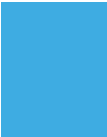


2023-24

Annual Report

UPPER BIG BLUE NATURAL RESOURCES DISTRICT





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The Upper Big Blue Natural Resources District provides a vital service in Adams, Butler, Clay, Fillmore, Hamilton, Polk, Saline, Seward, and York Counties, serving more than 56,000 people.

THE DISTRICT



- ***More than 56,000 citizens rely on the Upper Big Blue Natural Resources District (NRD) to provide direction and assistance in the wise use, conservation and development of our soil, water and related natural resources.***

The NRD is dedicated to the conservation and careful development of natural resources to serve everyone’s needs. The NRD system was created in 1972, following Nebraska legislation which consolidated 154 statewide special-purpose districts into 24 NRDs (later further consolidated into 23 NRDs). The NRDs correspond to major river basins in Nebraska. NRDs carry the names of these rivers, hence the Upper Big Blue NRD is named after the uppermost portion of the Big Blue River.

NRDs are organized as governmental sub-divisions of the state. Local control is provided by a board of directors. At the Upper Big Blue NRD, a 17 member board of directors establishes policy. These directors are placed in office through the general election process and represent the community’s interests in conservation.

Across the state, NRDs offer a major source of assistance to landowners in conservation and natural resources management. Not only do the board members make decisions about conservation programs at the district level, they also bring a wealth of local judgment and experience when adapting state and national programs to local situations.

The NRD staff at York and the field clerks at the Natural Resources Conservation Service (NRCS) offices in each county are responsible for implementing NRD policy and regulations.

A major source of funding for projects, programs, and administration comes from a levy on taxable property within the district. Other sources include federal and state funding, as well as program fees. Certain projects may also be funded with a portion of other local, state, private and/or federal revenues. The NRD is empowered to coordinate land and water management programs with local, state and federal conservation organizations and other governmental units.

Mission Statement

The Upper Big Blue Natural Resources District shall be a leader in conserving, protecting, developing, and managing the natural resources of the district for the health and welfare of the people of the district.

THE DISTRICT

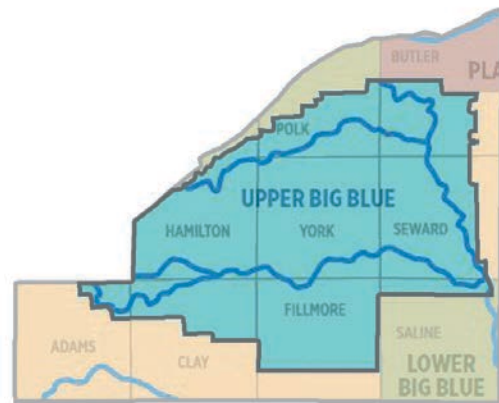


12 District Responsibilities

■ The Upper Big Blue Natural Resources District is a sub-division of local county government charged with the management, development, and protection of soil and water resources within district boundaries. District responsibilities are authorized by state statutes and are listed below but are **not** ranked in order of priority.

- Development, management, use and conservation of groundwater and surface water
- Soil conservation
- Erosion prevention and control
- Flood prevention and control
- Pollution control
- Water supply for any beneficial uses
- Prevention of damages from flood water and sediment
- Development and management of recreational and park facilities
- Forestry and range management
- Development and management of fish and wildlife habitat
- Drainage improvement
- Solid waste disposal









Within this general framework, the Upper Big Blue NRD carries out a variety of projects and programs in forestry, groundwater management, land treatment, flood control, water storage, and information and education. ■














Board of Directors

■ The Upper Big Blue Natural Resources District is governed by a 17 member Board of Directors. Two directors are elected from each of the eight sub-districts, plus one at-large member from any sub-district. The board sets policy for the district and works closely with the staff through a committee system to carry out the district’s goals. Board meetings are conducted on the third Thursday of each month at the district office. Committees meet throughout the month. Special meetings are called as needed to consider important concerns and issues. The district board of directors sets the direction, policies and budget for the natural resources district. ■

| | |
|--|--|
| Roger Houdersheldt Shelby Sub-district 1 |  |
| Kevin Peterson Osceola Sub-district 1 |  |
| Jeff Bohaty Seward Sub-district 2 |  |
| Douglas Dickinson Seward Sub-district 2 |  |
| Richard Bohaty Seward Sub-district 3 |  |
| Bill Stahly Milford Sub-district 3 |  |
| Paul Weiss McCool Jct. Sub-district 4 |  |
| Lynn Yates Geneva Sub-district 4 |  |

| | |
|--|---|
| Micheal Nuss Sutton Sub-district 5 |  |
| Kendall Siebert Henderson Sub-district 5 |  |
| Bill Kuehner, Jr. Aurora Sub-district 6 |  |
| John Miller Aurora Sub-district 6 |  |
| Rodney Grotz York Sub-district 7 |  |
| Anthony Bohaty York Sub-district 7 |  |
| Paul Bethune York Sub-district 8 |  |
| Matthew Perry York Sub-district 8 |  |
| Teresa Otte David City At-Large |  |

THE DISTRICT



Water, Water Everywhere... District Projects Toured by NRD Directors

- From monitoring wells to recreation areas, dam sites, and a water treatment plant, members of the board of directors for the Upper Big Blue Natural Resources District viewed a variety of water related projects on their annual district tour, held on August 25, 2023.

Each year, directors tour a different quadrant of the district to view completed projects or sites for proposed improvements. This tour is a vital educational event for directors, who might not regularly have a reason to visit parts of the district beyond the borders of their sub district.

The event was attended by seven directors and a handful of NRD staff, as well as Senator Bruce Bostelman and Matt Howe, a representative from the office of Senator Jana Hughes. The day afforded opportunities for local and state elected officials to discuss the natural resource challenges facing the people of the district, including the problem of nitrate in drinking water supplies.

“We appreciate the investment of time and attention from the directors and other local leadership that were a part of this tour,” said General Manager David Eigenberg. “The NRD and state representatives can’t appropriately steward our natural resources without opportunities to learn about the issues and projects that affect them. We





are grateful to all who made the day a success.”

The first stop was a demonstration of sampling of monitoring wells located at the Fairmont Airpark. The monitoring wells at the location are tested regularly for nitrates and other contaminants. These wells are part of a network of 20 monitoring wells spread across nine sites in the district which are routinely sampled to track water quality trends over time. The wells vary in depth, allowing for data collection from shallow, medium, and deep sites to capture a more accurate picture of the quality of the district’s groundwater. The Upper Big Blue NRD has been tracking this data consistently since 1997 to look at trends in non-point source contamination in the groundwater supply. There are plans to expand the monitoring well network to include more sites soon.

Geneva was the next tour stop, where the group viewed improvements to Boys Pond, the community walking trail, and a nearby tree planting site. The Upper Big Blue NRD has been involved in several community enhancements in Geneva in the last few years.

The tour then continued on to Lone Star Recreation Area, which is operated by the Little Blue NRD. Though the stop is outside of the district, it was an opportunity for directors to see how a different NRD manages recreation facilities. The lake at Lone Star covers approximately 75-acre feet, roughly twice the size of any of the lakes managed by the Upper Big Blue NRD. The recreation area also features 19 camper pads and is a popular spot for camping

throughout the season.

After lunch, the group visited dam sites in Dorchester and Seward. The Dorchester dam is on private property but is owned and maintained by the NRD. The structure provides valuable flood control as well as wildlife benefits. In the past year, the dam face was reinforced with rock to prevent further erosion of the aging structure, for a total cost to the district of \$22,822.96.

The Seward site featured construction on a large dam structure, which will provide recreation opportunities at a privately owned campground facility under development near the I-80 exchange. The district’s private dams program offers a 75 percent cost-share (up to \$50,000) for the design and construction of dams that will meet a number of the required resource concerns, including flood control, sediment and erosion control, water conservation, groundwater recharge, and fish and wildlife enhancement.

The group then toured the reverse osmosis water treatment facility in Seward. The almost 20-year-old facility remediates high nitrates in the community’s drinking water. The plant treats up to 1.4 million gallons of water per day and serves approximately 7,100 residents. In 2017, the NRD provided \$37,475 to the City of Seward through the municipal assistance program to replace the filter membranes in the system. The total cost to replace the membranes was \$135,000. There are plans to expand and update the facility in the future. ■



THE DISTRICT



NRD Board Members and Staff Recognized for Years of Service

Board Member Recognition

Bill Stahly
(17 years)

John Miller
(15 years)

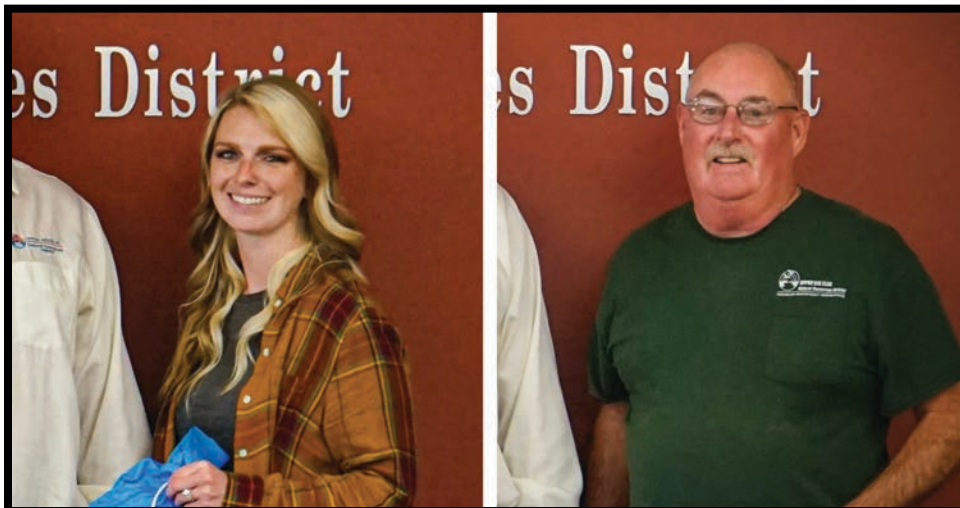
Lynn Yates
(15 years)



Employee Recognition

Erin Wilkins
(10 years)
Water Resources Technician

Andy Larkin
(5 years)
Maintenance Worker



Upper Big Blue NRD Staff

■ As of June 2024, the district has 30 employee positions: 29 full-time and one occasional worker. Full-time and part-time employees are permanent employees with paid benefits. Full-time employees work 40-hour work weeks all year, whereas part-time employees work a regular schedule of at least 20 hours per week. Occasional workers are temporary employees who do not earn benefits. Their hours vary depending on available work.

- David Eigenberg, General Manager
- Marie Krausnick, Assistant General Manager
- Jack Wergin, Projects Department Manager
- Nancy Brisk, Office Manager
- Chrystal Houston, Public Relations Manager
- Terry Julesgard, Water Department Manager
- Drew Ten Bensel, Engineering Technician
- Mick Northrop, Lead Maintenance Worker
- Levi Johansen, Maintenance Worker
- Andy Larkin, Maintenance Worker
- Sylvia Jividen, Geneva Field Office Secretary
- Janet Yates, Seward Field Office Secretary
- Mandy Miller, York Field Office Secretary
- Gloria Broekemeier, Aurora Field Office Secretary
- Debora Runquist, Osceola Field Office Secretary
- Rita Hoblyn, Projects Department Secretary
- Carleen Light, Water Department Secretary
- DeeDee Novotny, Water Data Specialist
- Patty Connors, Secretary
- Angie Johnson, Secretary
- Erin Lee, Water Resources Technician
- Dawson Tietmeyer, Water Resources Technician
- Jessica Simants, Water Data Assistant
- Amanda McLeod, Water Resources Technician
- Jerry Petersen, Seasonal Maintenance Worker
- Kaleb Fritz, Integrated Water Program Coordinator
- Seth Norquest, Precision Conservation Specialist
- Valerie Paul, Water Conservationist

Open Positions

- Water Resources Technician (2)
- Forestry/Maintenance Worker

THE DISTRICT



New and Familiar Faces at the NRD

■ **Valerie Paul** is the district’s new water conservationist. In this role, she will be responsible for groundwater management area educational programming, presenting district information on water use efficiency topics to various audiences, and working one-on-one with producers to protect groundwater quality and quantity. Paul holds a bachelor’s degree in Conservation and Wildlife Management from Missouri Western State University. Her previous employment has been in environmental health and safety in manufacturing settings. In those roles, she served as a member of the Nebraska Safety and Health Council, and the local emergency planning commission. In her spare time, Paul enjoys running and serves on her church’s council board as well as teaches Sunday school.



Valerie Paul

Seth Norquest will serve as the precision conservation specialist, funded through a partnership between the Illinois Corn Growers Association and USDA-NRCS. Norquest is new to the NRD, but not new to the area. He has spent the last few years as a research technologist with the University of Nebraska-Lincoln, working with the On-Farm Research Network. Prior experience also includes research and sales with local co-ops. Norquest holds bachelor’s and master’s degrees from UNL in agronomy and crop science.



Seth Norquest

Norquest will be working with producers to enroll acres in the Precision Conservation Management Program, which serves farmers by providing economic analysis of on-farm conservation practices. The program aims to help farmers understand the economic values of adopting practices such as cover crops, nutrient timing, and tillage practices. PCM is funded by the USDA NRCS – Regional Conservation Partnership Program. Along with applied economics, water quality outcomes and carbon sequestration values are generated.



Drew ten Bensel



Drew ten Bensel recently returned to the NRD in a new capacity. Previously, he served as a water resources technician for nearly five years. He left to pursue graduate school in 2022 and has returned to the Upper Big Blue NRD as an engineering technician. In this role he will be inspecting dams and other NRD projects, creating maps and collecting drone imagery, and assisting with planning, design, layout, cost estimation, and construction management for new projects.

Ten Bensel holds a bachelor's degree in geography from Concordia University and a master's degree in Geographic Information Systems (GIS) and Cartography from University of Wisconsin-Madison. His previous work experience includes GIS positions with a private company in Omaha as well as with the Lower Platte North NRD. In his off hours, Ten Bensel enjoys biking, camping, and fishing.

Levi Johansen joined the maintenance department in April, just in time for tree planting season. His role includes a variety of maintenance activities for the NRD office grounds as well as the five recreation areas the NRD operates. He is also instrumental in the success of the NRD's conservation tree program, as he sorts and bundles handplant tree orders and assists in district plantings.

The NRD is fortunate to have two interns for the summer 2024 season, **Trenton Naber** and **Tanner Hawkins**. They will be doing double duty, working for the NRD's water department as well as Four Corners Health Department on water quality sampling. Trenton is a student at Northeast Community College, studying natural resources and agronomy. Tanner is a student at York University and is studying plant biology. ■



Levi Johansen



Trenton Naber



Tanner Hawkins

WATER



Groundwater Levels Continue to Decline, Yet Remain Above Allocation Trigger

■ During March and April 2024, NRD staff measured roughly 500 observation wells throughout the district to determine the average water level change, based on a weighted change from each well. For spring 2024 water level measurements, the NRD has determined that the average groundwater level change shows a decline of 3.08 feet from last spring. The spring 2024 average groundwater level is now 3.6 feet above the “Allocation Trigger.” Thus, there will be no allocation restrictions enacted at this time.

Observation wells are measured in the spring of each year, allowing the water table to rebound from the previous irrigation season. The wells that are measured are uniformly distributed throughout the district to provide an accurate profile of the average groundwater level change. Each well measured is assigned an area of the district based on distances from other measured wells. This method gives the average groundwater level change a weighted average.

In spring 2023, the NRD reported an average decrease of 2.21 feet. Spring 2022 showed a decrease of 0.24 feet on average. Fluctuations from year to year are common throughout the district. The Upper Big Blue NRD sits above the High Plains Aquifer, which stretches from South Dakota to Texas. This portion of the aquifer is dynamic and factors like rainfall and pumping affect how the aquifer reacts.

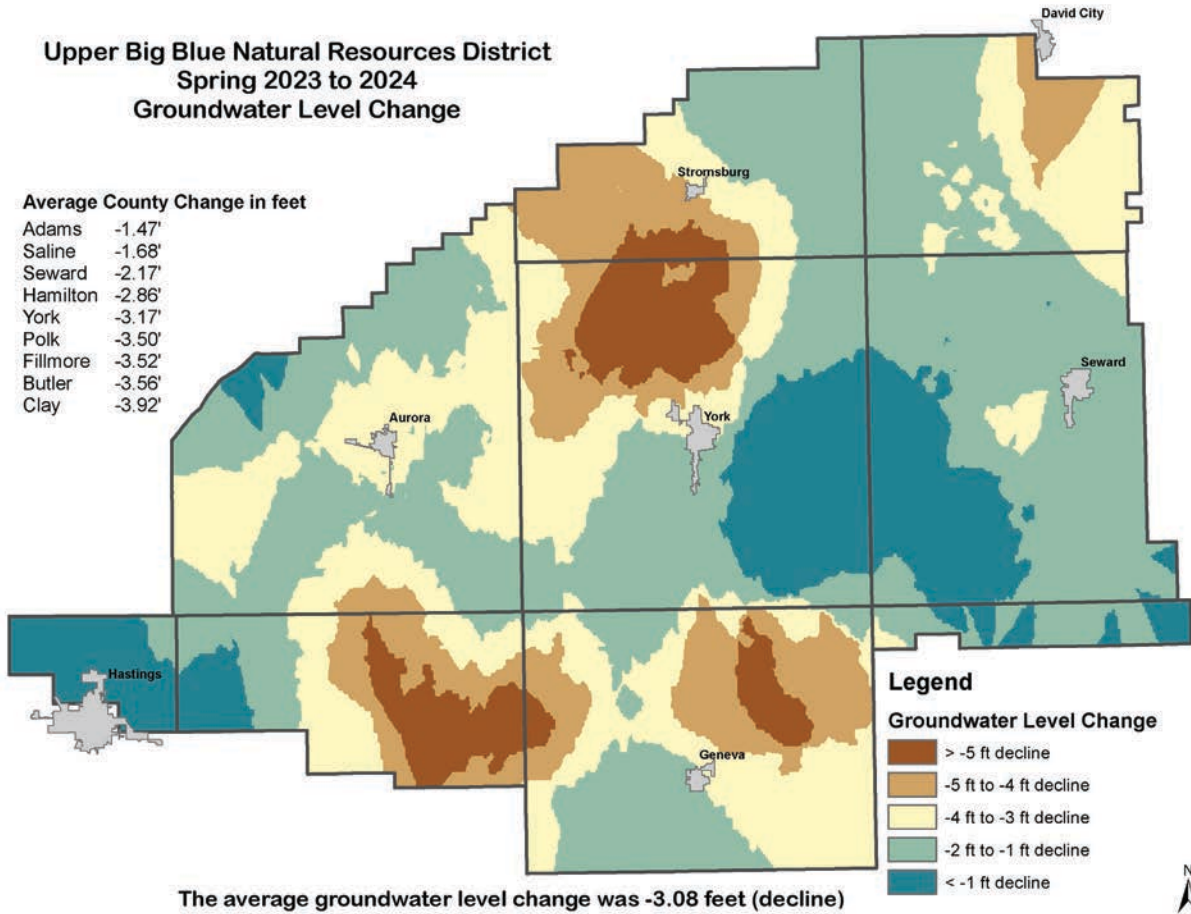
In addition to the average change, the NRD also provides a more detailed look at water levels across the district. Water levels declined most

significantly in York, Butler, Polk, Fillmore, and Clay Counties, each with a drop of more than 3 feet. Adams County saw the smallest decline, only dropping 1.47 feet. The rest of the district including Saline, Seward and Hamilton Counties all saw a decrease between 1 and 2 feet.

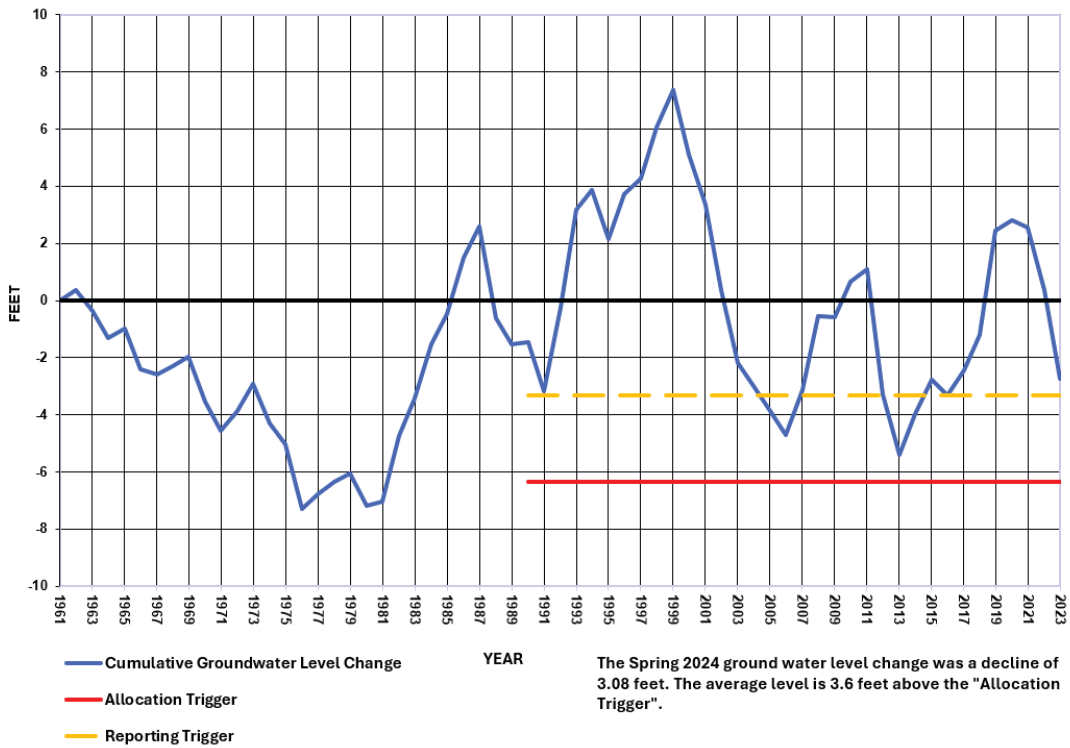
Water use records enable informed management decisions and practices

In recent years, producers have done an exceptional job of managing use of district water resources and cooperating with the NRD on conservation activities and monitoring. Along with NRD staff measuring observation wells, all groundwater users are required to annually report their water use. This is how the NRD maintains records on historic groundwater usage. Groundwater use records are very important to the district for making informed management decisions. The 2023 district average groundwater usage was 9.56 inches/acre. The district average groundwater usage is 6.2 inches/year since 2007.

The district’s goal is to hold the average groundwater level at or above the 1978 level. In 2005, the district average groundwater level reached the “Reporting Trigger,” initiating mandatory reporting of annual groundwater use to the district and certification of irrigated acres. If the district average water level falls below the 1978 level (“Allocation Trigger”), groundwater allocation will begin. ■



**UPPER BIG BLUE NRD - AVERAGE GROUNDWATER LEVELS
TRIGGERS COMPARED TO HISTORIC LEVELS
SPRING 2024**



WATER



Irrigation Withdrawals and Groundwater Levels

■ Irrigation plays a vital role in Nebraska’s agriculture. This is especially apparent in the Upper Big Blue Natural Resources District, which is the most heavily groundwater irrigated district in the state. In this district, 1.2 million acres are irrigated farmland, representing more than 12,000 active irrigation wells. However, irrigation can also put a strain on the area’s water resources when rainfall amounts aren’t enough to support a growing crop and irrigators turn to groundwater to fill the gap.

The district measures the groundwater levels each spring to determine the change from season to season. This spring the static water levels are below last spring by 2.21 feet, which is 6.68 feet above the allocation trigger. This trigger point was set by the board and is three feet above the lowest levels recorded in 1978. If the trigger point is reached in Control Area #1, the Board of Directors will vote to implement allocation.

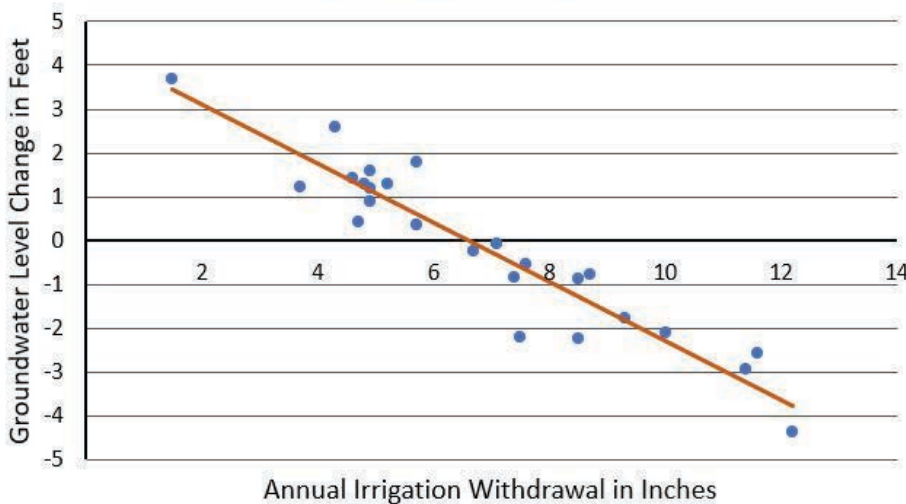
NRD staff also monitor annual water withdrawals and groundwater level changes. When historic data is graphed, it’s observable that if groundwater pumping is held at an average of just below 7 acre inches, there is little fluctuation in groundwater level (see Graph 1, right). During the 2012 pumping season, where in-season rainfall totaled 7.6”*, the average groundwater pumping was 12.2 acre inches, resulting in a groundwater level change of -4.38 feet. Comparatively, in 2022 using the same in-season rainfall data of 17.70”* inches along with the average pumping of 7.5 acre inches, a groundwater level change of -2.21 feet was recorded.

The NRD Board of Directors has safety measures in place to ensure groundwater levels are sustainable for future generations of producers. Part of those safety measures would be the triggering of allocation in the event of prolonged drought conditions resulting in groundwater level declines.

Currently, the NRD’s rules and regulations allow for 30 acre inches of irrigation water use over three years for every certified acre in the event that allocation triggers are met. Looking at more than 10 years of data (Graph 2, right), it is evident that most producers in the district would be unaffected by an allocation event at current levels.

For fields where irrigation efficiency could be challenging, there are a number of things that producers can do, especially in a time of water scarcity. ■

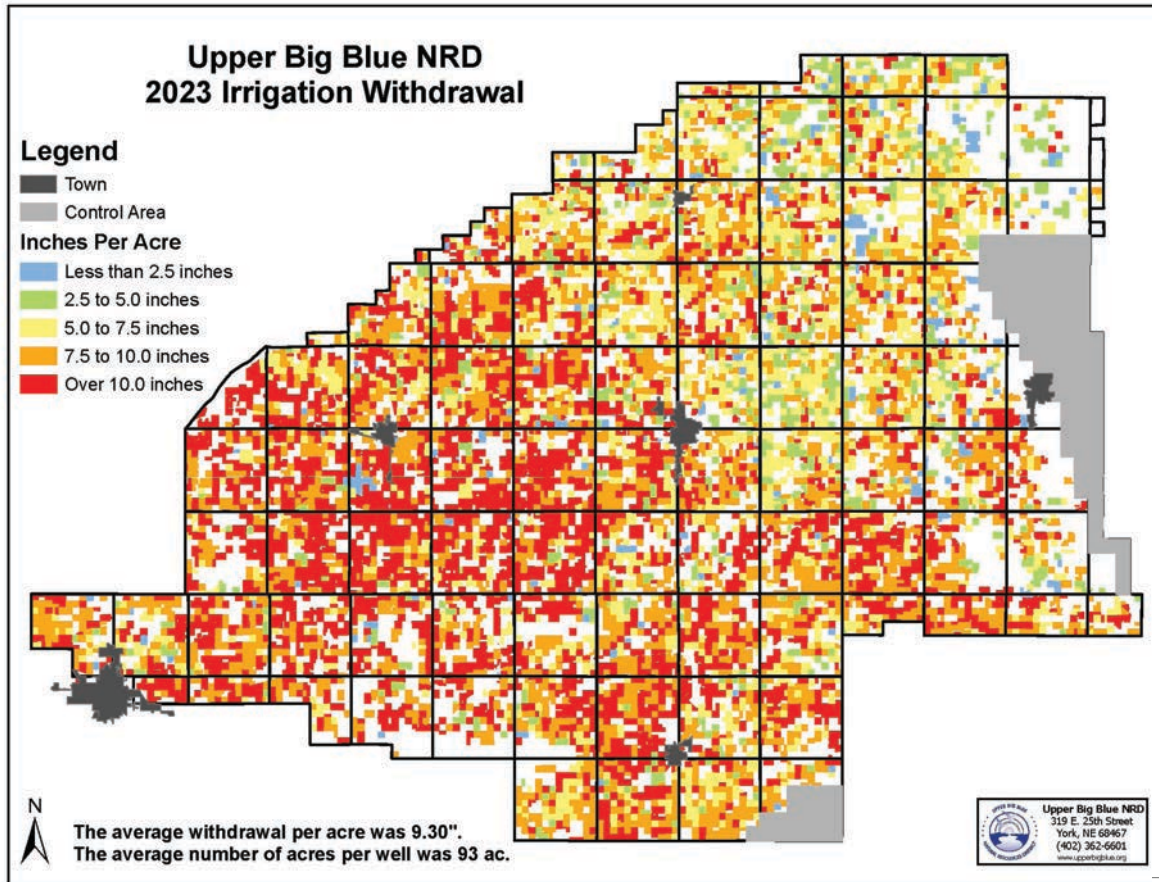
Groundwater Level Change vs. Annual Irrigation Withdrawal



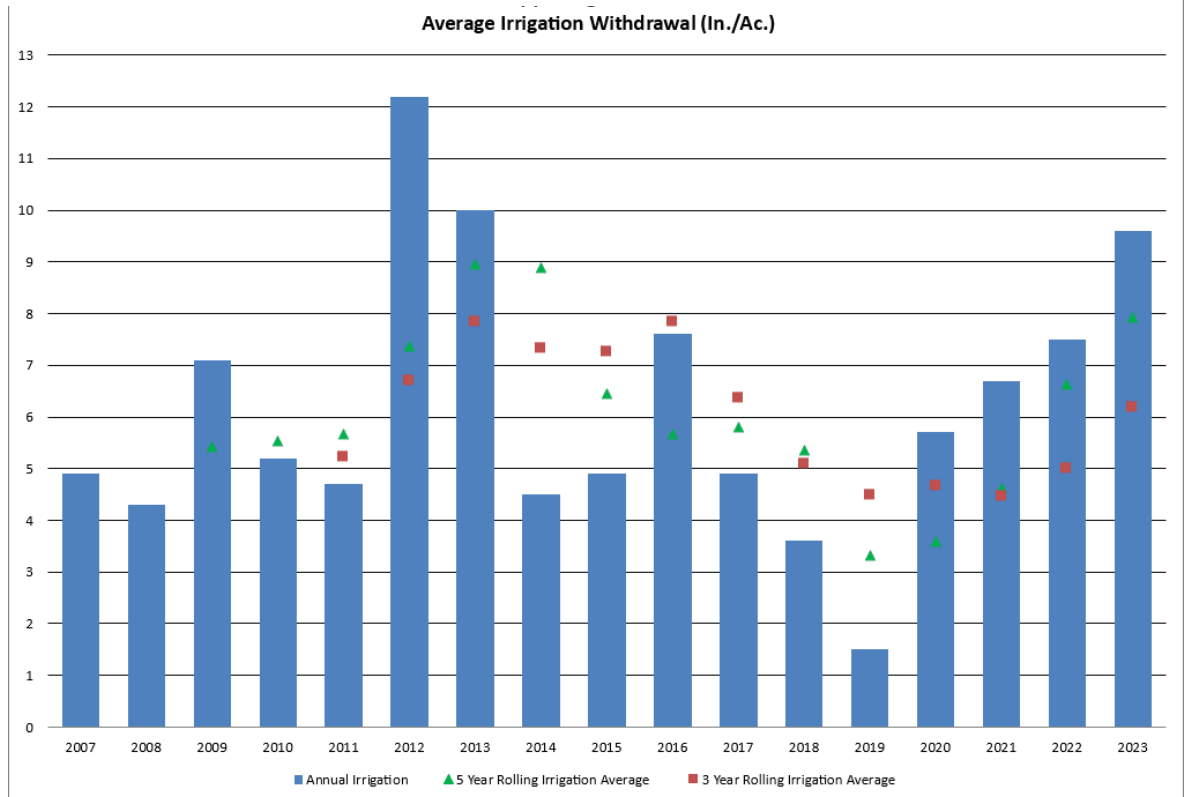
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*Calculated using the York 2W weather station hosted at Recharge Lake from April 1 – Sept. 30.

Graph 1: Annual irrigation withdrawal in the Upper Big Blue NRD plotted against groundwater level change. Based on measured data, the graph shows that if pumping is held to just below 7" annually we see little fluctuation in groundwater level change.



Graph 2: Average irrigation withdrawal in the Upper Big Blue NRD from 2007 to 2022, showing that most producers would be unaffected by allocation limits most years.



WATER



A River Runs Through It: Blue Basin River Compact Creates Shared Stewardship

■ When a river crosses state lines, things can get complicated. Who is responsible for the water that ends up downstream and who has claim to it at points along the way? Since 1971, an agreement has existed between the State of Nebraska and the State of Kansas to answer these questions and others regarding water crossing the state line. The Big Blue River Compact was established to divide the responsibility for caring for the Big Blue and Little Blue Rivers, as well as their tributaries, and to determine fair usage for both states. The compact puts rules around quality and quantity concerns, to ensure that there is sufficient water for all users for years to come.

This work is especially important during times of drought. The state compact details water allocation and streamflow maintenance protocols, to ensure each state gets its fair share. The Big Blue River

basin is geographically unbalanced, with about 75 percent of it being in Nebraska. The compact agreement allows for regular conversation and a collaborative approach to water management that ensures better stewardship of natural resources, as well as continued positive interactions between Nebraska and Kansas.

A compact meeting is held each spring with representatives from both states discussing the state of the river. These are open meetings and may be attended by any interested members of the public. Topics that have been discussed at recent meetings include precipitation and irrigation impacts on water supply, sedimentation concerns, further development in the compact area, regulations concerning use of water in the basin including permits, and hydrologic goals for the basin. ■



Notice of Adoption: Change to District Rule 5

On March 21, 2024, the Upper Big Blue NRD adopted changes to District Rule 5 – Groundwater Management Area Rules and Regulations. The amended District Rule 5 becomes effective on April 22, 2024. The geographic area affected by the Rule 5 changes includes the entire Upper Big Blue Natural Resources District except an area generally south and west of Milligan in Fillmore County, and those areas generally located east of the Big Blue River in Butler and Seward Counties. Detailed maps are available at the District Office. A general description of the adopted changes is as follows:

Chapter 15, Allocation to Agriculture Users under Paragraph 01. To add the following 01.01 Certified acres that have been converted to renewable energy site/s or to an industrial site/s shall be ineligible for and prohibited from pooling. ■

WATER



From Carbonomics to Carbon Intensity Scoring, Regenerative Agriculture Conference Explores Conservation ROI

- Sustainable, regenerative, decarbonized—no matter what you call it, Nebraska’s farmers are increasingly being asked to produce enough food, fuel, and fiber for a growing global population, while reducing their impact on the environment.

How do farmers incorporate practices that are proven to be good for the land as well as their bottom line, and what supports are in place to help them make the transition from conventional practices to more sustainable ones?

These questions were the topic of a recent regenerative ag conference held in Seward, Nebraska. More than 300 people attended the event, which was hosted by the Little Blue, Lower Big Blue, Lower Platte South, and Upper Big Blue Natural Resources Districts. The event featured keynote speakers Keith Berns, co-owner of Green Cover Seed, and Mitchell Hora, founder and CEO of Continuum Ag, as well as a local producer panel. The conference drew attendees primarily from the eastern half of Nebraska, but also saw participants from Iowa, Kansas, and Colorado.

Topics covered included soil health, cover crops, no-till, soil microbes, erosion prevention, carbon intensity scores, and potential funding for producers moving from conventional practices to regenerative ones. In addition to the speakers, attendees had time to visit with event sponsors representing a broad spectrum of products and services in the regenerative ag space.

“Carbonomics”

Keith Berns challenged the audience during his introductory keynote address with a thought exercise: Imagine if you went home today to find that half of your land was gone, and you suddenly had to make do with a lot less.

While no one is coming to steal your fields, American farmers are already in this scenario, due to soil degradation. “We’ve lost half of our topsoil



from water erosion and wind erosion,” Berns said, showing a dust bowl photo of billowing clouds of soil. “Of the soil that we have left, we’ve lost more than 50 percent of the carbon, the organic matter that’s in our soil,” which leads to a significant decline in soil productivity.

Changing weather patterns with heavier rainfalls punctuated by longer periods of drought make it more essential than ever to have a healthy functioning soil system that can take in and hold moisture, he said. How do we restore the soil to maximum productivity and increase water holding capacity? By treating the soil like a country’s economy. Berns went on to describe in detail “Carbonomics,” the economy of the soil with the currency of carbon.

Plants, animals (soil biota), and the soil each have a distinct role to play in this economy, whether they are producers or consumers. When producers and consumers are balanced and everyone is ‘working’, then you have a ‘low unemployment rate’ and a healthy system. Plants capture sunlight and use it to produce carbon. In that way, a farmer’s success is tied to how well they convert sunlight into something of direct value, like a bushel of soybeans. To improve soil productivity, you must add more carbon into the system via photosynthesis. An easy way to do this is to make sure there is something growing on the soil year-round through the use of cover crops.

When we provide a plant externally with what the soil system should provide for them naturally, you make the soil economy less functional, Berns explained, likening this scenario of increased inputs to “agricultural welfare.” When the soil economy is working, there should be enough nutrients and plant defenses occurring naturally that there isn’t a need for large quantities of fertilizer or herbicides.

“Your biggest energy expense on the farm isn’t diesel. It’s nitrogen,” Berns told conference attendees. While the atmosphere is full of nitrogen,

it isn’t directly accessible to the plants. To access the nitrogen, farmers need to support the “nitrogen factories” in the soil, including legumes as well as soil microbes like azospirillum and azotobacterium.

What kills these nitrogen-fixing microbes? Products like pesticides, fungicides, herbicides, and strong chemical fertilizers, as well as practices such as excessive tillage or monocropping.

In this way, conventional agricultural practices are reducing the natural nitrogen fixing bacterial activity of the soil. “Tillage is an act of war on your soil,” explained Berns, as it takes out the transportation and communication infrastructure of the soil.

“There’s a lot going on under our feet out there,” Berns said.

Carbon intensity scoring: the next big thing?

Being able to quantify your carbon score is essential to making regenerative agricultural practices pay.

That was the main message from keynote speaker Mitchell Hora. Hora is a seventh generation Iowa farmer and the founder and CEO of Continuum Ag, which seeks to equip farmers with data about their soil health and quantify the financial return on their soil health investments.

Data equals dollars, Hora told the farmers in the room. You can’t sell what you can’t measure. As financial institutions work toward carbon neutrality, pledging to decarbonize their portfolios, a new opportunity for agriculture is emerging.

Carbon intensity scoring quantifies the carbon footprint per agricultural unit, whether that is per bushel of soy, pound of beef, or gallon of milk. Selling a low carbon commodity is selling a data story, said Hora, who recommended that before a farmer reports any data on their practices, they understand the value of that data and how it’s used.

WATER



Changes are already evident in the carbon conversation in the biofuel industry. There's money from the federal government for clean fuel, and so a low carbon intensity score is a new unit of measure for businesses to reduce their carbon footprint. Tax credits for lower carbon intensity fuel will soon be available to ethanol plants. Farmers need to figure out their individual carbon intensity score to understand the value they are, so get a piece of the profits that are coming to businesses.

“Decarbonizing agriculture is a huge opportunity to bring money to middle America,” Hora said. “Farmers will absolutely rise to the occasion to decarbonize, but we want our fair share.”



According to the US Department of Energy, the typical bushel of corn has a carbon intensity score around 29g GHG/MJ (greenhouse gas emission per megajoule). However, according to Hora’s calculations, the average farmer’s carbon intensity score in their network is around 11g GHG/MJ. Due to conservation practices including long term use of cover crops and no-till, the Hora Farm’s carbon intensity score is -4.1g GHG/MJ. Buying corn with a lower carbon intensity score will increase the value to the ethanol plant when it comes to future tax credits, worth millions each year. Therefore, products with a lower carbon intensity score will be able to be sold at a premium.

Beyond the future financial windfall from decarbonization that Hora predicts for the agricultural industry, regenerative practices also make sense financially in the near term. “Soil health principles have been marketed wrong. They aren’t just defense against problems like erosion and lost productivity. They are offensive management tools,” he said, noting how reduced tillage and inputs, as well as increasing plant diversity have improved his family’s farm.



Building soil organic matter makes you resilient to unpredictable weather, said Hora. Cover crops will keep your soil alive when you aren't getting rain and will keep your soil from running off the farm when there's too much rain. A cheap measure of soil health on the Hora farm is that they haven't had to replant a crop due to flooding in ages. Their water infiltration rate is an incredible 4 inches in under 5 minutes.

Hora is a realist. He recognizes that sometimes inputs like anhydrous and Roundup are needed, but they are damaging to the soil system and come with a cost, so they should be used as a last resort. “We are on this journey, and it's a long journey,” he said. Practice changes take patience and humility. He recommends that farmers new to these practices implement them slowly and expect slow results, allowing for flexibility to experiment and make changes over time.



Producer Panel Insights

One of the highlights of the event was a chance to hear from Nebraska farmers, discussing their implementation of regenerative practices and the lessons they've learned through trial and error on their farms.

Dennis Fitzke, who farms near Edgar, reported on how cover crops and no-till pay off in a very dry year. "How much rain did you get? I definitely got it all," he likes to quip. Mycorrhizal fungi can access water for your crop even when there hasn't been rain, he said.

Fitzke began no-till in 1994 and continued doing it because it made him more money for less work. He joked that he has found a financially successful model of farming that goes like this: no tillage + low inputs + no insurance + no debt = more profit.

Fitzke noted the advice of soil experts who say a farmer should always carry a shovel and a soil probe, because what they need to know is underground. "There's no silver bullet for profitability," said Fitzke. You can't implement one new practice and assume that's what will make a difference. Instead, it takes a whole systems approach, because each practice works together, cascading, and compounding forward.

Hank McGowan, who farms in McCool Junction, discussed the challenges of changing family systems. He farms with his father, who was initially resistant to adding conservation practices on their acres. McGowan started planting cover crops to provide an additional source of forage for his cattle and soon discovered that the practice had other benefits, including a reduction of erosion on his roughest land. "If you're a livestock producer, this is a slam dunk," he said.

McGowan recommended that farmers that want to implement regenerative practices take their worst farm and add cover crops there first, as it is where they would have the least to lose and would potentially see improvements fastest. McGowan also discussed his latest efforts around making compost to increase soil microbial activity.

Aaron Studebaker, who farms near Davey, Nebraska, has been using no-till in some capacity since 2006. He recommends cereal rye as a "bulletproof" cover crop, especially useful for weed suppression. "We are running out of chemical options for weeds," he said, which is why planting rye as a cover crop or a second cash crop in a double cropping system can be so valuable. Another advantage Studebaker has seen with cover crops is erosion control on tricky contoured fields. Additionally, the harvested rye reduces his need for other feed for his cattle through the winter.

'We've always done it that way' is a toxic mentality for a farmer, said Studebaker, who recommended making SMART goals: specific, measurable, attainable, relevant, and timely. Once the goals are set, hold yourself accountable. How are you improving year over year? "If you can't measure it, you can't improve it," he said. ■



WATER



Chasing Profit: Nebraska Farmer Uses Conservation to Improve Soil and Financial Returns

- If your idea of a successful Nebraska farmer is one who has the biggest equipment, and whose fields are regularly turned, black soil with nothing but corn in perfect rows all the way to the horizon, then Todd Dzingle's operation might disappoint you.

Dzingle's corn and soybean fields in Hall, Adams, Clay, and Sherman Counties includes no-till on all of his acres and cover crops on the majority of them. "I'm after soil health, and profit per acre along the way," he said. The challenge he has set for himself is to use the least amount of inputs while raising quality yields, making the return on investment for each bushel as high as possible.

"I'm happy with the yields, and each year I'm seeing better yields as I'm increasing my soil health. I want my investment per acre to be as slim as possible without sacrificing yield," he said. Like any new practice this takes a little time, patience, and a positive attitude.

Dzingle applies nitrogen sparingly, opting instead to do all he can to boost the health of his soil, with the understanding a well-functioning soil system is the key to success. "I want to take care of the land. I'm not farming year-to-year. I'm looking five years plus down the road," he said.

Dzingle grew up farming with his grandpa and dad and later worked with local farmer Kurt Unger on his farm. He started his career as a crop consultant with Servi-Tech, helping other farmers make decisions about their most important resource, their soil.



By 2009, he was ready to see for himself if there was any power in what he had been preaching. He rented 90 acres of ground from his dad and started farming his own way, including transitioning to conservation tillage. Over the years, he added more acres to his operation and more practices to those acres.

For some, the multigenerational aspect of farming can be a barrier to getting started with conservation practices, as there is pressure from the previous generations to farm 'the way we've always done it.' Dzingle said he was fortunate that he didn't have that problem, as his dad was supportive of trying out new strategies along with Unger.

Informed and equipped by soil health experts like Dean Krull, Gabe Brown, Ray Archuleta, Keith Berns, and advice from Kurt and Lisa Unger, Dzingle started experimenting with cover crops in 2016. He quickly discovered that using conservation practices requires courage and constant learning. "If you're not messing up, you're not trying hard enough," he said. "You have to manage cover crops. I've had some bumps and bruises, but nothing that's going to make me stop trying."

Early on in his experimentation, he added a spring mix cover crop on a gravity irrigated area on a pivot corner, planting green. "Everything looked great, and then it just turned super dry and windy for about three weeks," he recalled. "The oats pulled some moisture in and the ground started to crack and the corn started to suffer."

The corn ended up being shorter on the corners, however, “It still ended up yielding right with the rest,” he said. The lesson he learned? “I should have had the cover crop sprayed sooner.” And yet, he did see excellent weed suppression in the cover cropped area and the next time he hilled the ground he was amazed at how loose the soil was. “There was a positive out of the mistake. That was a definite lightbulb moment for me. I could see how the tough clay had structure and really softened the ground from the cover that was planted.”

Another lightbulb moment for Dzingle was during the intense flooding across much of Nebraska in the spring of 2019. When the water receded from his farm in Sherman County, he noticed where he had planted rye the previous fall, he didn’t have soil loss, though the sandy soil was prone to erosion on the slopes. “I was really impressed that I just didn’t have the washing or the issues where I had the rye. That really sold me,” he said.

By the 2020 growing season, Dzingle was all in on cover crops. He purchased a 30-foot no-till drill and significantly increased the number of acres he had in cover crops.

Doing more with less is the strategy that excites Dzingle when it comes to farming. The longer he farms this way and the more comfortable he becomes with experimentation, the more willing he is to push the envelope. For example, he likes to wait until the last possible moment to terminate cover crops to get the maximum benefit of those plants building biomass and keeping the soil active. However, for a farmer who is just getting started with cover crops, he recommends early termination, especially if they are unsure about the timing. “Just pick a date and spray,” he said, as you’re still going to be better off having the cover crops on the ground for even a short amount of time than not having them at all.

How does he know if his investment in soil health is paying off? Other than the obvious benefits he has seen year after year including improved soil structure and infiltration rates, the proof is in the lab results. He samples annually and has seen a steady increase in soil organic matter. He also bases his fertilizer strategy on what the test results tell him he already has available in the soil. After all, fertilizer is expensive,

and since his goal is to get the most return with the least investment, it makes sense to add only as much nitrogen as is needed.

These continuous improvements motivate Dzingle to do more for the soil. In the upcoming year, he plans to move from a single species cover crop to a multi-species mix. Eventually, he plans to integrate livestock into the operation.

While he jumped into conservation farming practices with both feet, he suggests that others set their own pace, even if that just means a small amount of acres in the first year.

“Start with what you are comfortable with and have an open mind,” he said. “Commit to a course of action for three to five years before you decide if it is working or not.” He also recommends getting in touch with local resources and programs through agencies that offer support and funding, such as NRCS and NRDs. “They have been good to work with. No one has been pushy. They are encouraging and supportive. They like to see you making the changes.”

While no-till with cover crops and livestock is the ideal, Dzingle says that one tillage pass is far better than three, and cover crops on a few acres is much better than none. He encourages others to look more closely at what they are doing to see where there could be improvement--and that goes for landowners as much as operators. “Landowners renting out their ground need to work with the producer. You shouldn’t put it all on the farmer to make these changes,” he said, because if it’s your soil, you should be investing in it. Rented land can create a disconnect from the soil where neither party truly feels like they are a steward.

The biggest hurdle for some farmers in implementing conservation practices is the fear of what the landlord or others will say, especially if they make a mistake, Dzingle said. He tells other farmers to “have blinders on to begin with, be confident and okay with seeing your fields look different from conventional practices, the end product will still turn out.”

Most are hesitant to step outside the boundaries of conventional agriculture, he said. But as for him, “It feels good to work with nature and getting the soil back to a healthy state while improving yields with less inputs.” ■

WATER



Nitrates in Groundwater Management Zones Continue Upward Trend; Zone 4 Moves to New Management Phase

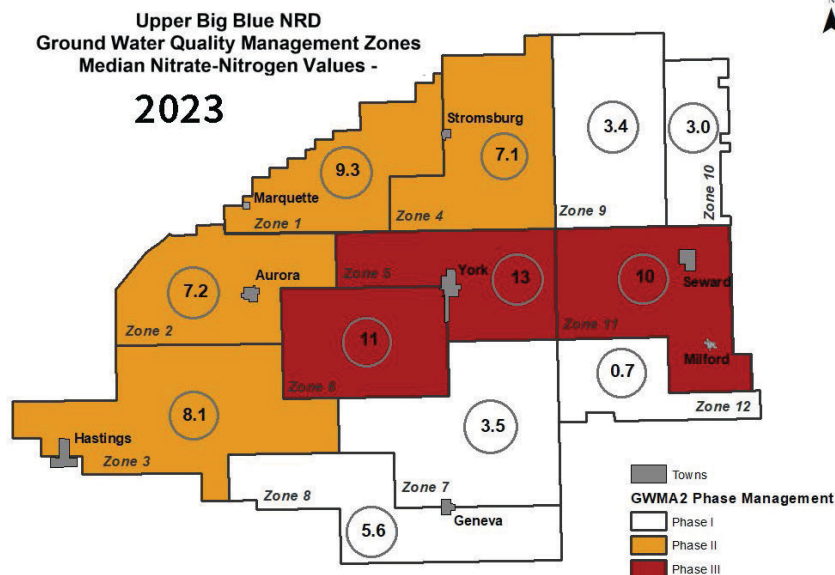
■ On September 21, 2023, the Upper Big Blue Board of Directors voted to move Zone 4 to a Phase II Management Area, beginning January 2024.

This was based on the monitoring well sample results for the summer of 2023, which showed a median nitrate level of 7.1 ppm for the zone. The following townships will now be subject to Phase II requirements:

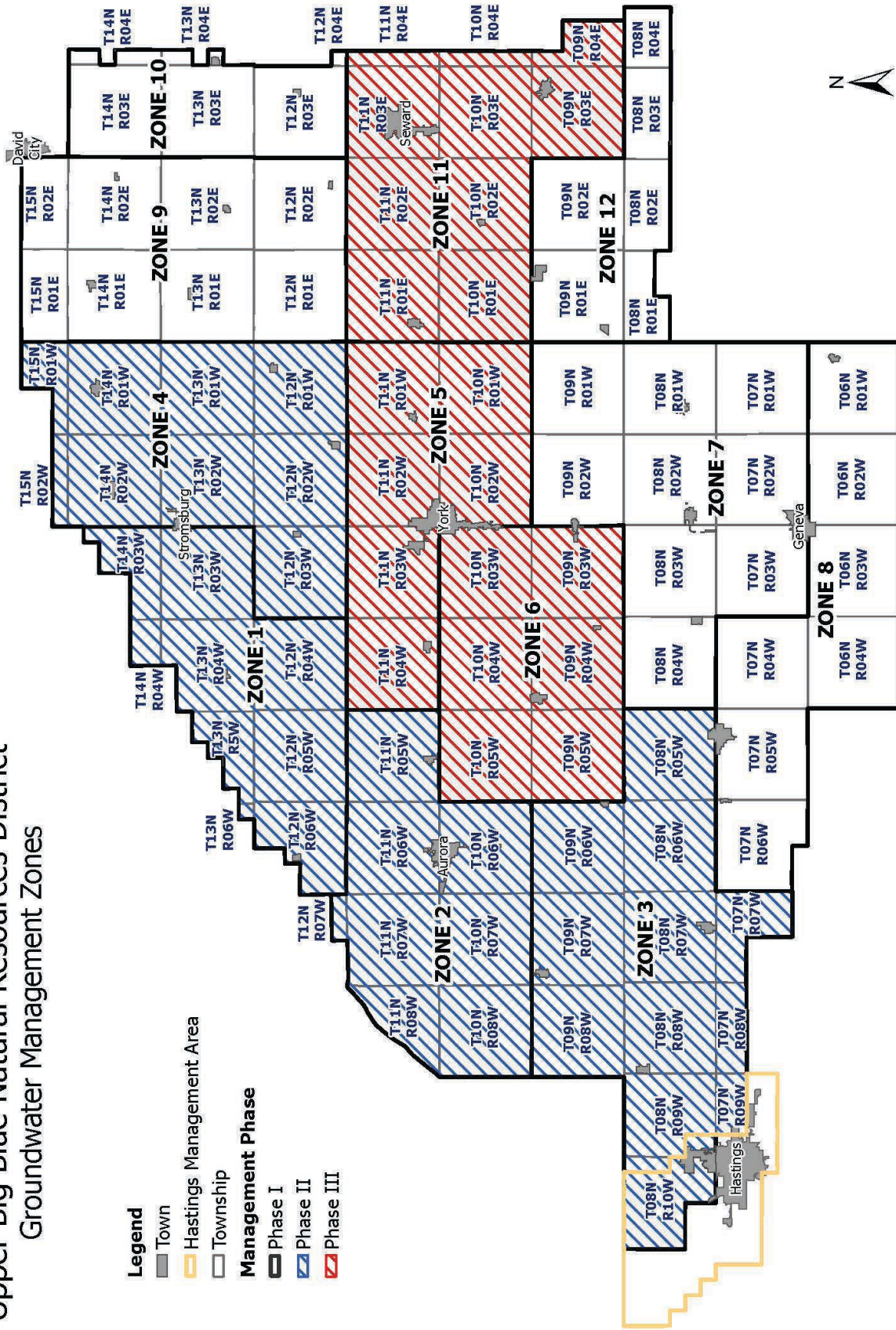
- York County: Stewart (12N-01W), Thayer (12N-02W), Morton (12N-03W)
- Polk County: Map North Canada (14N and 15N-1W), Map North Osceola (15N-2W), Map South Osceola (14N-2W), Map South Canada (13N-1W), Map East Stromsburg (13N-2W).

All operators of land within a Phase II Management Area are subject to the following requirements:

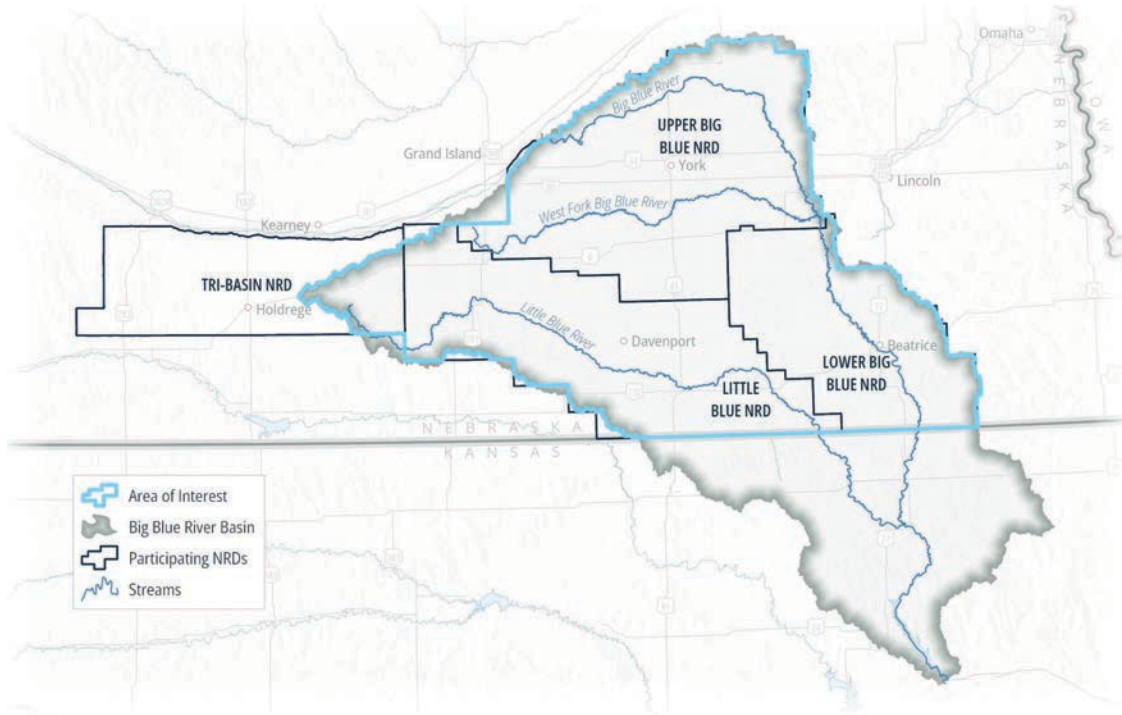
- Nitrogen Certification Training once every 4 years
- Irrigation scheduling equipment is required in at least one field in a Phase II area
- Soil samples are required in years when corn or sorghum will be grown following a non-legume crop and/or when livestock, municipal or industrial waste has been applied within the last 12 months
- University of Nebraska Recommended Nitrogen Fertilizer Application Rate
- An annual report is required for all dryland and irrigated fields by April 1



Upper Big Blue Natural Resources District Groundwater Management Zones



WATER



Blue River Basin Model Project Complete

- After several years of development, the Blue River Basin model is complete and is already being used to evaluate possible water use impacts in the Upper Big Blue Natural Resources District.

Given the drought conditions in much of the district in the last growing season, this resource is especially timely as it will help the NRD board to “protect water supply for all beneficial purposes,” one of the 12 areas of responsibility shared by all NRDs and dictated by state statute.

The Upper Big Blue NRD has partnered with the Nebraska Department of Natural Resources and three other NRDs in the Blue River Basin in this ambitious modeling project. Since 2017, the group has been working with an engineering firm to conduct a comprehensive survey of the Blue River and tributaries to identify the extent to which they

are hydrologically connected—where groundwater and surface water interact. The balance between surface water and groundwater is a vital data point to understanding the water system in the district.

The model will help the participating Natural Resources Districts (NRDs) and the Nebraska Department of Natural Resources efficiently evaluate the potential impacts of current and future groundwater pumping on aquifer levels and stream flows.

By collecting information about stream flow, groundwater recharge, land use in the basin,



drought patterns, and average rainfall and water use, engineers created a computer model that allows users to run scenarios to test different variables. While there are planned improvements to the model, including the addition of stream gauges at additional sites, the model is already providing useful results. The model was recently utilized to determine the impact of a proposed fertilizer plant development in Hamilton County, which would be classified as a Large Water User. Such well permit applicants are required to complete a hydrologic evaluation to make sure that the water quantity in the area is sufficient to meet the needs of the business development without causing aquifer depletion that would prevent existing users from accessing the water they need, including domestic and irrigation wells.

The model’s primary area of interest covers the entire Upper Big Blue, Lower Big Blue, and Little Blue NRDs as well as the Little Blue River Basin within the Tri-Basin NRD. The model also includes geographic areas around the perimeter of the NRDs (including areas in northern Kansas), but these perimeter areas are not modeled in detail.

The model was developed in part to estimate potential stream flow changes resulting from changes in aquifer levels and pumping, as well as to determine the appropriation status of different areas of the basin. Modeling in the Upper Big Blue Natural Resources District started in 2005 with an effort to produce a similar tool for the Platte River. At that time, the Nebraska Department of Natural Resources was looking for data about whether the Platte River basin (surface and ground water) was fully appropriated (meaning the balance of water use and water demand indicates that increased planning is needed) or over-appropriated. Part of the district between Phillips and the Platte River was deemed fully appropriated at that time based on the results of the modeling project. This outcome made apparent the value of groundwater modeling

for planning and management.

When that study was complete, the focus shifted from the Platte River hydrologic interconnection to the Blue River. The newest model created relies on updated data and methodologies, reflecting the best available science, providing a more robust model.

The Blue River Basin Model has two main parts. The first part analyzes groundwater needs for agriculture, municipalities, and industries as well as the aquifer recharge, end-of-field runoff, and stream flow that results from these uses. The second part uses the data on groundwater needs to analyze the impacts of pumping on the aquifer and stream flow.

So, how accurate is the model and what are its limitations? The model was “calibrated” using available historical records of groundwater levels, pumping, and stream baseflows in the Blue River Basin from 1940 to 2017. The goal of calibration was not to precisely reproduce every aspect of the historical record – no model can accomplish that. However, the calibration results showed accurate overall matches with historical records on a regional basis.

The model focused on regional hydrologic processes and water management. To zoom in and see local-scale information, model refinement in the area of interest would be needed. Similarly, calibration results were better in some places than others. Additional data will be collected moving forward to improve model calibration.

Now that the model is completed, the data regarding hydrologic connection will become part of the NRD’s voluntary Integrated Management Plan. Having this plan in place will allow the NRD to apply for additional funding through the Nebraska Water Sustainability Fund to make improvements in the district to reduce the threat to the water supply. ■

WATER



Private well water quality assistance available

- The Upper Big Blue Natural Resources District is launching a new program to address drinking water quality concerns in the district. The program will provide up to \$500 per home for a point-of-use reverse osmosis (RO) system on properties where the drinking water well exceeds the level of nitrate deemed safe by the Environmental Protection Agency (EPA), which is 10 PPM.

The State of Nebraska also had a reverse osmosis funding program for private well owners. A key difference for the NRD’s program is that it does not require that the well be registered. Additionally, the water samples will be tested locally for free in the NRD lab, rather than having to be shipped to a state lab. These changes should remove some of the main barriers to access that have been reported by district residents.

The state program provided up to \$4,000 per application for a whole-house RO system, while the NRD funds provide a smaller amount for a point-of-use system.

Once installed, yearly maintenance and operation costs of a point-of-use reverse osmosis system run between \$50 and \$100 a year for filter membranes which must be regularly replaced. Maintenance of the system including replacement filters will be the

responsibility of the well owner, not the NRD.

A reverse osmosis system is one of the safest and most effective forms of water filtration available. Using pressure, water is forced through semi-permeable filters, resulting in a high degree of filtration and contaminant reduction. Contaminants bind to the filter media, allowing clean water to pass through. Reverse osmosis water filtration systems connect to existing water lines under a sink or refrigerator water dispenser. Properly maintained reverse osmosis water filtration systems will remove drinking water nitrate, whereas many other home filtration methods cannot.

Nitrogen is a naturally occurring element. However, elevated levels of nitrogen are present in Nebraska due to the use of fertilizer. Excess fertilizer moves through the soil profile and eventually ends up in the groundwater that most Nebraskans use for



drinking. On the way to the water table, it also activates other elements and compounds such as arsenic, selenium, and uranium, which are naturally found in the soil, but become a health hazard for humans when they end up in the water supply. According to research from the University of Nebraska Medical Center, poor water quality due to these contaminants has been linked to a number of adverse health outcomes, including pediatric cancers and birth defects.

While municipal water systems in Nebraska communities are required to provide water that meets EPA standards for these contaminants, private well users in Nebraska are responsible for maintaining the integrity of their own water supply. They should have it tested annually for contaminants—a process that residents of the Upper Big Blue NRD can do for free through its walk-in water testing program (which tests for nitrates and bacteria) and at-home test kits (which test for nitrate, nitrite, and phosphorus).

For full details on the NRD's Point of Use Reverse Osmosis Water Filtration System Pilot Program as well as application materials, visit www.upperbigblue.org/RO. ■

Cost-Share Program Changes

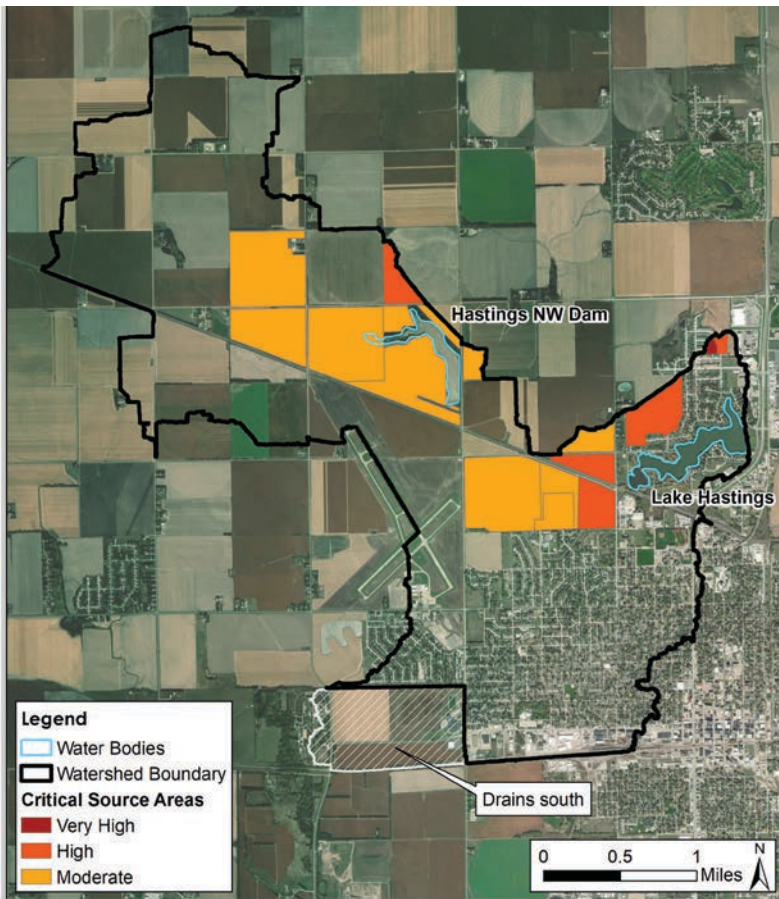
- The amount of funding available for some NRD cost-share programs is increasing, including for land treatment, well decommissioning, and flow meter repair.
 - Aquifer Quality Well Abandonment Cost-Share Assistance Program (AQWACAP): the cost-share amount for well decommissioning will increase from the current rate (60 percent of total cost, up to \$750), to 60 percent of total cost, up to \$1,000 per well, effective July 1, 2024.
 - Flow Meter Repairs: The cost-share amount for water flow meter repairs will increase from the current rate (50 percent of total cost up to \$300), to 50 percent of total cost, up to \$500 per flowmeter, effective July 1, 2024. The program will allow for the replacement of electronic flow meters which are not repairable with new or refurbished mechanical flow meters. The maximum cost-share per landowner for flow meter repair is \$1000 per fiscal year. The minimum cost-share payment is \$100.
 - Land Treatment: The Private Dams Program provides planning, design and financial assistance for the construction or reconstruction of dams located on private property. Public benefits include flood control, sediment and erosion control, water conservation, groundwater recharge, and fish and wildlife enhancement. The cost share amount has increased from 75 percent up to \$50,000, to 75 percent up to \$75,000 per project. ■

FORESTRY & PARKS



Lake Restoration Projects Considered

- A better habitat for animals and better recreational and educational opportunities for district residents are some of the desired outcomes for lake restoration projects being discussed in Hastings and York.



Lake Hastings Watershed Management Plan

Lake Hastings is a 76-acre lake that spans the boundary lines between the Upper Big Blue and Little Blue NRDs. High concentrations of phosphorous and nitrogen have been found in the lake, and fish tissue samples have detected mercury and PCBs. The lake has been classified as “impaired for aquatic life” since 2006 and “impaired for aesthetics” since 2012. Beginning in 2022, the City of Hastings in collaboration with the two NRDs, began community conversations to learn how residents would like to use the lake in the future and what to prioritize in a restoration project.

A study was conducted by JEO Consulting group in 2023 and 2024 to propose a plan for lake restoration focusing on watershed improvements. Priority best management



practices identified in the plan included urban and agricultural improvements, such as:

- Irrigation water management
- Nutrient and manure management
- No-till
- Cover crops
- Grassed waterways/riparian buffers
- Grazing management
- Urban BMPs (pet waste signage, low/no-phosphorus fertilizer adoption, bioswales, rain gardens, porous pavement)
- Stream restoration/stabilization (small section just above the lake)

According to the study: “Focus areas within the watershed provide a starting point for targeted BMP implementation. With the small size and urban-rural land use of the Lake Hastings watershed, the following focus areas were identified:

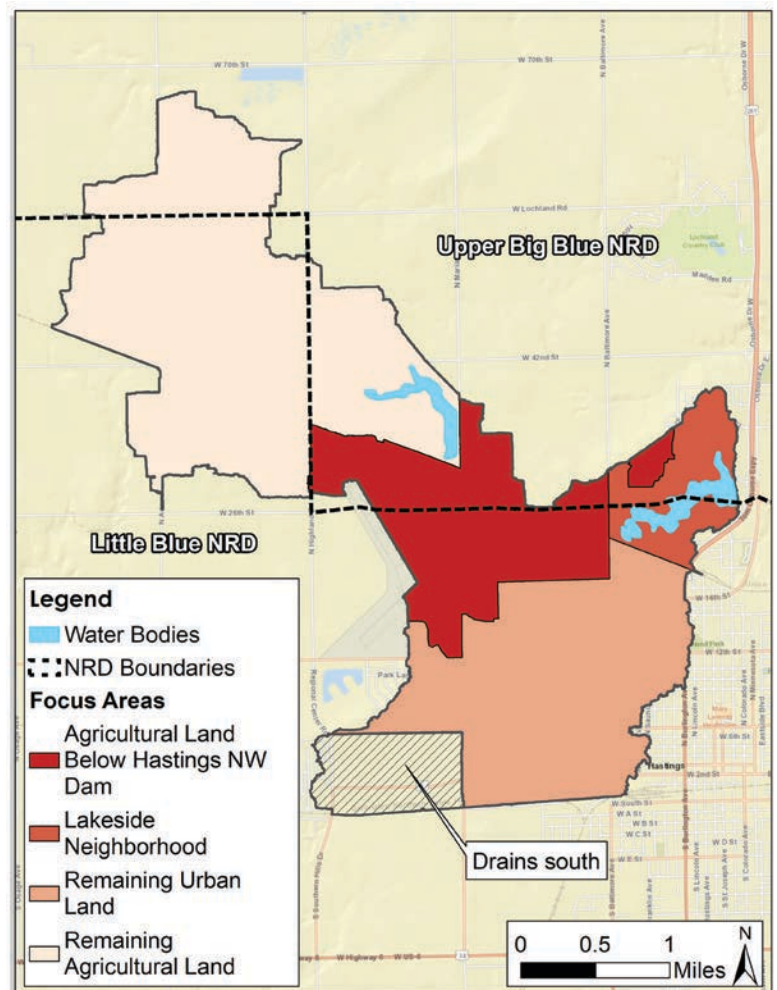
- Agricultural land below Hastings NW Dam (1,057 acres or 19% of watershed)
- Lakeside neighborhood (387 acres or 7% of watershed)
- Remaining urban land (1,494 acres or 28% of watershed)
- Remaining agricultural land (2,490 acres or 46% of watershed)

By organizing the watershed into these areas, it can be easier to identify locations to implement BMPs and target various outreach and education strategies. Agricultural land below Hastings NW Dam and the lakeside community around Lake Hastings should be seen as the highest priority for implementation, due to proximity, pollutant availability, and stakeholder engagement. Urban BMPs beyond the lakeside community will also be crucial to meeting water quality goals."

The study also identified conceptual in-lake management practices that will address impairments to aesthetics caused by sedimentation. These practices include

renovation of the existing sediment storage basin, addition of a rock riprap weir at the lake inlet, riprap breakwaters and flow check structures, and sediment removal at specific areas of the lake to 1) improve and restore boat access, 2) improve shoreline fishing, 3) deepen the lake to decrease suspension of lake bottom sediment and nutrients, and 4) improve aquatic and fish habitat by increasing depth and bottom diversity.

These in-lake improvements would have several goals: 1) at least 25% of the lake is 12 feet deep or greater, 2) 50% of the lake is at least 8 feet deep, and 3) no more than 25% of the lake should be 5 feet deep or less.



FORESTRY & PARKS



Other improvements addressed in the study included aquatic vegetation management, upstream wetland creation, shoreline protection and stabilization, drainage channel rehabilitation, creation of a no wake zone in the lake, and initiating an outreach and education program to increase the public’s understanding of these improvement measures.

Recharge Lake Water Quality Improvement Study

Recharge Lake is a 44-surface-acre lake which stores 310 acre feet of water on a tributary of Beaver Creek. It is part of Bruce L. Anderson Recreation Area, which is the highest use recreation area owned by the Upper Big Blue NRD. The recreation area hosts hundreds of campers through the summer months, as well as regular day-use throughout the year for fishing, boating, picnics, and nature hikes.

The public as well as the board and staff of the Upper Big Blue NRD have been concerned about water quality at Recharge Lake for many years. Once an abundant fishery, it is now primarily a place to catch catfish and crappie, as the level of turbidity in the water makes it poorer habitat for many species of more desirable fish. For several years, the NRD has offered additional cost-share incentives for BMPs in the watershed above the lake to reduce sediment load entering the lake from surrounding agricultural acres. This approach has had limited success.

In 2023, the NRD commissioned a study with the Flatwater Group to determine what could be done to improve the water quality via in-lake actions. In spring 2024, the report results were presented for the board of director's consideration.

Improvements considered by the study include a near-lake wet detention pond at the west end

of the property on either side of Road K; in-lake wetlands with a possible floating treatment wetland structures, earthen baffles, and weir structures; reservoir deepening in the main part of the lake using targeted excavation; rebuilding the island and installing other shoreline protection measures to reduce erosion; and adding aquatic habitat structures. These measures would increase the storage capacity of the lake by 20 percent and make the lake both better for fish habitat and improved for angler access.

Once the board decides how to proceed, the NRD would potentially apply for grants to fund some of this restoration project.



CONCEPT DESIGN COMPONENTS

- Near-Lake Sediment Basin
 - Traps sediment and retains nutrient runoff from the watershed
 - Earthen baffle structures forces water to flow over a long distance, which improves trapping performance
 - Targeted excavation areas to facilitate future maintenance
 - Floating treatment wetlands capture nutrients and provide aquatic habitat for fish and insects
 - Weir overflow structure constructed of rock riprap and/or articulated concrete block matting
- In-Lake Treatment Wetlands
 - Designed to trap sediment becoming shallower over time to promote establishment of emergent wetland vegetation - no excavation is planned for this area
 - Wetland vegetation provides aquatic habitat and filtering of sediment and nutrient runoff
 - Also includes earthen baffles and weir overflow structures to enhance wetland functions
- Reservoir Deepening
 - 55ac-ft of excavation increases the storage capacity by 20%
 - 25% of the reservoir has an over-wintering depth of 12ft or greater to improve fishery and water quality
 - Deep water excavation areas (6ft) are targeted in areas with highest sediment thickness
 - Shallow water excavation areas (4ft) target sediment accumulation in the upper reservoir
 - Aquatic structures include under water rock piles, log cribs, and gravel beds to improve fishery
- Island Restoration / Shoreline Stabilization
 - Place rock riprap along shorelines and around island to protect against wave erosion
 - Island restoration provides a cost-effective location to place spoil materials from reservoir deepening
 - Rock jetties provide angling access and erosion protection for adjacent shorelines by reducing fetch lengths and wave run-up
 - Shoreline protection alternatives such as block and sheetpile seawalls provide angler access opportunities for youth and ADA

PROJECTS



Hazard Mitigation Process Underway

- From floods to blizzards, tornadoes to cyber-attacks, there are many potential hazards facing Nebraska’s communities. While some hazards can’t be prevented, proper planning can lessen the severity of their impacts to people, property, the environment, and the economy.

To that end, the Upper Big Blue Natural Resources District is in the process of updating its Hazard Mitigation Plan. The last time it was updated was 2019. A Hazard Mitigation Plan is a community-driven, living document that assesses vulnerability to natural and manmade hazards and identifies mitigation strategies to reduce vulnerability. As this plan is being updated, residents and representatives from organizations across Hamilton, Seward, and York counties were encouraged to participate in a survey to identify the areas of greatest concern.

The information provided to the NRD through survey responses will guide district staff as they seek funding from state and federal sources to implement mitigation actions that address the threat of possible hazards. Specific mitigation actions that could be implemented will depend on the needs of individual communities, but some common projects include backup generators, emergency sirens, drainage

improvements, and public education programs.

In addition to the survey, the NRD hosted a series of public meetings, inviting all communities and stakeholder organizations to participate and to provide input to the planning process. This public engagement was to ensure that the mitigation efforts included in the plan document are appropriate and consistent with the needs of organizations and communities. Representatives from jurisdictions such as a county, city, village, or district (including school or fire district) were especially encouraged to participate in these public meetings, as once they are part of an approved plan, they become eligible for up to a 90 percent cost share from the Federal Emergency Management Agency (FEMA) for a variety of projects listed in the plan. ■



Table LT-1: Land Treatment Projects per County 2024

| County | NRD | NSWCP | Total | % of Total |
|--------------|-----------|-----------|-----------|-------------|
| Adams | 0 | 1 | 1 | 2.4% |
| Butler | 4 | 1 | 5 | 11.9% |
| Clay | 0 | 0 | 0 | 0% |
| Fillmore | 0 | 6 | 6 | 14.3% |
| Hamilton | 6 | 1 | 7 | 16.7% |
| Polk | 1 | 1 | 2 | 4.8% |
| Saline | 0 | 1 | 1 | 2.4% |
| Seward | 2 | 3 | 5 | 11.9% |
| *York | 7 | 8 | 15 | 35.7% |
| TOTAL | 20 | 22 | 42 | 100% |

Table LT-2: Expended Land Treatment Funds per County 2024

| County | NRD | NSWCP | Total | % of Total |
|--------------|--------------------|--------------------|---------------------|-------------|
| Adams | \$0 | \$4,631.58 | \$4,631.58 | 4.3% |
| Butler | \$16,000 | \$7,500 | \$23,500 | 22% |
| Clay | \$0 | \$0 | \$0 | 0% |
| Fillmore | \$0 | \$11,395.02 | \$11,395.02 | 10.7% |
| Hamilton | \$9,667.87 | \$1,595.18 | \$11,263.05 | 10.5% |
| Polk | \$500 | \$787.66 | \$1,287.66 | 1.2% |
| Saline | \$0 | \$1,122.59 | \$1,122.59 | 1% |
| Seward | \$6,318 | \$14,328.55 | \$20,646.55 | 19.3% |
| *York | \$9,325.52 | \$23,803.47 | \$33,128.99 | 31% |
| TOTAL | \$41,811.39 | \$65,164.05 | \$106,975.44 | 100% |

* Denotes that 100% of county land area is located within the Upper Big Blue NRD.

PROJECTS

Table LT-3: NUMBER of Practices By Type of Land Treatment 2024

| Practice Type | NRD | NSWCP | Total # | % of Total |
|----------------------------|-----------|-----------|-----------|-------------|
| Terrace System | 2 | 3 | 5 | 11.9% |
| Mechanical Outlet | 0 | 0 | 0 | 0% |
| Dam | 0 | 0 | 0 | 0% |
| Grade Stabilization | 0 | 0 | 0 | 0% |
| Diversion | 0 | 0 | 0 | 0% |
| Waterway -- grassed | 0 | 0 | 0 | 0% |
| Basin --Sediment Control | 0 | 0 | 0 | 0% |
| Pasture Planting | 0 | 0 | 0 | 0% |
| Windbreak Planting | 0 | 16 | 16 | 38.1% |
| Planned Grazing | 0 | 0 | 0 | 0% |
| Windbreak Renovation | 2 | 3 | 5 | 11.9% |
| Subsurface Drip Irrigation | 0 | 0 | 0 | 0% |
| Streambank Stabilization | 0 | 0 | 0 | 0% |
| Brush Management | 0 | 0 | 0 | 0% |
| Cover Crop | 4 | 0 | 4 | 9.5% |
| Reverse Osmosis | 12 | 0 | 12 | 28.6% |
| TOTAL | 20 | 22 | 42 | 100% |

Table LT-4: **COST** of Practices By Type of Land Treatment 2024

| Practice Type | NRD | NSWCP | Total \$ | % of Total |
|----------------------------|--------------------|--------------------|---------------------|-------------|
| Terrace System | \$15,000 | \$22,071.87 | \$37,071.87 | 34.7% |
| Mechanical Outlet | \$0 | \$0 | \$0 | 0% |
| Dam | \$0 | \$0 | \$0 | 0% |
| Grade Stabilization | \$0 | \$0 | \$0 | 0% |
| Diversion | \$0 | \$0 | \$0 | 0% |
| Waterway -- grassed | \$0 | \$0 | \$0 | 0% |
| Basin -- Sediment Control | \$0 | \$0 | \$0 | 0% |
| Pasture Planting | \$0 | \$0 | \$0 | 0% |
| Windbreak Planting | \$0 | \$32,735.81 | \$32,735.81 | 30.6% |
| Planned Grazing | \$0 | \$0 | \$0 | 0% |
| Windbreak Renovation | \$2,043.65 | \$10,356.37 | \$12,400.02 | 11.6% |
| Subsurface Drip Irrigation | \$0 | \$0 | \$0 | 0% |
| Streambank Stabilization | \$0 | \$0 | \$0 | 0% |
| Brush Management | \$0 | \$0 | \$0 | 0% |
| Cover Crop | \$19,217 | \$0 | \$19,217 | 18% |
| Reverse Osmosis | \$5,550.74 | \$0 | \$5,550.74 | 5.2% |
| TOTAL | \$41,811.39 | \$65,164.05 | \$106,975.44 | 100% |

PUBLIC RELATIONS



Media Reach

In the past year, the Upper Big Blue Natural Resources District had more than \$27,000 worth of earned media and more than 73K views, with placements in district, regional, and national publications and channels, including:

TV and Radio

- News Channel Nebraska
- KTMX/KAWL York Radio
- KRVN Rural Radio
- Rock1015
- KLKNTV
- 1077theisland.com
- KRNY
- KQKY
- KGFW

Newspapers and Magazines

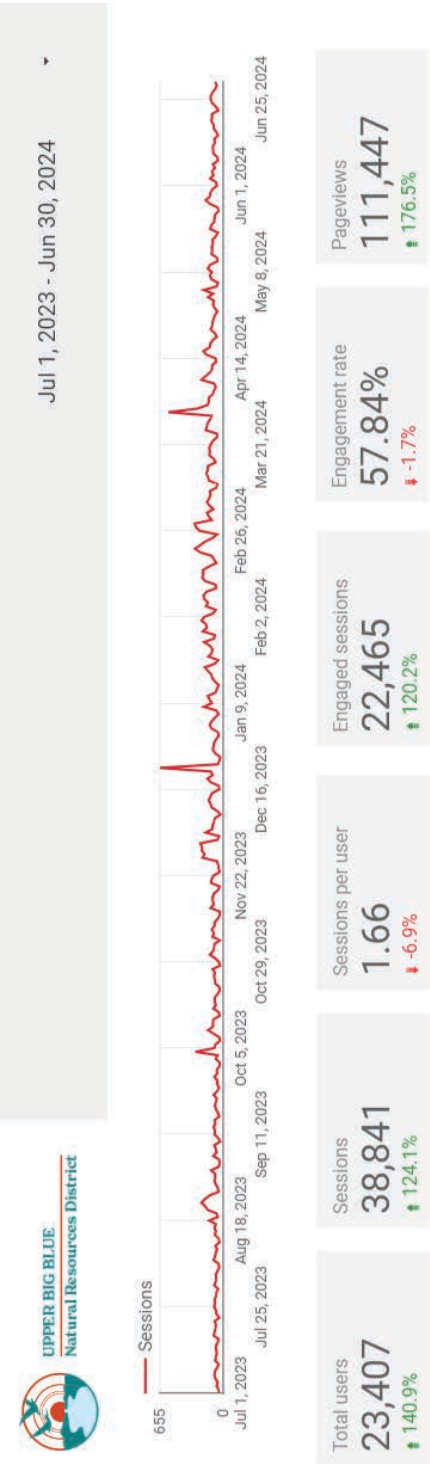
- *Aurora News Register*
- *Hastings Tribune*
- *Seward Independent*
- *York News-Times*
- *Lincoln Journal Star*
- *Grand Island Independent*
- *Midwest Messenger*
- *Heartland Beat*
- *Farm Progress*
- *Polk County News*
- *Clay County News*

Other

- *Farmprogress.com*
- *Nebraska.gov*
- *JustMelanie.com*



Website Metrics, July 1, 2023- June 30, 2024



| Page path | Views | % Δ | Engagement rate | % Δ | City | Sessions |
|--|--------|------------|-----------------|------------|---------------|----------|
| / | 42,553 | 433.0% ↑ | 71.88% | 5.1% ↑ | York | 6,605 |
| /reporting | 3,511 | 270.7% ↑ | 73.61% | 308.0% ↑ | (not set) | 5,958 |
| /tree-program | 2,990 | 1,050.0% ↑ | 68.95% | 574.2% ↑ | Omaha | 3,371 |
| /recreation-areas | 2,459 | 83.5% ↑ | 72.06% | 81.5% ↑ | Lincoln | 2,488 |
| /recreation/bruce-handerson-recharge-lake | 2,428 | 94.2% ↑ | 62.43% | 60.2% ↑ | Chicago | 2,308 |
| /about/staff | 2,427 | 116.9% ↑ | 78.47% | 317.6% ↑ | Aurora | 1,048 |
| /regenerative-ag | 2,305 | - | 57.43% | - | Dallas | 980 |
| /about/employment | 2,156 | 194.5% ↑ | 62.54% | 117.3% ↑ | Seward | 918 |
| /search/node | 1,957 | 106.9% ↑ | 79.6% | 4,278.2% ↑ | Hastings | 717 |
| /recreation/pioneer-trails-recreation-area | 1,770 | 100.2% ↑ | 71.04% | 53.4% ↑ | Grand Island | 673 |
| /recreation/oxbow-trail | 1,751 | 157.5% ↑ | 71.9% | 77.4% ↑ | Warsaw | 484 |
| /nrd-trees | 1,524 | -2.1% ↓ | 86.27% | 192.2% ↑ | Denver | 467 |
| /board | 1,430 | 41.6% ↑ | 84% | 204.6% ↑ | Columbus | 437 |
| /about | 1,424 | 147.2% ↑ | 80.24% | 2,702.6% ↑ | Ashburn | 420 |
| /events | 1,295 | 88.8% ↑ | 85.5% | 232.4% ↑ | Geneva | 360 |
| /contact | 1,211 | 104.6% ↑ | 75.68% | 1,590.1% ↑ | San Francisco | 360 |

PUBLIC RELATIONS



Social Media Quick Hits

**INTRODUCING
OUR SUMMER
INTERNS**



Trenton Naber and Tanner Hawkins

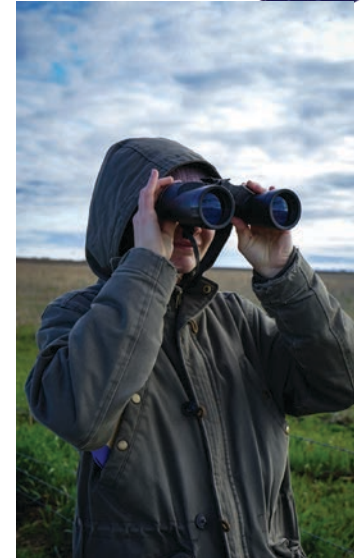
June 7, 2024: Meet our summer interns, Trenton and Tanner! They will be doing double duty this summer, working for the NRD's water department as well as Four Corners Health Department. Their work will mostly deal with water quality.

Trenton is a student at Northeast Community College studying natural resources and agronomy. Tanner is a student at York University studying plant biology. We are glad to have these talented young men on our staff for the next few months!

October 11, 2023: Jessie Ciezki, a senior agriculture major at Concordia University, Nebraska, stopped by Project GROW yesterday to collect soil samples from the soil health demonstration site managed by the Upper Big Blue NRD. She also collected samples at a nearby field that is conventionally farmed. Ciezki will run several types of tests on these soil samples then compare the collected data with samples gathered at a site in Seward. Ciezki has been gathering data for this study for the past year, studying many indicators of soil health, from pH to microbial activity to nitrate load. She will present her results in the spring as part of her senior capstone project.



May 22, 2024: This chill fellow was spotted at the NRD office this morning. Photo of Woodhouse Toad with black mutation by NRD Water Resources Technician Amanda McLeod.



May 7, 2024: A participant at an early morning birding event at Teal View Wetland Education Area.

June 7, 2024: Congrats to Brandy of York, winner of a \$100 gift card to Scheels! Brandy has visited all of the Upper Big Blue Natural Resources District's recreation areas and submitted her fun pics for the #NRDRecreationExploration contest site.





May 14, 2024: Many thanks to Central Platte Natural Resources District for organizing an outstanding Nebraska Children's Groundwater Festival today and for including students from the Upper Big Blue NRD in the event! Thank you also to Water Rocks for providing the curriculum for this lesson on the important jobs that wetlands do.



June 15, 2023: A little birdy told us that a pine tree at the NRD office is a dandy place to start a family.



February 16, 2024: No plans this weekend? Stop by our booth at the York Home and Garden Show to register to win free trees, plus learn about all the programs and upcoming events the NRD has to offer.



April 8, 2024: Clear skies and a great view of the partial eclipse from our office in York, Nebraska, today!



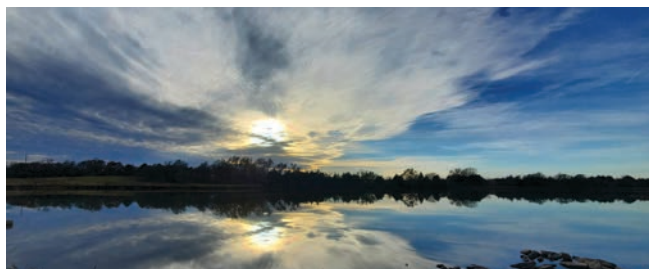
August 11, 2023: A flock of American White Pelicans is visiting Recharge Lake at Bruce L. Anderson Recreation Area (York) today. These birds are regularly spotted in Nebraska during spring and fall migration. We wonder where they're coming from and where they're heading!



July 25, 2023: This whopper of a catfish was caught at Oxbow Trail Recreation Area near Ulysses. Angler Dylan Landwehr reeled in the big guy, who weighed 20.46 lbs.

October 22, 2023: Autumn rainbow at Oxbow Trail Recreation Area captured by Upper Big Blue NRD Director Teresa Otte

November 6, 2023: Special thanks to Andrew Riedmann for this beautiful shot of the sky and tranquil lake at Bruce L. Anderson Recreation Area.



PUBLIC RELATIONS



Education: Burke Scholars

- In 2023, three students were chosen as Burke Scholars. These students received scholarships of \$2,000 each to pursue studies at a Nebraska college or university to study natural resources or a related field.

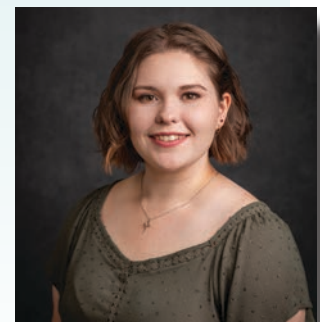
Morgan Ekhoﬀ is a 2019 graduate of Aurora High School. The daughter of Brock and Renee’ Ekhoﬀ, Morgan’s future plans include completing an associate’s degree in agricultural sciences at Central Community College where she currently attends, then transferring to UNL to earn a bachelor’s degree in agriculture education. Her long-term goal is to join her family’s farming and ranching business, in addition to teaching Ag and FFA. Morgan is a member of the Nebraska National Guard. Her extracurricular interests are shooting sports, FFA livestock showing, and band. Her service activities include volunteering at the Prairie Plains Institute, Nebraska Veteran’s Home, and Nebraska Game and Parks as a ﬁshing instructor.



Jack Allen is a 2023 graduate of Aurora High School. The son of John and Suzanne Allen, Jack’s future plans include pursuing a degree in environmental science at UNK beginning this fall. His career goal is to work on soil, water, and land management issues in Nebraska. He has participated in a variety of extracurricular activities, including band, football, wrestling, track, and Future Business Leaders of America. His service activities include volunteering at the Plainsman Museum in Hamilton County, acting as a youth football coach and youth wrestling mentor, as well as a DARE mentor.



Elizabeth Marsh is a 2022 graduate of York High School. The daughter of Susan and Michael Marsh, Elizabeth is pursuing a bachelor’s degree in environmental science at Concordia University and plans to have a career studying the intersection of people and the environment. Marsh earned a Girl Scout Gold Award, the highest award available, in 2023. Her final project included the installation of bat boxes at NRD recreation areas.



ALTERNATE: Noah Fields is a 2023 graduate of Seward High School. The son of Kevin and Deidra Fields, Noah is planning to pursue a bachelor’s degree in rangeland management science at Chadron State College. His future career plans involve working for the US Forestry Service or National Parks Service as a ranger or another position where he spends most of his time outdoors, working in a conservation capacity. As a member of Key Club, Noah has completed over 100 hours of community service. ■



Farm Safety Day Event Teaches About Water Quality

■ Oct. 3, 2023 --It was a windy and warm day for outdoor learning as elementary students from Centennial Public Schools and St. Paul Lutheran School in Utica gathered for a Farm Safety Day, organized by the local FFA chapter on September 28. Staff from the Upper Big Blue NRD were on hand to teach a lesson on water quality, reminding students that if they live on a farm or acreage, it's important to test their domestic well water annually for nitrates and bacteria.

Water resources technicians Erin Lee and Jaden Groff explained the importance of healthy drinking water to students, then led them through a water testing experiment using the at-home water test kits that are available for free to district residents. (To request a test kit, email info@upperbigblue.org or call 402-362-6601.)

The water being tested came from students and staff at Centennial Public Schools and ranged from reverse osmosis treated water from a home in York County to pond water collected in Seward County and many sources in between. Students were impressed to see the color changing test strips

working and to note that you couldn't tell by looking or smelling the different samples of water which would be high in nitrates.

District residents who are concerned about their water quality should have their water tested at the NRD. If the nitrate level is above 10 parts per million, they are eligible to receive funding for a reverse osmosis treatment system from the NRD. ■



PUBLIC RELATIONS



Just Peachy: Fruit Tree Basics Workshop Held

- Peaches, pears, cherries, and apples were the mouthwatering topic of conversation on Saturday, March 9, as about 50 people attended a fruit tree basics workshop at the York County Fairgrounds.

The free event was hosted by the Upper Big Blue Natural Resources District and Nebraska Extension.

Back by popular demand, horticulture expert Sarah Browning was the main speaker for the workshop. Last year, she presented a vegetable gardening workshop in York that was equally well received. Attendees for that event suggested the topic for the 2024 workshop.

As an educator with Nebraska Extension since 1998, Browning's programming has focused on environmental horticulture, fruit and vegetable production, and food safety. Working with the public and commercial green industry professionals, her major program goals include conserving water, protecting water quality, promoting local food production, and protecting human health.

Browning's presentation on fruit trees began with what grows well in Nebraska. She recommended varieties of common fruits that are cold hardy

and resistant to pests, including currant and serviceberry, both of which are available through the NRD's Conservation Tree Program. She also gave advice to those daring gardeners who want to grow fruit less well-adapted to Nebraska, such as blueberries, sweet cherries, and peaches. Blueberries do best in acidic soil, so Browning recommends cultivating them in containers so that the soil acidity can more easily be managed. For tender stone fruits, like sweet cherries and peaches, Browning suggested selecting later blooming varieties and planting on a north-facing slope to deter early blooms.

Due to climate change, new hardiness zones were recently published, however, don't go crazy, Browning said. Nebraska is still not the best place to grow warmer climate fruits. As for variety selection, Browning suggested that dwarf or semi-dwarf varieties tend to be easier to care for, as the shorter plants make for less laborious pruning and harvesting.



Browning discussed strategies and timing for pruning. She suggested that now is a great time to prune fruit trees, prior to the start of the growing season, but that you should never remove more than 30 percent of the canopy in a season. As to which limbs to prune, she recommends removing any that are dead, or that are growing too vertically or horizontally. The best limbs for fruit production without possible tree damage tend to grow close to a 45-degree angle. She also discussed the best style of pruning for production based on the fruit type (leave the central leader intact for apple and pear trees, or remove the central leader for an open center for apricot, cherry, peach, and plum).

When it comes to common insects and diseases of home-produced fruit, Browning provided resources for a great many possible pests but went into detail on just a few, including codling moth, plum curculio, cherry maggot, and spotted wing drosophila. Browning recommended an integrated pest management approach including biological, mechanical, and chemical pest deterrents, from insecticides to sticky traps. She warned against the use of broad-spectrum insecticides, as they will destroy the populations of beneficial bugs as well as the undesirable ones.

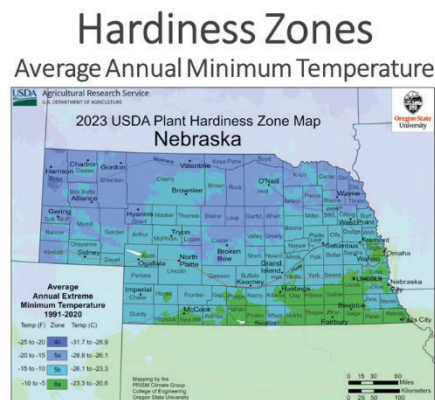
Conventional insecticides take time to break down in the environment. Due to their residual presence, fewer applications are needed to protect the fruit. However, you should plan for application well ahead of harvest to be sure that you don't accidentally ingest the chemicals. A more natural option like neem oil has no residual presence, so it will need to be applied more frequently. But no matter which products you use, always follow label directions for application timing and waiting periods before harvest.

Browning also discussed some tips and tricks, like soapy water for removal of Japanese beetles, or a milk jug trap - containing a banana peel, ½ cup vinegar, ½ cup sugar, then filled half full of water - placed in the main crotch of an apple tree to attract and capture codling moths.

General guidelines for insect control that Browning recommended were to avoid wounding fruit trees; maintain plant vigor with proper watering and pruning; preserve beneficial insect populations; address infestations early and often; and make sure to keep the site free of fallen leaves and fruit, as they attract insects.

For fungal infections such as apple scab, cedar-apple rust, and cherry leaf spot, Browning stressed that fungicide must be applied several times early in the season. If the fungus gets a foothold on the tree during leaf production, there's no going back. Leaves are the factory for the fruit. If the leaves are compromised by a fungal infection, you won't get as much fruit production.

Materials from Browning's workshop are available on the Upper Big Blue NRD website at www.upperbigblue.org/projectgrow.



PUBLIC RELATIONS



Nebraska’s NRDs Advocate for Conservation Funding in Washington, D.C.

- LINCOLN, Nebraska – Nebraska’s Natural Resources Districts (NRDs) were represented by nearly 50 directors and staff in Washington, D.C., March 18-20, 2024.

Nebraska’s NRDs advocate for strengthening tools to preserve and fund natural resources projects, which includes engaging policymakers from the grassroots level with a unified voice.

This grassroots advocacy culminates with a visit to Washington, D.C., allowing NRD staff and directors to meet with congressional leaders and discuss local priorities with national partners on federal legislation and programs.

While on Capitol Hill, conference attendees spent a day meeting with Nebraska senators and congressmen and participated in a two-day session

with federal agencies and conservation partners. NRDs help deliver several federal programs locally, and these partnerships equate into real dollars for Nebraska agriculture and communities. ■

NRD employees Jack Wergin, Chrystal Houston, and David Eigenberg



FORESTRY & PARKS



Nebraska's Capitol Christmas Tree

■ While the NRD is generally more concerned with growing trees rather than cutting them down, District Forester Kyle Yrkoski made an exception in 2023. When he heard that the Nebraska capitol building needed a special tree for display through the holiday season, he nominated a blue spruce from one of the NRD's recreation areas for consideration.

Heather Dinslage, a capitol groundskeeper leader, told the York News-Times that people submitted around six to eight trees from mostly around Lincoln and Omaha for consideration. She visited each tree and settled on the tree from the Upper Big Blue NRD. The 20-foot tree met the requirements — a full tree that would fit through a doorway in the capitol.

The tree was harvested in early December, transported to Lincoln, decorated, and displayed in the capitol rotunda until after the holidays. David Eigenberg, NRD general manager, attended a tree lighting ceremony and posed for a picture with the donated tree alongside of Nebraska Governor Jim Pillen.

“Harvesting a Christmas tree at an NRD recreation area is not allowed for the general public, however, providing a tree to the capitol building was a special honor for the district,” noted Chrystal Houston, public relations manager. “Under normal circumstances the NRD does not allow recreation area trees to be harvested.” ■



FORESTRY & PARKS

2024 Tree Planting Program Report

- The District purchased 23,186 trees/shrubs (includes 57-acre packages). The trees/shrubs purchased were used for farmstead windbreaks, field windbreaks, habitat areas, and riparian plantings.

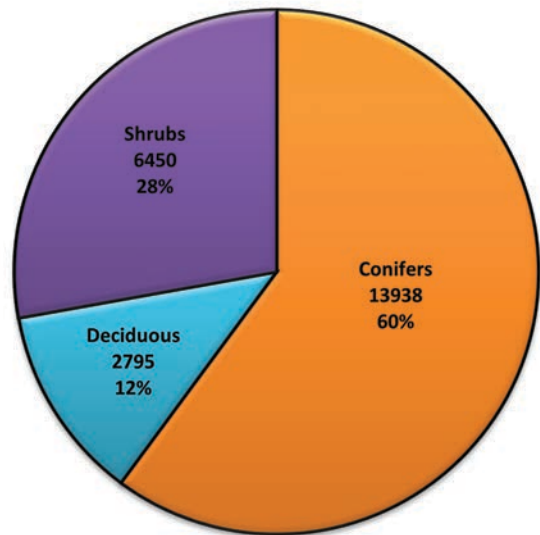
The trees purchased from Bessey Nursery were picked up April 9, 2024. The hand plants were then sorted and delivered to the NRCS offices within the district. There were 255 customers that purchased 18,191 trees/shrubs for hand plantings. We started machine planting on April 11th and planted a total of 4,995 trees for 20 cooperators, which were completed on April 24th.

Weed barrier was laid by a private contractor to enhance the tree plantings.

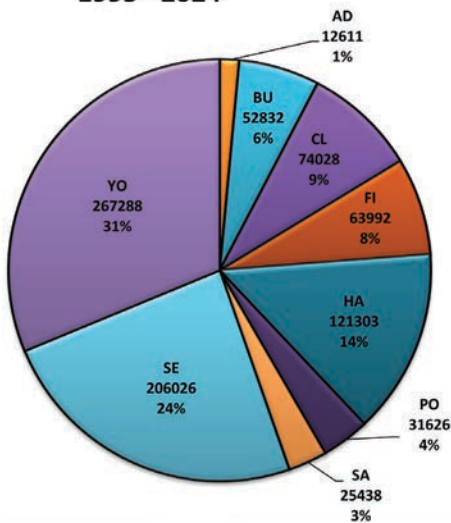
The weather conditions during the weeks of April were cool and dry. Soil moisture was perfect on all sites, when tilled properly.

The following is a summary of the expenditures and revenue for FY2024.

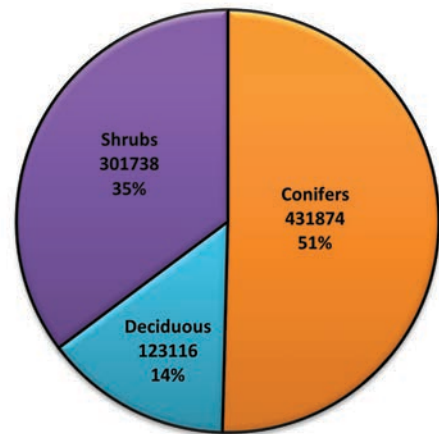
**TOTAL TREES SOLD BY SPECIES
2024**



**TOTAL TREES DISTRIBUTED BY COUNTY
1995 - 2024**



**TOTAL TREES SOLD BY SPECIES
1996 - 2024**





Tree Planting Expenditures 2024

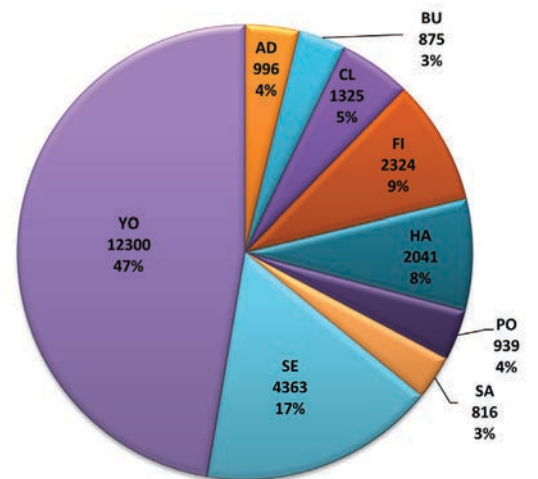
Seedlings Purchased (includes shipping)

| | Trees | Cost |
|---|---------------|--------------------|
| NARD Bessey Nursery | 25,804 | \$25,544.55 |
| Lower Loup NRD | 175 | \$210.00 |
| TOTAL | 25,979 | \$25,754.55 |
| Executive Travel Tree Program Donation (Credit) | | -\$2,103.92 |
| Total tree cost minus credit | | \$23,650.63 |

Operating Costs

| | | |
|--------------------------|-------------------------|-------------------|
| Fuel and Oil (tractor) | | \$104.90 |
| Packing material | | \$858.09 |
| Vehicle mileage/fuel | 2,158 mi/ 67¢ per mi | \$1,445.86 |
| Nursery dealer's license | | \$83.00 |
| Cooler expenses | | \$125.00 |
| Total | | \$2,532.88 |

TOTAL TREES DISTRIBUTED BY COUNTY
2024



FORESTRY & PARKS



Tree Sales Report

Number of Trees Sold by County

| | NRD Planted | Customer Planted |
|--------------|--------------|------------------|
| Adams | 521 | 475 |
| Butler | 0 | 875 |
| Clay | 740 | 585 |
| Fillmore | 1,109 | 1,215 |
| Hamilton | 208 | 1,833 |
| Polk | 150 | 789 |
| Saline | 116 | 700 |
| Seward | 313 | 4,050 |
| York | 1,838 | 10,462 |
| Total | 4,995 | 20,984 |

Combined Total: 25,979 Trees

Tree Planting Revenue

| Type | # of Trees | Cost | Total |
|---|------------------------|---------|--------------------|
| NRD staff planted trees | 4,995 | \$1.18 | \$5,894.10 |
| Machine planting charge | 4,995 | \$1.18 | \$5,894.10 |
| Hand planted trees | 18,134 | \$1.18 | \$21,398.12 |
| Hand planted trees, small acre packages | 57 packs = 2,850 trees | \$65.00 | \$3,705 |
| total | | | \$36,891.32 |

Special Projects

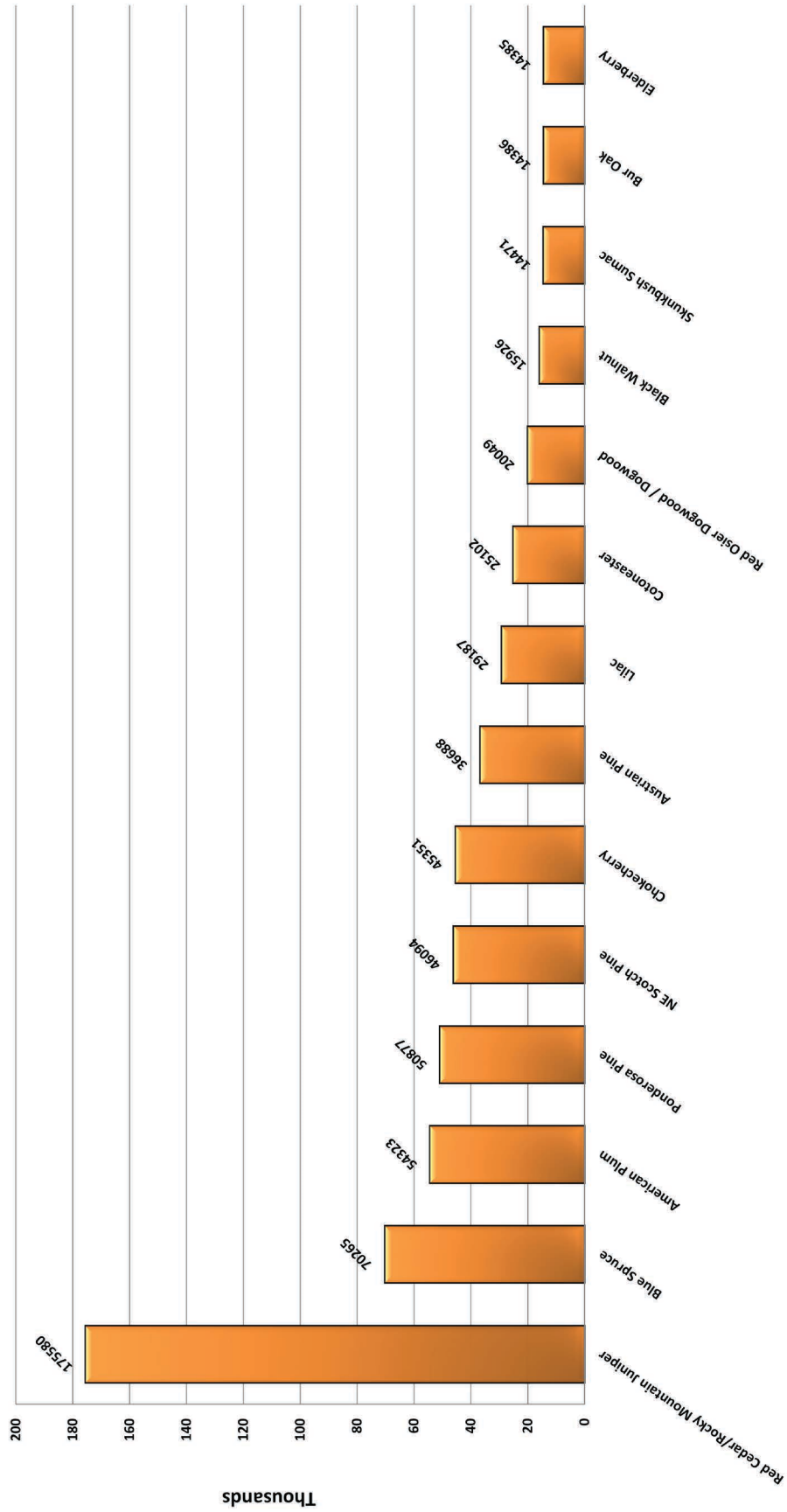
| Entity | # of Trees | Cost | Total |
|------------------------|--------------|--------|-------------------|
| Gresham Public Library | 15 | \$6.00 | \$90.00 |
| Polk County Extension | 114 | \$1.18 | \$134.52 |
| Area Schools Give-Away | 1,125 | \$1.18 | \$1,327.50 |
| TOTAL | 1,254 | | \$1,552.02 |

**Total Revenue:
\$36,891.32**

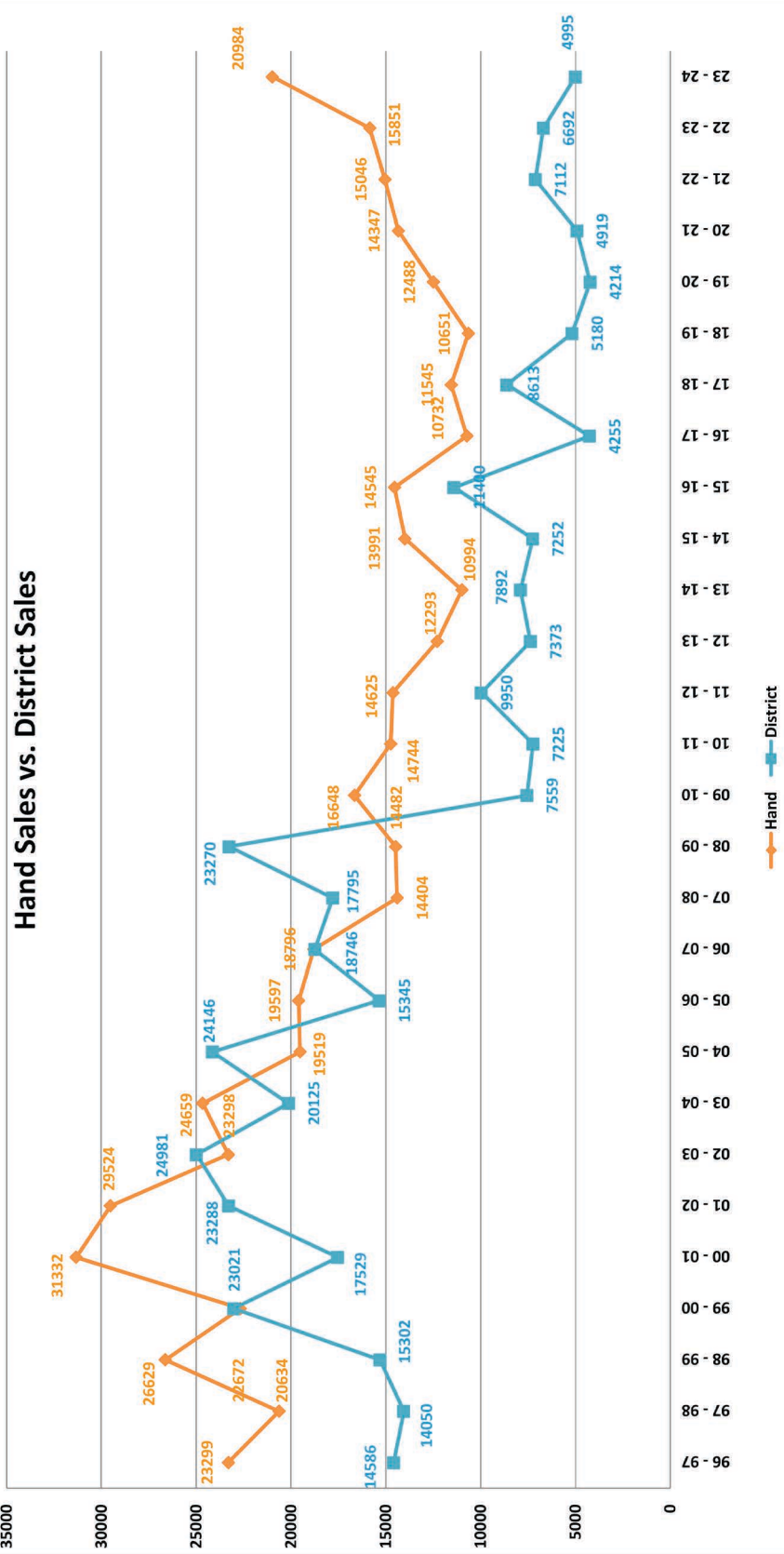
**Total Expense:
\$26,182.88**

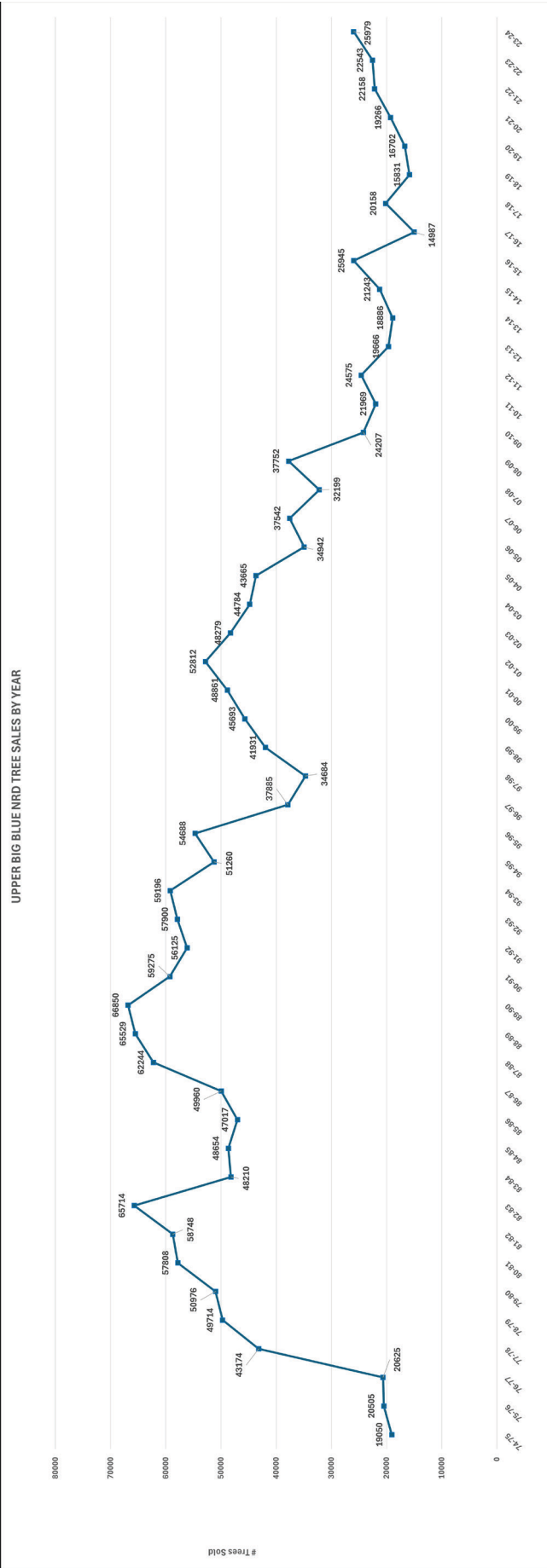
**Total Gain:
\$10,708.44**

UPPER BIG BLUE NRD TOP 15 SELLING TREES 1996 - 2024



FORESTRY & PARKS





FORESTRY & PARKS



Recreation Area Updates

■ It has been a busy year at the NRD’s recreation areas. There have been improvements for safety, accessibility, and overall public enjoyment, across all of the NRDs parks.

In March 2024, tornado sirens were added to four of the Upper Big Blue NRD’s recreation areas for added safety for campers. These sirens were funded in large part through a grant from the Nebraska Emergency Management Agency. As originally identified in the 2019 Hazard Mitigation Plan created by the NRD, sirens have now been installed at Smith Creek, Bruce L. Anderson, Pioneer Trails, and Oxbow Trail Recreation Areas.

Smith Creek Recreation Area (Utica) has seen recent equipment additions and upgrades. Eagle Scout Jayden Butzke, with a little help from his scout troop, added four benches around the lake in September 2023 (page 55). In June 2024, upgrades to the park continued when old playground equipment and a deteriorating picnic shelter were replaced. A number of mature trees were planted in the park area to replace older, damaged trees. The Smith Creek site is a favorite facility for those looking for a free place to camp close to Interstate 80. It is also a regular stopping place for local scout groups. Throughout the summer months, the campgrounds tend to be very busy. Even through the colder weather, there is a significant amount of use at this facility.

Water quality has been poor (high turbidity and sediment load) for a number of years at Bruce L. Anderson Recreation Area (York), which detracts from the fishery as well as



Captions: 1) Installing tornado sirens at Bruce L. Anderson Recreation Area. 2) New equipment installed at Smith Creek Recreation Area. 3) New toilets being installed at Overland Trail Recreation Area. 4) Supply well installed at Oxbow Recreation Area. 5) Controlled burn at Pioneer Trails Recreation Area.



general user experience. In early 2024, the Board of Directors began discussing opportunities for improvement to the lake. A study by the Flatwater Group looking at in-lake best management practices was conducted and presented to the board in May 2024. Discussions for improvement of the lake are ongoing. (see page 33).



Overland Trail Recreation Area (York) has undergone a significant transformation. For decades, it has been a minimally developed nature area. In 2023, the parking lot was enlarged and improved with crushed rock. Power was run to the site to add security lighting and a domestic well. New signage was also added. In summer 2024, vault toilets were added. ADA parking stalls and sidewalks will be added in late summer/fall of 2024 to increase accessibility. Future plans may include adding a picnic shelter.



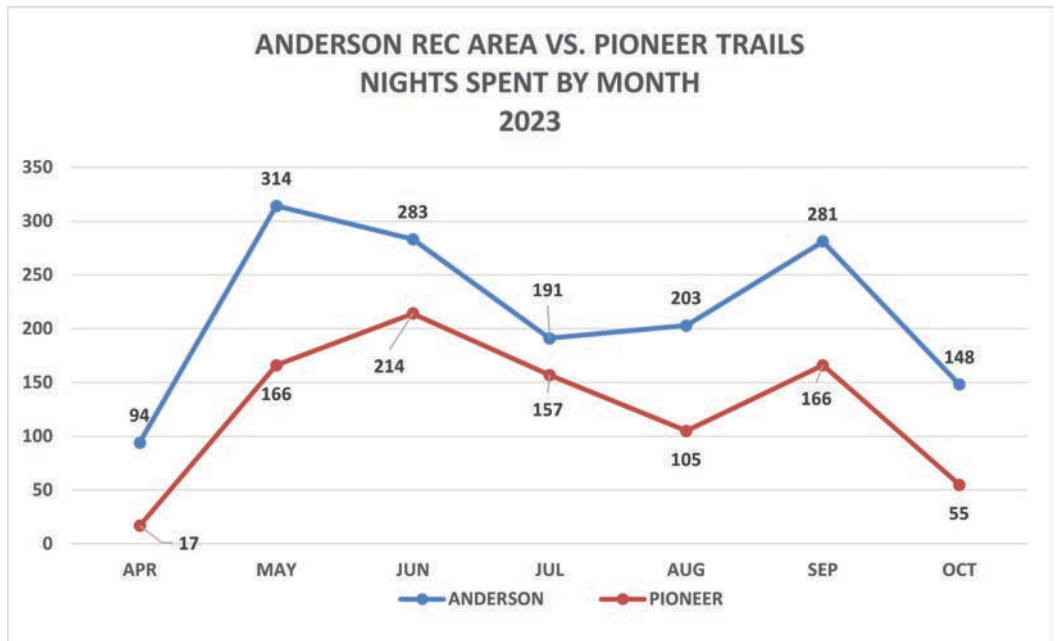
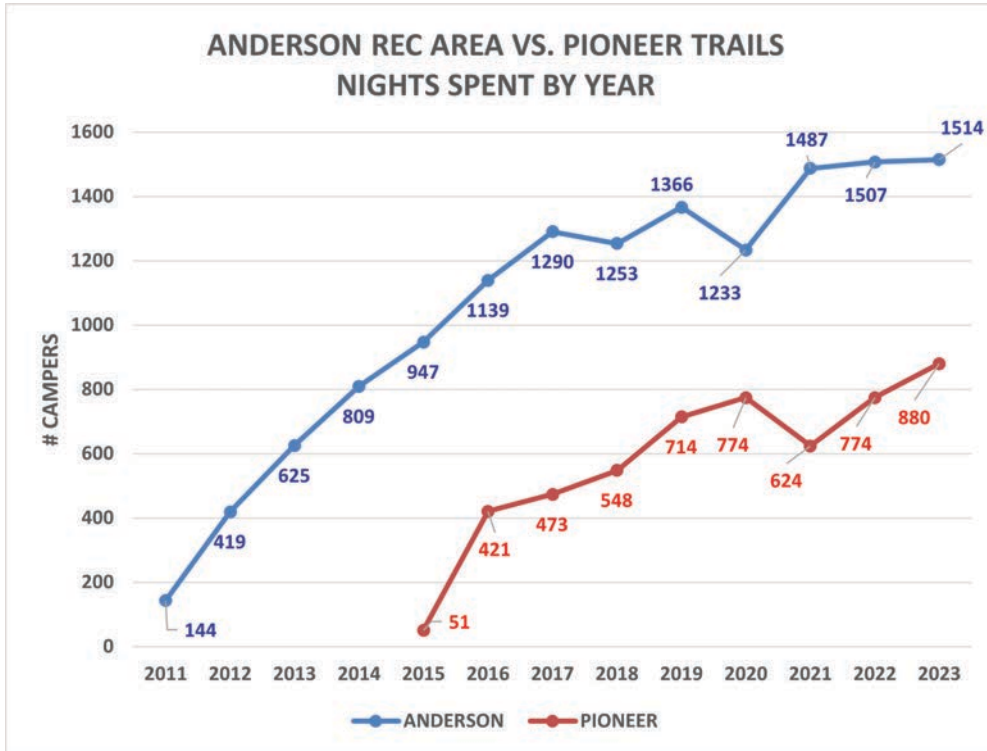
Oxbow Trail Recreation Area (Ulysses) saw the addition of a domestic well in 2023 and a supply well to supplement the natural spring fed lake in 2024. The addition of the supply well was taken to ensure the continued success of the fishery, which is often recognized as being one of the best in the area.

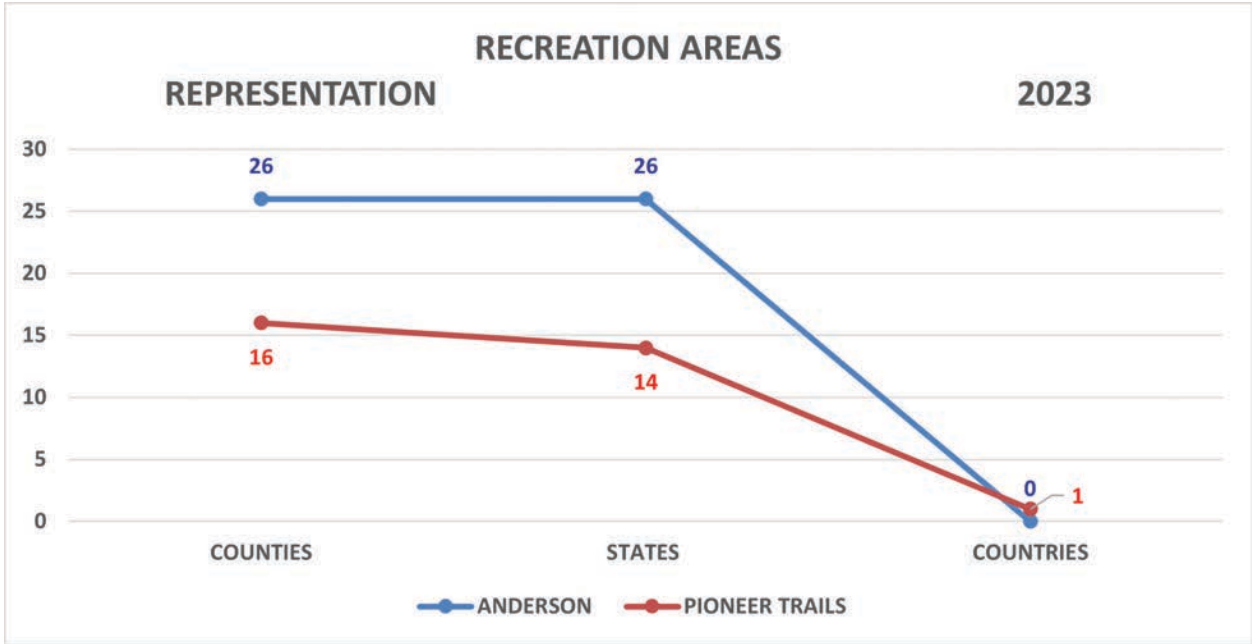
At the recommendation of the Nebraska Game and Parks Commission, the Pioneer Trails Recreation Area (Aurora) shoreline, south of the boat ramp was cut back and re-sloped to improve access for bank fishing in spring 2023. In March 2024, a prescribed burn was conducted on seven acres of prairie at the recreation area. According to the US Forest Service, this practice has many benefits. It reduces hazardous fuels, protecting human communities from extreme fires; minimizes the spread of pest insects and disease; removes unwanted species that threaten species native to an ecosystem; provides forage for game; improves habitat for threatened and endangered species; recycles nutrients back to the soil; and promotes the growth of trees, wildflowers, and other plants. ■

FORESTRY & PARKS



Recreation Area Usage





Camping Fees Collected

| Park | Tent | RV | Total Nights Stayed | Amount Collected |
|-------------------------------|------|-------|---------------------|--------------------|
| Anderson Recreation Area | 164 | 1,350 | 1,514 | \$21,045.00 |
| Pioneer Trail Recreation Area | 66 | 814 | 880 | \$12,262.50 |
| total | 230 | 2,164 | 2,394 | \$33,307.50 |

FORESTRY & PARKS



Scout Improves Smith Creek Recreation Area with Eagle Project

- Boy Scout Jayden Butzke has enjoyed camping, fishing, sledding, and kayaking at Smith Creek Recreation Area near Utica for years, but on one recent visit, he realized something was missing from the park: a place to sit.

Other than pulling up a patch of grass or bringing a lawn chair, the only seating was at picnic tables. Butzke thought benches around the trail at the lake's edge would be a great enhancement for the facility. He began fundraising and planning in the summer of 2022, then built four benches in the summer of 2023 and installed them at Smith Creek in September, with the help of Utica Scout Troup 180.

This act of service will help him achieve the highest rank attainable in scouting, Eagle Scout, which he hopes to be awarded in 2024 after completing his remaining merit badge requirements.

Butzke has been part of the Boy Scouts of America since 2020. He says he appreciates the group and the Eagle Scout project requirement as, "It pushes you to be a better person and to learn responsibility."

Other scouts who were involved with the installation of the benches included Elden Butzke, Devon Slawnyk, Matthew Hoops, Levi Jorgensen, Paul Dale, Nick Grantski, and Tyler Toovey. Butzke recognized he could not have accomplished this project on his own. "Thanks to my parents, for pushing me to get this completed," he said. "Thanks also to all the local businesses that contributed



materials for my project,” such as Hughes Brothers, Volzke’s, Beaver Hardware, and Interstate Welding.

Butzke estimates that with materials and labor costs, the total value of his project was about \$3,500.

Butzke lives in Beaver Crossing with his parents Chris and Robin Butzke and is a junior at Centennial Public Schools. In addition to Scouting, he is involved in football, baseball, track, choir, show choir, and one-act. His long-term plans include pursuing a degree from Southeast Community College and a career as a welder, hopefully in Nebraska.

“The Upper Big Blue NRD is grateful to Jayden as well as his family and scout troop for improving our recreation area,” said General Manager David Eigenberg. “Smith Creek sees a lot of activity, especially in the summer months. Many people will benefit from Jayden’s act of community service as they enjoy our recreation area.” ■



FORESTRY & PARKS



Branching Out: Elm trees used for grafting lesson

- A hundred years ago, American Elm (*Ulmus Americana*) was one of the most commonly planted shade trees in the Eastern half of the US, including in Nebraska. It was prized for its lofty trunk and dense leafy canopy, as well as its tolerance to weather extremes and its rapid growth.

In many cities, elm trees lined the streets and shaded the parks. However, the species was nearly wiped out due to a fungal infection called Dutch Elm Disease (DED) that swept across the country starting in the 1930s.

Due to its disease susceptibility, the Upper Big Blue Natural Resources District doesn't sell American Elm through the annual conservation tree program, which provides low-cost, bulk tree seedlings each spring in species selected for best performance in this area. However, when McCool Junction resident Brad Morner reached out to the NRD about ordering elm trees for classroom use, District Forester Kyle Yrkoski was able to special order 25 elm seedlings.

Morner's two sons, Alex and Aaron, are students in agriculture classes at McCool Junction High

School. Morner asked their teacher, Dana Hall, if he could teach a lesson on tree grafting during a plant science class, as he used to operate a tree nursery. Grafting is a method of propagating trees that involves creating a wound in one plant and attaching another to it, allowing the plants' tissues to knit together to form something new.

Hall was enthusiastic about the idea. "It's really great to have experts in different areas share their knowledge with students and expose them to different careers," she said. "Any time I can have experts come in and share their experience with students, I think it's a great thing."

Morner and his wife, Patty, provided all the items necessary for the lesson, including silver maple cuttings to practice with. The couple showed

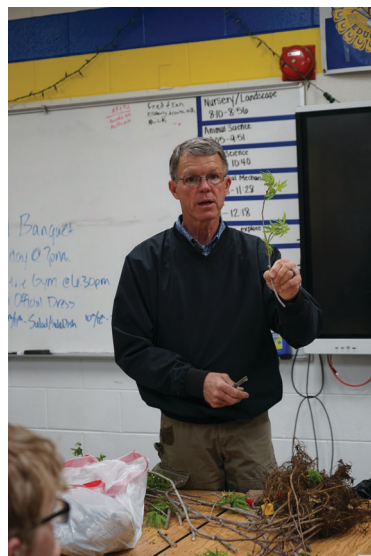


students how to take a freshly sharpened grafting blade and notch two tree cuttings together so that their cambium layers align, then bind the stems with elastic and grafting tape. Morner explained that as the tree wounds heal, the two trees will grow together as one, the roots from one tree supporting the cutting from the other.

To have a successful tree graft, you must have genetically similar trees (you can't grow apples on a pine tree, for example). On the elm rootstock ordered through the NRD from Bessey Nursery, the students grafted a cutting from a DED resistant elm tree in Waverly, Nebraska. As the grafted trees grow, they will be genetically identical to the Waverly tree.

Why not just grow the trees from seed? Planting from seed doesn't guarantee that the desired traits will be carried on, Morner explained to students. Grafting is the only way to make sure that the new tree has the traits of the parent tree—in this case, DED resistance. Today, Morner farms full time, but still has a clear passion for trees. Alex and Aaron help on the farm and manage Morner Brothers Honey, maintaining hives in the McCool area.

Mercifully, there were few injuries and little blood spilled during tree grafting lesson, despite sharp knives in inexperienced hands. Students potted their grafted elm trees to take home and plant. ■



ADMINISTRATIVE



Financial Highlights

- This discussion and analysis of the financial performance of the Upper Big Blue NRD provides an overview of the district’s financial activities for the year ended June 30, 2023.

The assets of the Upper Big Blue Natural Resources District exceeded its liabilities at the close of the most recent fiscal year by \$10,580,116 (net position). Of this amount, \$5,186,465 (unrestricted net position) may be used to meet the government’s ongoing obligations to citizens and creditors.

At the end of the current fiscal year, the Upper Big Blue NRD is able to report positive balances in all categories of net position.

Financial Analysis of the District as a Whole

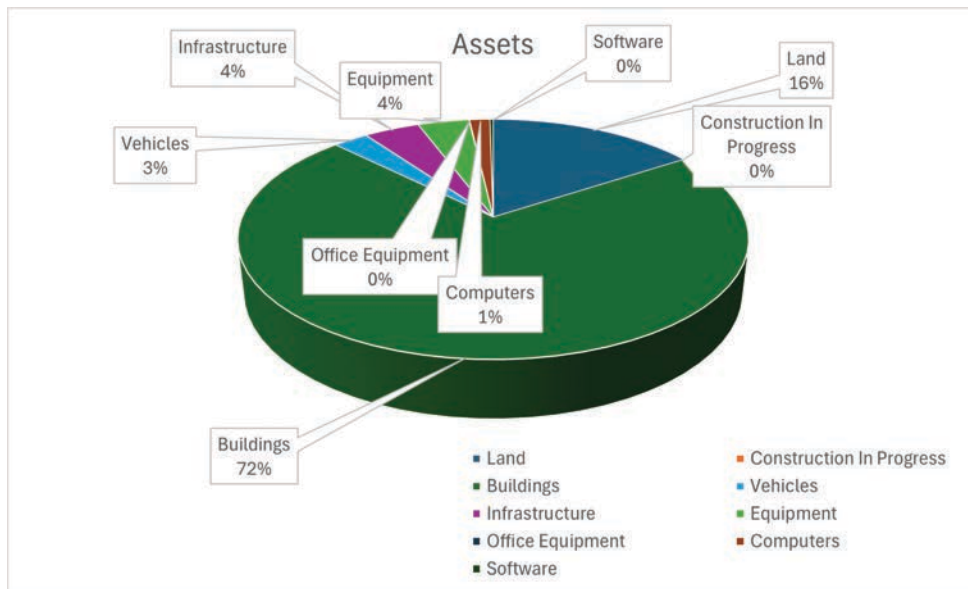
Net position may serve over time as a useful indicator of a government’s financial position. In the case of the Upper Big Blue Natural Resources District, assets exceeded liabilities by \$10,580,116 at the close of the most recent fiscal year.



Capital Assets

The district’s investment in capital assets as of June 30, 2023, amounts to \$5,393,651 (net after depreciation). This investment in capital assets included land, buildings, equipment, and improvements. The summary of capital assets net of depreciation follows:

| Asset | June 30, 2023 | June 30, 2022 |
|--------------------------|--------------------|--------------------|
| Land | \$849,804 | \$849,804 |
| Construction In Progress | - | \$32,000 |
| Buildings | \$3,865,565 | \$3,988,783 |
| Vehicles | \$144,265 | \$81,089 |
| Infrastructure | \$226,318 | \$77,233 |
| Equipment | \$209,368 | \$207,316 |
| Office Equipment | \$2,422 | \$28,681 |
| Computers | \$81,932 | \$29,275 |
| Software | \$13,977 | \$29,225 |
| TOTAL ASSETS | \$5,393,651 | \$5,323,406 |



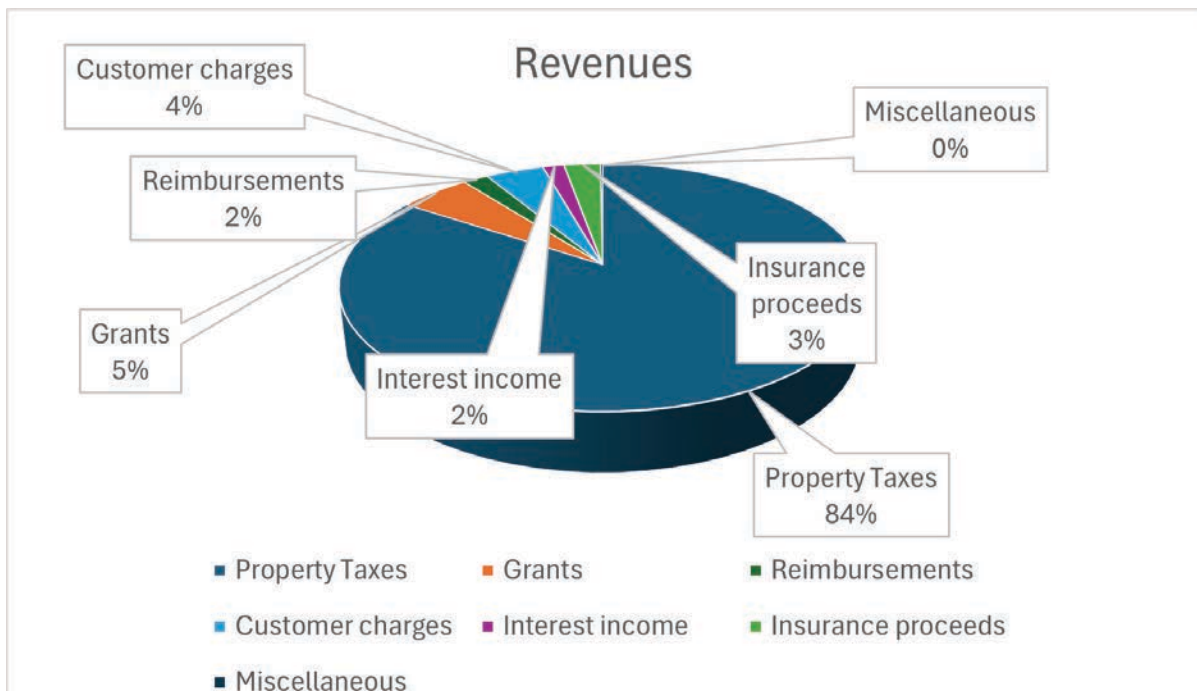
ADMINISTRATIVE



Revenues

General Funds Revenues for FY2023

| Revenue Source | General Fund | Sinking Fund | Total Funds |
|-----------------------|--------------------|-----------------|--------------------|
| Property Taxes | \$3,448,474 | | \$3,448,474 |
| Grants | \$213,101 | | \$213,101 |
| Reimbursements | \$75,038 | | \$75,038 |
| Customer charges | \$174,711 | | \$174,711 |
| Interest income | \$16,026 | \$47,294 | \$63,320 |
| Insurance proceeds | \$109,161 | | \$109,161 |
| Miscellaneous | \$6,649 | | \$6,649 |
| TOTAL REVENUES | \$4,043,160 | \$47,294 | \$4,090,454 |

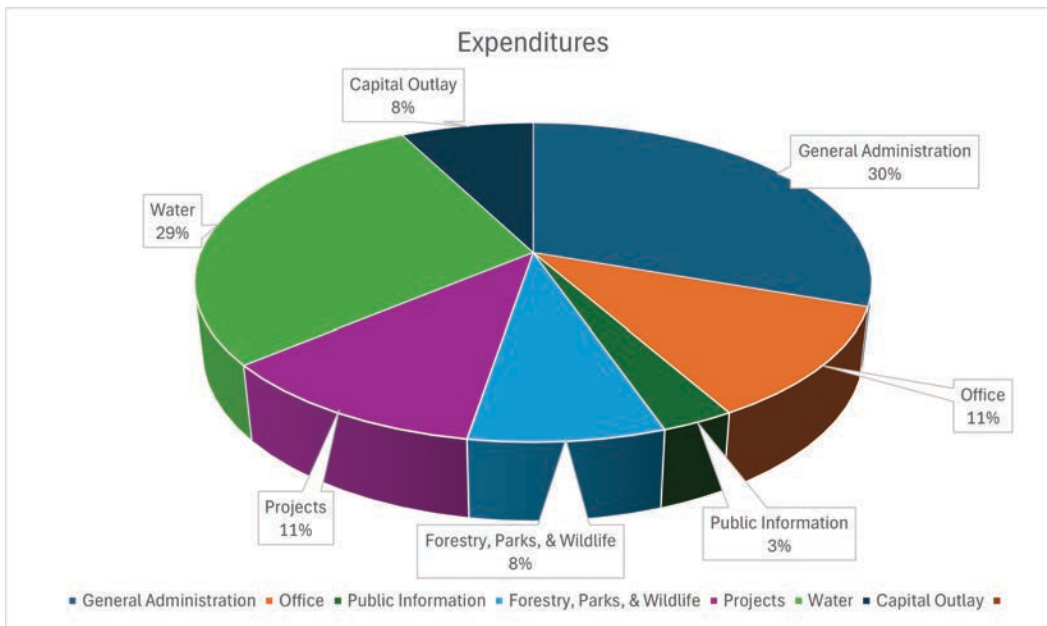




Expenditures

General Funds Expenses for FY2023

| Expenditure | General Fund | Sinking Fund | Total Funds |
|------------------------------------|-------------------|-----------------|-------------------|
| General Administration | \$1,252,199 | -- | \$1,252,199 |
| Office | \$47,0963 | -- | \$47,0963 |
| Public Information | \$121,085 | -- | \$121,085 |
| Forestry, Parks, & Wildlife | \$32,4946 | -- | \$32,4946 |
| Projects | \$46,4604 | -- | \$46,4604 |
| Water | \$117,8208 | -- | \$117,8208 |
| Capital Outlay | \$312,037 | -- | \$312,037 |
| Total Expenditures | \$4,124,042 | -- | \$4,124,042 |
| Net change in fund balances | (\$80,882) | \$47,294 | (\$33,588) |



ADMINISTRATIVE



General Operating Expenses

- Payroll: Salaries/Benefits/Taxes (Admin./ Clerical)
- Directors' expense & per diem
- Dues & Memberships/Fees & Licenses
- Insurance
- Legal notices
- Office supplies/Postage
- Special projects and Professional services
- Project operations & maintenance/Auto & Truck
- Supplies & maintenance/Building maintenance
- Purchases for resale
- Rent/Telephone/Utilities

Projects, Engineering Design, Cost-Share

- Sediment control basins/Stream bank stabilization
- Dams
- Diversions/Grade stabilization structures
- Pasture planting/Planned grazing systems
- Pitless irrigation water reuse systems
- Windbreak planting & renovation
- Grassed waterways/Terraces
- Water impoundment dams
- Subsurface drip irrigation
- Mechanical outlets
- Buffer Strips

Water Quantity & Quality, Cost-Share

- Rules & Regulations enforcement
- Groundwater level measuring - Observation well monitoring
- Well Permitting/Registration

- Certification of irrigated acres
- Crop water use reporting
- Nitrate monitoring
- Domestic well testing
- Deep soil sampling
- Wellhead protection
- Irrigation well pump testing
- Chemigation safety inspections
- AQWACAP and Abandoned well verification
- CROP-TIP
- Flowmeter inspection
- Phase II & III Management Area

Public Education

- Quarterly newsletters
- Seminars
- Publications
- Speaking engagements
- Advertisements

Forestry, Parks, and Wildlife, Cost-Share

- Tree/shrub or native grass planting programs
- Corners For Wildlife
- Wildlife habitat improvement
- WILD Nebraska
- Parks & Recreation management
- Parks Program
- Storm Damaged Trees Program

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Balance Sheet--Governmental Funds 2023 with comparative figures for FY2022

| ASSETS | June 30, 2023 | June 30, 2022 |
|---------------------------|--------------------|--------------------|
| Cash and Cash Equivalents | \$1,000,544 | \$1,860,758 |
| County treasurer cash | \$31,511 | \$25,193 |
| Investments | \$4,396,135 | \$3,651,982 |
| Accounts Receivable | \$18,789 | \$2,725 |
| Interest Receivable | \$17,413 | \$1,295 |
| Inventory | \$34,828 | \$21,365 |
| Prepaid Insurance | \$84,553 | \$84,553 |
| TOTAL ASSETS | \$5,583,773 | \$5,647,871 |

| LIABILITIES | June 30, 2023 | June 30, 2022 |
|--------------------------|------------------|------------------|
| Accounts Payable | \$116,493 | \$169,849 |
| Payroll Liabilities | \$18,194 | \$15,189 |
| Accrued Wages | \$141,756 | \$122,020 |
| Sales Tax Payable | \$238 | \$133 |
| TOTAL LIABILITIES | \$276,681 | \$307,191 |

The information contained in this financial section are based upon the independent and unbiased audit performed by AMGL CPAs & Advisors of Grand Island, Nebraska. The audit was presented to the Upper Big Blue NRD Board of Directors in September 2023.



Upper Big Blue NRD

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