.

With the combined knowledge of 35+ years they will be hard to replace, but we are looking forward to welcoming two new Board members. Jake Armknecht of Auburn, and Matt Bloss of Pawnee City were sworn in at the January 2023 meeting. We look forward to the new ideas and perspectives that will accompany the two new members of the Board.

Matthew Bloss won the District 10 Director's seat. Matt is a fourth generation farmer from the Pawnee City area. He also owns his own business, Custom Jobs LLC. Matt is an award winning sorghum producer and member of Table Rock Methodist Church. He chose to run for the Nemaha NRD board to build leadership and understand the duties and finances of the district.

Jake Armknecht of Auburn won the At-Large Director seat. Jake works for Farm Bureau Financial Services in Auburn.

Russel Moss has served on the Board of Directors since 2015 in the At-Large position. Following the re-districting that took place in 2021 some directors subdistricts changed. Russel ran for and secured the District 2 position which includes part of western Otoe County and small areas of Cass and Lancaster Counties.



Don Siske (right) served 20 years.



Lisa Beethe (right) served 16 years.



Dan Giittinger (left) served 2 years.

Subdistrict 4 Director Sought

The Nemaha NRD is looking for someone to fill a vacancy on its board of directors in subdistrict 4. This region is eastern Otoe County/eastern Nebraska City area. The area includes the McWilliams Precinct (formerly McWilliams, Rock Creek, & Otoe Precincts), portions of the Belin Precinct (formerly Berlin & Wyoming Precincts), and portions of Nebraska City east of North 9th Street and east of South 11th Street. It includes the villages of Talmage, Otoe, Lorton, Wyoming, & Paul. The position is a two-year term; it will then come back up for election in 2024. Visit www.nemahanrd.org/about/nemaha-nrd-board-members for more information.

Winter 2023

2023 Tree Workshop Takeaways



NNRD Tree Specialist, Mark McDonald presents information

The Nemaha NRD partnered with the Nebraska Forest Service, Pheasants Forever, and the Natural Resources Conservation Service (NRCS) to host a free tree workshop at the Nemaha NRD on February 1st. Tree experts from across the State provided information on pests and diseases, windbreak renovation, proper planting and care techniques, considerations for wildlife, and programs available to assist landowners. Takeaways from the event include: Diversity, Drought Impacts, Wildlife Planning, and Assistance.

Experts from all agencies emphasized the need for diversity when planting trees. When threats move into the area that target a certain species of tree they can completely devastate single species windbreaks. Planting a variety of species on your property or in different rows of your windbreak helps to prevent complete devastation in the event of a catastrophic pest or disease like pine wilt.

Ongoing drought conditions across the district have been a big concern for everyone. Unfortunately for trees, droughts can have long lasting effects on their health. Some of the issues experts are seeing

today are a result of the 2012 drought. Similar to humans, when a tree is not getting all the essential water and nutrients it needs for an extended period of time it is more susceptible to illness. One of the more common types of illness in trees is a canker. Essentially a canker is an open wound that just won't heal. It can be caused by a number of factors and eventually spreads and takes over the tree, leading to death. Proper watering and care of trees during drought can improve the ability of the tree to fight diseases and can increase chances of survival.

Windbreaks can be designed or enhanced to favor wildlife by incorporating species that provide shelter and winter foraging. Shrub blocks are another alternative for landowners who want to attract upland game species.



Chris Coonce & Jared Meiergerd of Pheasants Forever present wildlife information

As a reminder to our residents, there are a wealth of resources available to you when considering planting windbreaks, making improvements to an existing windbreak, or incorporating wildlife friendly plantings on your property. Cost share is available through the Nemaha NRD, NRCS, Pheasants Forever, and Nebraska Forest Service. If you are thinking about planting or renovating a windbreak or establishing trees or shrubs for aesthetics or wildlife be sure to call the Nemaha NRD or visit one of the local NRCS offices to get some expert advice, develop your plan, and get direction on which funding source would best fit your needs.

Conservation trees and shrubs are on sale now through the Nemaha NRD. Species are \$1.25 each and must be purchased in lots of 25. Tree and shrub orders will be accepted through March 15, 2023. For the best variety of species order soon! For more information, please visit www.nemahanrd.org/programs/

Steamboat Trace Trail 5K Fun Run and Grand Re-Opening

This spring the Nemaha NRD will celebrate the grand re-opening of the Steamboat Trace Trail with a celebration and 5K Fun Run the morning of Saturday, April 15, 2023. The re-opening celebration will take place at the Peru Depot and the 5K will take place just east of the Peru Depot trailhead in Peru.

Registration will be available on the Nemaha NRD's website very soon! Keep an eye on our social media for the announcement. All proceeds of this event will go to the Nebraska Association of Resources District's (NARD) foundation that supports students' desire to enter the field of natural resources. The NARD Foundation supports Nebraska Agricultural Youth Institute, Ag Day on the Hill, Agriculture Issues Academy and Awards at the Annual State FFA Convention, Nebraska Envirothon, Nebraska Farm Bureau Foundation for Agriculture, Adventure Camp about the Environment, the Raising Nebraska exhibit at the Nebraska State Fair, and Nebraska LEAD (Leadership, Education, Action, and Development) Program.

The Steamboat Trace Trail was closed from two miles south of Peru to Brownville following the 2019 historic flooding. Last year, NRD crews and contractors worked diligently to get the beloved trail back into shape and opened up by fall for its users. Truck loads of screenings, the material that is used for trail surfacing, were placed and shaped along with new guardrails installed and tree trimming. Weather conditions this winter should help with overall rideability of the trail for cyclists as precipitation helps to compact surfacing materials. If you haven't had the chance to explore the Steamboat Trace Trail we strongly encourage you to take a stroll or a ride. The scenic 22-mile long abandoned railroad corridor parallels the Missouri River from about six miles south of Nebraska City to just south of Brownville. You'll venture through a forested canopy, and cut across open farm fields and along the bluffs of the Missouri River. Of note near Peru are the limestone carvings created by the late Roland Sherman.



2022 Water Programs Update

Groundwater Levels

A local network of 115 wells (irrigation, live-stock, domestic, and public water supply) located throughout the District were measured in the spring and fall of 2023. 97 of the 131 wells measured were used to create a lifetime average minus a 10-year average groundwater level change. The District lifetime average change was a decrease of 0.29 feet (this is for all well types). Lifetime average water levels for irrigation wells were down 0.52 feet, domestic wells were down 0.23 feet and dedicated observation wells were up 0.08 feet.

Well Abandonment

A total of 31 abandoned wells were decommissioned the past fiscal year (June 2021—July 2022). \$8,159.72 toward cost share was paid out for this program.

As a reminder to our readers, the NNRD has cost share available to properly close abandoned wells. There is 75% cost-share up to \$500 for drilled wells and \$700 for hand-dug wells (excluding the removal of exposed or buried pipes, tanks, pumps, towers, well houses, or other apparatus). Interested parties should first contact the NNRD

Nitrate Testing

204 well samples were collected and tested for nitrate concentration. The district average nitrate concentration was 4.6ppm with a median concentration of 2.3ppm. 58 of the wells sampled were domestic. The average nitrate concentration of domestic wells was 7.3ppm and the median was 6.3ppm.

37 of the 204 wells tested were from within the Phase II Groundwater Management Area. The average nitrate concentration was 7.5ppm with a median concentration of 7.3. Domestic wells sampled averaged 7.5ppm and irrigation wells sampled averaged 7.4ppm.

Chemigation

This year the District received 335 permit applications and inspected 159 systems for safety equipment and compliance. Out of the 335 applications received, 299 were renewals; 35 were new permits; and 1 was an emergency permit. 2023 inspections will take place in Zone 2 which is located in the northeast part of the District.

Chemigation fees are increasing this year. Rates will be as follows; \$60 new, \$30 renewal, and \$250 emergency.

As a reminder, applicator certification is required prior to chemigation. Training sessions are held throughout the State each winter/early spring. Contact the NNRD or log on to www.deq.state.ne.us/ click on the Licenses & Certification dropdown box located on the top right center of the page then click Chemigation for a current list of training dates, locations, and training materials. On this webpage, applicators can also find their certification number and expiration year. This year's nearby training session will be at the following dates and times:

- Beatrice: February 28, 2023 at 1:00 at Gage Co. Extension
- Lincoln: March 9, 2023 at 1:00 at Lancaster Co Extension

- Tecumseh: March 2, 2023 at 1:00pm Tecumseh City Library

Plans for FY23

The NNRD was awarded a \$190,020 grant through Water Sustainability Funds to conduct Airborne Electromagnetic (AEM) flights in the final priority areas of the NNRD. Aqua-Geo Frameworks of Wyoming has been hired and flights should take place this summer. Following their completion and data post-processing, all current and previously collected hydrogeologic data will be compiled into a single database and report. This information will serve as a decision making tool for the NNRD and its Board of Directors when it comes to groundwater management.

The NNRD installed 4 new continuous recording telemetry units at existing groundwater monitoring wells. These units record the same information but require less personnel time to gather data. They are calibrated annually to ensure the readings are correct.

Irrigation

Readings from flowmeters across the district were collected this fall. Irrigators across the district averaged 5.96 inches of irrigation water per acre. The district average for 2021 was 3.85 inches of irrigation water per acre. This was expected as the District saw persistent drought conditions throughout the 2022 growing season.

In the NNRD, groundwater resources capable of irrigating crops or supplying municipalities with drinking water are found in ancient paleo-valley (river valley) aquifers created long ago when glaciers moved through the region. Looking at the map on the top of the next page, you will notice that the paleo-valley aquifer beneath the NNRD is not uniformly distributed. A small portion of cropland in the Nemaha NRD is irrigated, compared to the vast majority in other NRDs situated on top the High Plains Aquifer. Luckily for NNRD row crop producers, the wetter climate in south-

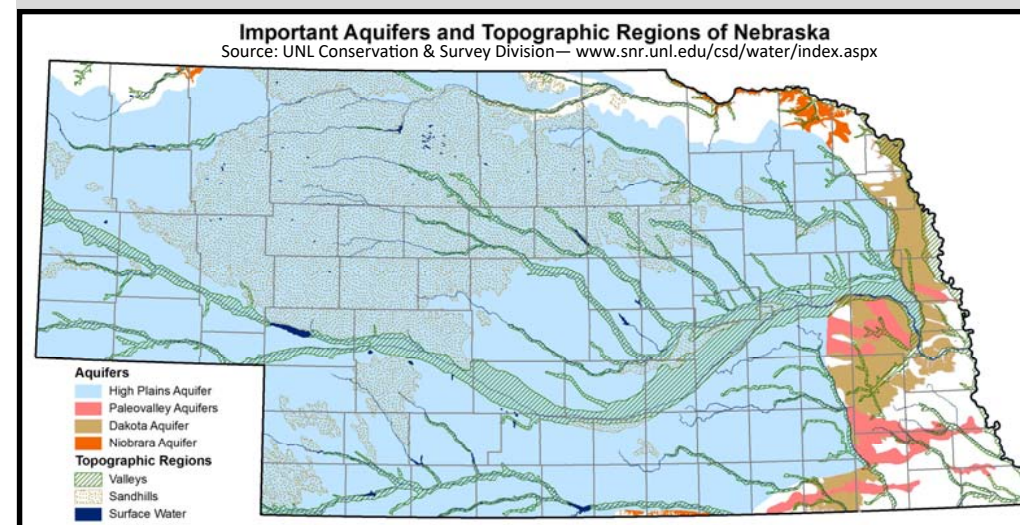
east Nebraska makes irrigation more of a drought mitigation plan than a necessity to raise a corn or soybean crop.

Municipal water supplies in the NNRD have their wells situated within the paleo-valley aquifer system. Water is pumped from depths anywhere from 40 to 295 feet below the earth's surface and then travels up to 10 miles from municipal wells to municipalities. Amazingly enough, most drinking water pumped within the NNRD requires no to minimal treatment before reaching residential taps.

Nemaha NRD's Unique Groundwater Resources

Nebraska is known for sitting on top one of the largest freshwater aquifers in the world, the Ogallala or High Plains Aquifer. This aquifer is a lifeblood for agricultural producers and communities in central and western Nebraska. It supplies drinking water to residents and allows for increased crop production and vast irrigation in regions of the state that would not otherwise grow dryland corn and soybeans. Did you know that the famous High Plains Aquifer does not extend far enough east to be beneath any land in the Nemaha Natural Resources District (NNRD)?

Nemaha NRD's Unique Groundwater Resources... Continued



Protecting Groundwater

Over allocation of groundwater resources is one of the biggest threats to the paleo-valley aquifer system. The Board of Directors and Staff at the NNRD work together to actively and adaptively manage groundwater regulations to protect the quantity and quality of groundwater in the district. To drill a well capable of irrigating crops (a high capacity well) the NNRD requires a test hole be submitted by a licensed well driller or geologist. The information collected through the test hole provides subsurface geology composition and thickness of materials that is used in the district's scoring criteria. Water Resources Manager, Chuck Wingert will score well permit applications based on 5 criteria to ensure each meets the minimum requirements. Any wells that score the minimum requirements or above are brought forward to the board of directors for final vote at monthly meetings.

To increase understanding of the hydrogeology of the region and prevent over allocation of groundwater resources, the NNRD has participated in detailed hydrogeologic data collection through the use of Airborne Electromagnetic (AEM) flights since 2007. AEM data collected produces virtual test holes along a linear flight path providing depths and thicknesses of geologic materials below the earth's surface all the way down to bedrock. Using the geologic data generated by AEM, Wingert is able to better identify aquifer extents and areas that could be susceptible to groundwater contamination. For more information on AEM please see the "Plans for 2023" section on the previous page or visit www.enwra.org.

Increased Monitoring Where Needed

The NNRD has one Phase II groundwater quality area around Humboldt. In this area the NNRD intentionally monitors a network of wells more frequently.

Programs & Resources that Enhance Protection

Since 2013 all new and replacement irrigation wells are required to have a flow meter. The flow meter provides producers information on how much water they applied to their crops each growing season. Soil moisture content, plant growth stage, current climate conditions, and the forecast can be monitored to ensure an agronomic amount of irrigation water is being applied to crops. The USDA NRCS office has technical and incentive programs available to help producers make timely irrigation decisions. The NNRD also has soil moisture probe and flow meter cost share available.

Soil sampling has become increasingly popular among agricultural producers as a means to fine-tune their nutrient programs and save on input costs. Sampling soils for residual nitrates when manures have been applied or two nitrogen using crops are grown back to back (corn on corn) can help fine tune a nitrogen budget and prevent leaching. Using soil samples to generate a nutrient budget can really help producers to maximize their profit potential and protect water resources. The University of Nebraska—Lincoln has developed a free Nitrogen Calculator that can be used to make best management decisions from inputs of expected yield, residual soil nitrates, soil organic matter, other nitrogen sources, timing of application, and price of fertilizer. The USDA NRCS or UNL Extension offices are available to help producers calculate a recommended budget for their individual row crop fields. NRCS also has funding available to incentivize producers to make nutrient management changes to their operations.

Please visit www.nemahanrd.org/programs/ water for more information.

Another concern of the NNRD is groundwater quality. Safe drinking water is essential to the livelihood of our district. One of the largest threats to drinking water quality the state of Nebraska faces is elevated nitrate levels. Nitrates that make their way into groundwater typically come from lawn fertilizers and agricultural operations. If nitrogen goes unused by plants, it can leach into groundwater sources. The EPA has set the safe drinking water standard for nitrates at 10ppm (parts per million). Municipal water sources are responsible for testing their water supplies to ensure they meet this standard, among others. As a service to NNRD residents that own domestic wells, the Nemaha NRD offers free well water testing for Nitrates and Bacteria. Domestic well owners can simply call 402-335-3325 and request a test be collected.

The soils of the NNRD also provide another level of natural protection from nutrient leaching. Soils are classified by texture using their particle makeup (sand, silt, clay). The glaciated soils of eastern Nebraska are considered "heavier", meaning they have a higher clay component than sandy soils of central and western Nebraska. Clay soils carry a slight negative charge that allows them to hold nutrients and water longer than sandy soils. When nutrients and water are held by the soils they are available for plants to use for longer periods of time, reducing the potential to enter the water table. This benefit of clayey soils allows farmers to fall apply anhydrous ammonia with minimal concern of fertilizer loss for next year's crop.

NARD Legislative Conference



Pictured Left to Right: General Manager Kyle Hauschild and Nemaha NRD Board Directors: Doug Iske, Orval Gigstad, Russel Moss, Dan Hodges, Bill Niedfeldt, & Duane Sugden

Staff and directors from the Nemaha Natural Resources District (NRD) attended the Nebraska Association of Resources District (NARD) Legislative Conference January 24-25 in Lincoln, Nebraska. The conference prepares NRDs for the legislative session and helps to form and builds partnerships among elected officials and partners interested in protecting natural resources.

Governor Jim Pillen kicked off the conference Tuesday January 24th followed by a presentation of the South Platte River Compact and discussion of proposed legislation of interest to the NRDs. Throughout the 2023 legislative session the NARD and NRDs monitor proposed bills and their impacts to NRDs. General managers can testify in favor of, or opposition to bills as they see fit. Wednesday, January 25th was filled with breakout sessions ranging from agency updates to nitrogen management. A series of concurrent breakout sessions allow participants to maximize the benefits they get from the conference and provide an opportunity to receive continuing education credits.



NNRD Seeks Nominations for Outstanding Conservationists

The Nemaha NRD is looking for residents putting forth outstanding efforts to support natural resources conservation. Nomination categories include; Outstanding Community Conservation, Outstanding Grassland Conservation, Outstanding Soil Conservation, Outstanding Water Conservation, Educator of the Year, and Tree Planter of the Year. Please consider nominating someone you know that is making a difference in these areas! Nominations are due to the NNRD by April 1st. For more information please call the office or visit www.nrdnet.org/news/conservation-awards



Take a moment to picture yourself as a drop of rain falling from the sky. Imagine where you might land and the journey you might go on after landing. The topographic and geologic makeup of a landscape determine where and how water moves within a watershed. We all live in a watershed! In Nebraska your NRD is named after the watershed you live in! And within your NRD watershed there are smaller watersheds.

This year students are invited to learn more about watersheds and how water is connected through resources produced by the National Association of Conservation Districts (NACD) through their "One Water" campaign. Educational curriculum and resources for students and teachers are available online at www.nacdnet.org/general-resources/

stewardship-and-education-materials/ under the National Poster and Photo Contests link. Each year the NACD hosts a poster contest for students in grades kindergarten through 12th grade. The theme for 2023 is "One Water". To enter the competition K-12 students will need to submit original works of art to the Nemaha Natural Resources District via mail or email, by September 30, 2023. A permission form is needed for all entries and is available by contacting the Nemaha NRD office at 402-335-3325. Local poster contest entries will be judged by the Nemaha NRD board at their November board meeting. Nemaha NRD winning entries will move on to the state competition. Winners from the state competition will move on to the NACD competition.

Spring is a great time to get kids outdoors for some hands on science!

- Try observing where water is going as snow melts or rain falls to the earth's surface.
- Make predictions what the water might pick up and carry with it as it flows over the earth's surface
- Watch a raindrop's path from anywhere in the United States by visiting <https://river-runner.samlearner.com>

NNRD Parks Update

2023 park permits are available for purchase at the parks, at the NNRD office, or online. If you are purchasing an annual permit at one of the parks via blue envelopes, please be sure to include ALL your vehicle information! If any information is missing, the office will

not be able to issue your permits. If you are fishing, please be sure to follow all state of Nebraska rules and regulations. If you have lost anything at one of our parks in the past or lose anything this year, call 402-335-3325 to see if it has been turned in.

NNRD Conservation Tree Program Taking 2023 Orders Through March 15th!
Call (402)335-3325 to request an order form

Deciduous Trees	Shrubs	Coniferous Trees
- Black Cherry	- American Hazelnut	- Black Hills Spruce
- Black Walnut	- American Plum	- Colorado Blue Spruce
- Black Oak	- Black Chokeberry	- Eastern Red Cedar
- Northern Pecan	- Chokecherry	- Eastern White Pine
- Northern Red Oak	- Elderberry	- Norway Spruce
- Shagbark Hickory	- Lilac	- Ponderosa Pine
- Swamp White Oak	- Redosier Dogwood	
	- Serviceberry	

Insight is a publication of the Nemaha NRD. Requests to be placed upon the Insight mailing list and/or comments regarding information in this publication should be directed to Ashley Rippe at 62161 Hwy 136 Tecumseh, NE 68450 or at arippe@nemahanrd.org. To view the newsletter in color please submit your email address as indicated above or visit our website www.nemahanrd.org



Nemaha NRD
62161 Hwy 136
Tecumseh, NE 68450

Upcoming Events

- March 6-7: NRD Water Programs Conference
- March 9: NNRD Board of Directors meeting 7:00pm
- March 19-22: NRD Washington DC Conference
- April 13: NNRD Board of Directors Meeting 7:00pm
- April 15: Steamboat Trace Trail Run
- April 22: Earth Day
- April 28: Arbor Day
- May 11: NNRD Board of Directors Meeting 7:00pm
- May 20-21: NNRD Free Park Entry Weekend