2026

Governor’s Water Quality and Quantity Task Force

FINAL REPORT

Table of Contents

Appendices

Acronyms

Abbreviation	Definition
AF	Acre feet
BMP	Best Management Practice
CCA	Certified Crop Advisor
CEU	Continuing Education Unit
CI	Carbon Intensity
CSD	Conservation and Survey Division
CWA	Clean Water Act
CWS	Community Water System
DWEE	Department of Water, Energy, and Environment
DWPMP	Drinking Water Protection Management Plans
DWSRF	Drinking Water State Revolving Fund
EPA	U.S. Environmental Protection Agency
GWMPA	Ground Water Management and Protection Act
IMP	Integrated Management Plan
MCL	Maximum Contaminant Level
NARD	Nebraska Association of Resources Districts
NDED	Nebraska Department of Economic Development
NDEE	Nebraska Department of Environment and Energy
NDHHS	Nebraska Department of Health and Human Services
NeDNR	Nebraska Department of Natural Resources
NeRWA	Nebraska Rural Water Association
NIFA	Nebraska Investment Finance Authority
NiRIA	Nitrogen Reduction Incentive Act
NRC	Natural Resources Commission
NRCS	Natural Resources Conservation Service
NRD	Natural Resources District
NSAC	Nebraska Strategic Ag Coalition
ONE RED	Opportunity for Nebraska: Reducing Emissions and Decarbonization
PCAP	Priority Climate Action Plan
PWS	Public Water System
SWP	Source Water Protection
UNL	University of Nebraska-Lincoln
UNMC	University of Nebraska Medical Center
USGS	U.S. Geological Survey
WSF	Water Sustainability Fund
WHPA	Wellhead Protection Area
WHPP	Wellhead Protection Plan

Page left intentionally blank.

Dear Governor Pillen,

We, the members of the Water Quality and Quantity Task Force, are pleased to submit our final recommendations for your consideration. Over the past several months, our collective efforts have focused on assessing the current state of water resources in Nebraska and identifying actionable steps to ensure the protection and sustainability of Nebraska's water quality and quantity.

The results of our work have identified several proactive goals and action items that we believe are critical to advancing Nebraska's future water management. Our recommendations are rooted in extensive discussion across a diverse range of experts in the field with the aim of safeguarding our precious water supply for generations to come. Key recommendations include:

1: Expand water measurement across the State for groundwater and surface water.

2: Develop strategies to support large water users and continued economic growth in the State.

3: Expand water storage opportunities and management of water consumption.

4: Ensure nitrogen fertilizer recommendations are agronomically, economically, and environmentally appropriate for Nebraska producers.

5: Incentivize producers to increase the percentage of nitrogen applied in season versus out of season to improve overall nitrogen use efficiency.

6: Increase adoption of sensor- and model-based nitrogen recommendation technology.

7: Increase adoption of soil health practices which will allow producers to increase nutrient cycling and reduce overall nitrogen application rates over time. Improved soil health will also maximize water infiltration and crop utilization while minimizing runoff.

8: Support Nebraska producers by providing education on nitrogen fertilizer and irrigation best management practices to reduce nitrate leaching and to protect groundwater resources.

9: Develop consistent education, marketing, and outreach materials related to water quality, quantity, and public health for use across the State.

10: Provide support and resources to public and private drinking water well owners to ensure safe and reliable drinking water for Nebraskans.

11: Expand rural water systems and regionalization of water systems.

12: Establish a centralized clearinghouse to inventory and prioritize water quality and quantity projects across Nebraska.

13: Identify and implement sustainable, diversified funding models to support the development, implementation, and maintenance of priority water projects in Nebraska.

14: Recommend funding priorities for ONE RED funding and other potential funding sources.

We request your support in implementing these recommendations as part of Nebraska's commitment to maintaining high standards for water quality and quantity. By doing so, we can safeguard the health of our communities, protect our environment, and support our economy.

We sincerely appreciate the opportunity to serve on this Task Force and hope to see these critical recommendations put into action under your leadership. Thank you for your ongoing commitment to the people of Nebraska.

Respectfully,

_____	_____
Joe Anderjaska	Brian Bruckner
_____	_____
Brittany Bartak	Devin Brundage
_____	_____
Don Batie	Russ Callan
_____	_____
Jesse Bradley	Tom Downey

_____	_____
Jessica Groskopf	Tim Mundorf
_____	_____
Brandon Hunnicutt	Scott Schaneman
_____	_____
Brian Kissinger	Dean Settje
_____	_____
Scott Knobbe	John Shadle
_____	_____
Steve Kyes	Marty Stange
_____	_____
Matt Manning	Annette Sudbeck

Executive Summary

The Governor's Water Quality and Quantity Task Force (Task Force) was convened to address interconnected water quality and quantity challenges, review existing water management authorities and programs, and develop actionable recommendations to reduce nitrate levels while supporting Nebraska's agricultural productivity and economic vitality. This Final Report of the Task Force (Final Report) includes:

- Details on Task Force formation and its four subcommittees;
- An overview of meeting schedules and materials;
- Background information on Nebraska's water management authorities related to water quality and quantity; and
- The Task Force's recommended goals, action items, and metrics for success to guide future efforts to reduce nitrate concentrations in groundwater and address water quantity issues.

In developing recommendations, the Task Force prioritized incentives, innovation, and education over new regulatory requirements, while acknowledging that additional regulatory measures may be necessary in the future if desired outcomes are not achieved. Building upon and expanding coordination among State agencies, Natural Resources Districts (NRDs), other entities, and existing resources was also a priority.

Task Force members recognize that addressing Nebraska's water quality and quantity challenges will require sustained commitment, cooperation, and flexibility. The Task Force's recommendations provide a proactive and practical framework for reducing nitrate levels in drinking water sources while respecting Nebraska's local governance structure and economic considerations. By emphasizing incentives, innovation, education, and measurable results—and by remaining open to additional tools, if necessary—Nebraska can make meaningful progress toward protecting public health and ensuring the long-term sustainability of its water resources.

Task Force Formation

Governor Pillen announced the Task Force when he testified on LB317 (2025),[1] a bill calling for the merger of the Department of Environment and Energy (NDEE) with the Department of Natural Resources (NeDNR), in part, to bring more meaningful and

[1] 2025 Neb. Laws, LB 317, passed on May 6, 2025, provides that on or after July 1, 2025, the Department of Natural Resources shall be merged into the Department of Environment and Energy, which shall be named the Department of Water, Energy, and Environment.

streamlined oversight around water use. The Task Force was charged with providing the Governor with actionable recommendations to improve water quality, with an emphasis on reducing nitrate levels in groundwater, and to ensure the long-term sustainability of the State's water resources.

Membership

Task Force Members

The following individuals were invited to serve on the Task Force by the Governor and represent a cross-section of interests, industries, and locations as illustrated in Figure 1.

Joe Anderjaska, Director, Middle Republican Natural Resources District

Brittany Bartak, Agronomist, Yield Plus Agronomics

Don Batie, current member and former President of the Natural Resources Commission, farmer

Jesse Bradley, Director, Department of Water, Energy, and Environment

Brian Bruckner, General Manager, Lower Elkhorn Natural Resources District

Devin Brundage, General Manager, Central Nebraska Public Power and Irrigation District

Russ Callan, General Manager, Lower Loup Natural Resources District

Tom Downey, President and CEO, Downey Drilling

Jessica Groskopf, Extension Educator, University of Nebraska

Brandon Hunnicutt, Chairman, Nebraska Corn Board

Brian Kissinger, Fort Kearny Consolidated Feedyard

Scott Knobbe, Knobbe Feedyards

Steve Kyes, Seed Corn Producer

Matt Manning, Chief Water Officer, Department of Water, Energy, and Environment

Tim Mundorf, Central Valley Ag

Scott Schaneman, General Manager, North Platte Natural Resources District

Dean Settje, Founder and President, Settje Agri-Services

John Shadle, Water Resources Advisor, Nebraska Public Power District

Marty Stange, former Environmental Supervisor, City of Hastings

Annette Sudbeck, General Manager, Lewis and Clark Natural Resources District

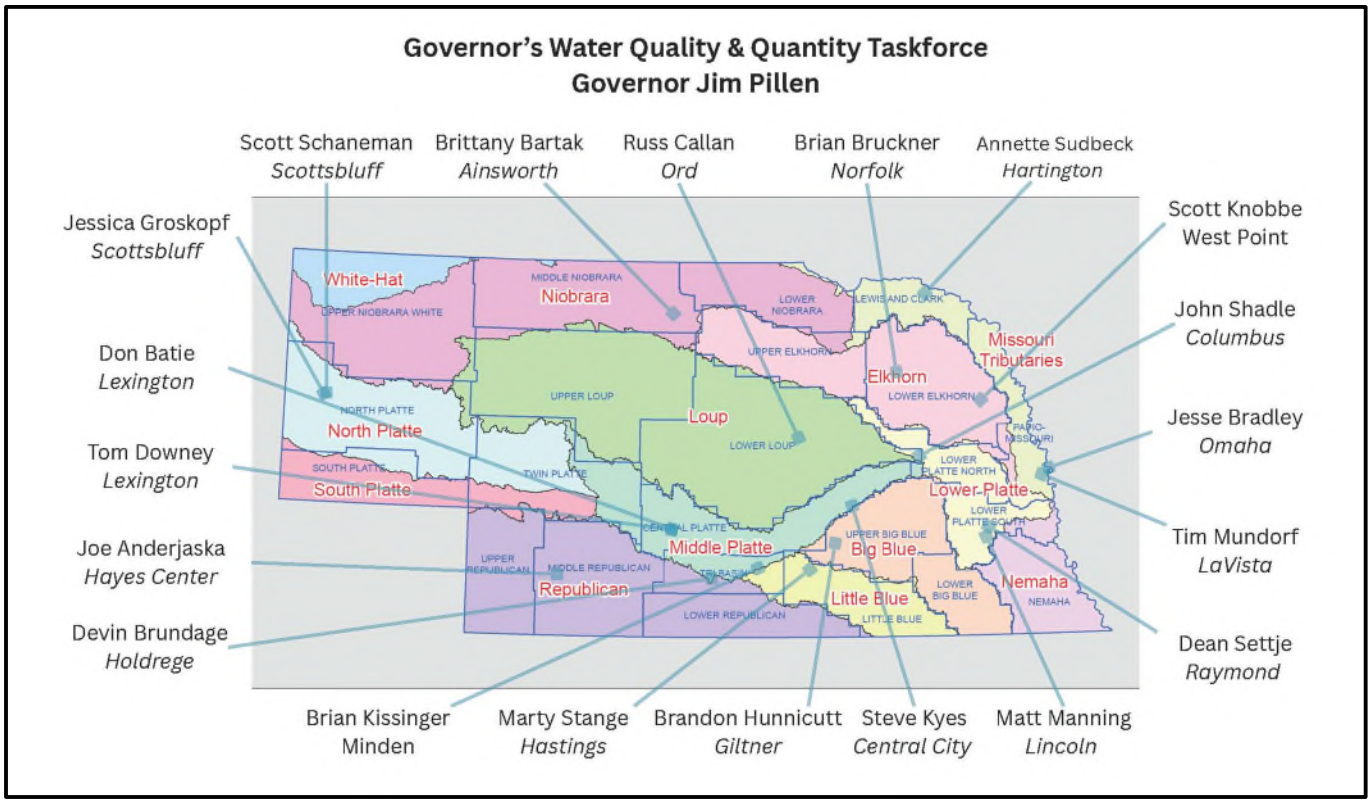


Figure 1. Locations of Task Force members.

Task Force Subcommittees

The Task Force organized its work through four subcommittees aligned with the primary issue areas identified early in the process. These subcommittees were: (1) Methods and Resources, (2) Nitrate Legacy and Drinking Water Access, (3) Water Conservation and Quantity, and (4) Financing and Incentives. Members selected their subcommittee assignments at the first Task Force meeting, with some choosing to participate in multiple subcommittees based on their interests, experience, and expertise. The subcommittees and their participating members are listed in Table 1.

Table 1. List of Subcommittees and members. Names in bold indicate the Subcommittee spokesperson.

METHODS AND RESOURCES	***NITRATE LEGACY AND DRINKING WATER ACCESS***
Joe Anderjaska	Brian Bruckner
Brittany Bartak	Tom Downey
Don Batie	Matt Manning
Jesse Bradley	Dean Settje
Russ Callan	**Marty Stange**
Brian Kissinger	Annette Sudbeck
Scott Knobbe	
Tim Mundorf	
Annette Sudbeck	
WATER CONSERVATION AND QUANTITY	***FINANCING AND INCENTIVES***
Joe Anderjaska	Brittany Bartak
Don Batie	Jesse Bradley
Brian Bruckner	Devin Brundage
Devin Brundage	Jessica Groskopf
Russ Callan	**Brandon Hunnicutt**
Steve Kyes	Scott Schaneman
Matt Manning	
John Shadle	
Scott Schaneman	

Process

Task Force Meetings and Subcommittee Meetings

From June 2025 through March 2026, the full Task Force met on a quarterly basis, while each of the four subcommittees met monthly, as shown in Table 2. Each subcommittee received presentations from subject-matter experts relevant to its focus area, including background on authorities, current challenges, and existing programs at the federal, State, and local level addressing water quality and quantity issues. This process allowed the Task Force to develop a shared understanding of the issues to identify recommended goals and corresponding action items for implementation. All meeting materials including agendas, presentations, and meeting minutes can be found in the Appendices to this Final Report and are available on the Task Force webpage.[2]

[2] https://dnr.nebraska.gov/water-quality-and-quantity-task-force.

Table 2. Overview of Task Force Meetings, Subcommittee Meetings, and presentations.

Date	Meeting Type	Presentation(s)	Presenter(s)
June 2, 2025	Full Task Force	Overview of State and NRD Initiatives on Water Quality and Quantity	Jesse Bradley (DWEE)
July 14, 2025	Nitrate Legacy and Drinking Water Access	—	—
July 16, 2025	Methods and Resources	—	—
July 16, 2025	Water Conservation and Quantity	—	—
July 21, 2025	Financing and Incentives	—	—
Aug. 20, 2025	Nitrate Legacy and Drinking Water Access	DWEE Clearinghouse and Related Information	Dave Miesbach (DWEE)
Aug. 21, 2025	Water Conservation and Quantity	—	—
Aug. 21, 2025	Methods and Resources	Lower Loup NRD: The Effect of Fertilizer Application Practices on Soil Nitrate and Water Quality	Chris Hobza (U.S. Geological Survey); Jason Moudry (Lower Loup NRD)
Aug. 22, 2025	Financing and Incentives	UNL Agricultural Budget Calculator	Jay Parsons, Glennis McClure, Sourav Barua (Nebraska Extension)
Sept. 24, 2025	Full Task Force	Producer Connect	Jennifer Swanson (Nebraska Association of Resources Districts)
		Central Platte NRD Nitrogen Use Efficiency Dashboard	Courtney Widup (Central Platte NRD)
		ONE RED Program Overview	Sarah Starostka (DWEE)

Date	Meeting Type	Presentation(s)	Presenter(s)
Oct. 21, 2025 (Virtual)	Water Conservation and Quantity	—	—
Oct. 22, 2025 (Virtual)	Methods and Resources	Sentinel Ag: Optimizing Nitrogen for Profit & Stewardship	Jackson Stansell (Sentinel Ag)
		Nitrate Recommendation Calculations	Tim Mundorf (Central Valley Ag)
Oct. 23, 2025 (Virtual)	Nitrate Legacy and Drinking Water Access	—	—
Oct. 23, 2025 (Virtual)	Financing and Incentives	—	—
Nov. 13, 2025	Financing and Incentives	UNL Extension Nitrate Initiatives	Crystal Powers (Nebraska Extension)
Nov. 13, 2025	Methods and Resources	Hillside Solutions & Soil Dynamics: On Farm Organics Management in Nebraska	Andy Harpenau (Hillside Solutions & Soil Dynamics)
Nov. 19, 2025	Water Conservation and Quantity	Lower Loup NRD Large Water User Study	Russ Callan (Lower Loup NRD)
Nov. 21, 2025	Nitrate Legacy and Drinking Water Access	University of Nebraska Medical Center: Nitrate in Groundwater and Our Health	Jesse Bell, Krista Brown (UNMC)
		DWEE Drinking Water Program Overview	Laura Johnson (DWEE)
Dec. 16, 2025	Full Task Force	—	—
March 25, 2026	Full Task Force	—	—

Background

Given the Task Force's charge to develop actionable recommendations for improving water quality and ensuring the long-term sustainability of Nebraska's water resources, providing a brief background is necessary to frame these recommendations. The following section summarizes Nebraska's current water governance framework,

management tools, and ongoing initiatives, offering context for the Task Force's process in developing action items that build on existing efforts while avoiding duplication. Information on water quality and quantity topics considered by the Task Force is also included. This section is not intended to be exhaustive; rather, it highlights key elements most relevant to the Task Force's work.

Water Management Authorities and Governance Structure

Water quality and quantity management in Nebraska is carried out through coordinated partnerships between the State and Nebraska's 23 local Natural Resources Districts (NRDs), shown in Figure 2. In general, the Nebraska Department of Water, Energy, and Environment (Department or DWEE) manages surface water resources, while each NRD has authority over groundwater within its boundaries. This locally led, State-supported structure is foundational to Nebraska's approach to both water quality protection and water quantity sustainability, and it directly informs the Task Force's charge to develop practical, implementable recommendations.

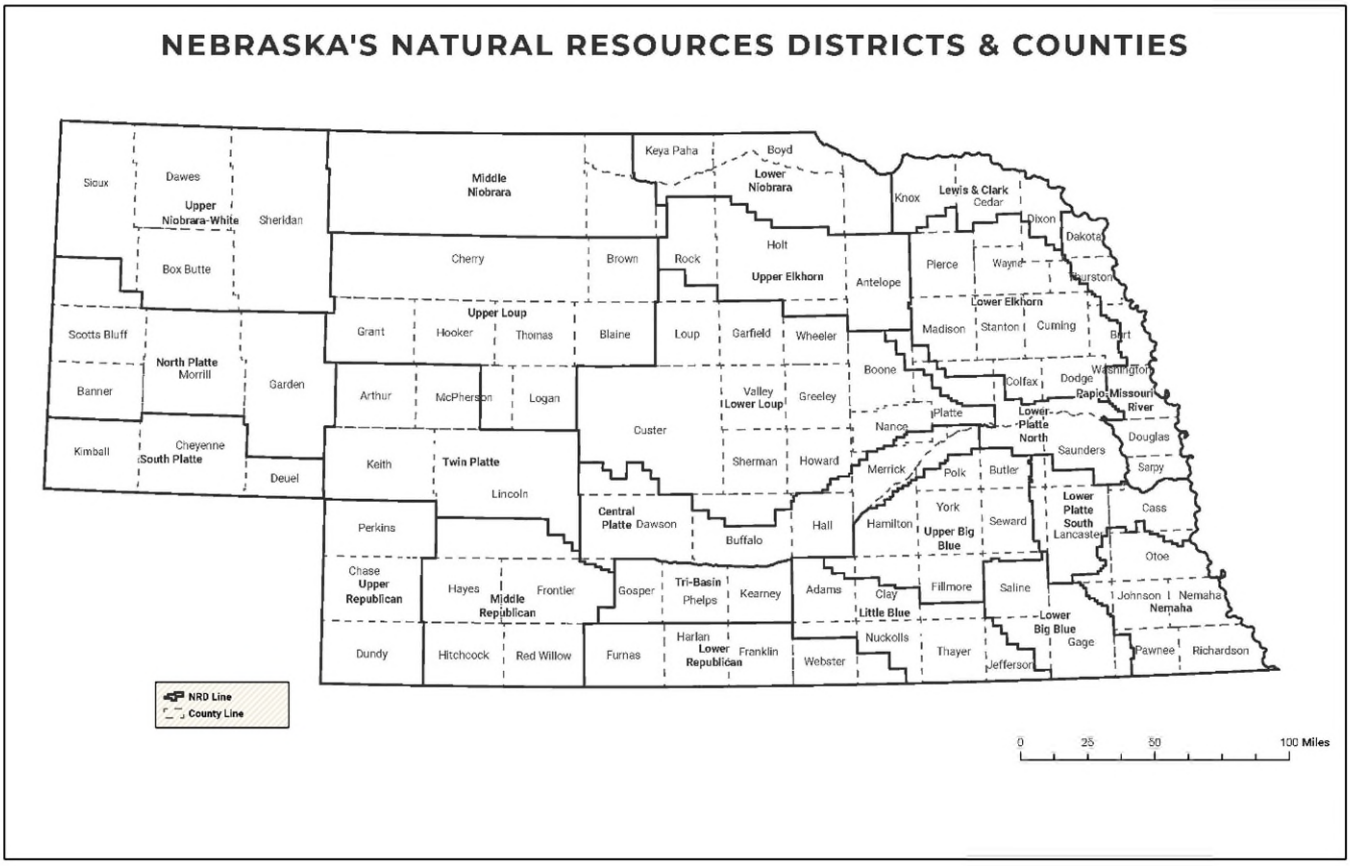


Figure 2. Nebraska Natural Resources District and county boundaries.

Pursuant to the Ground Water Management and Protection Act (GWMPA),[3] the Department is required to annually review, and, as necessary, evaluate the impacts of existing and new surface water and groundwater uses in each of the State's river basins.[4] This statutory responsibility provides the basis for identifying areas in which water supplies are under stress and where additional management requirements may be warranted. Similarly, for groundwater quality, the Department is required to prepare an annual report outlining the extent of groundwater quality monitoring conducted by NRDs during the preceding calendar year.[5] The data is analyzed by the Department for the purpose of determining whether ground water quality is degrading or improving and completing trend analysis.

Integrated Management Planning

Currently, all 23 NRDs are engaged with the Department in some phase of integrated management planning for hydrologically connected surface water and groundwater, as shown in Figure 3.

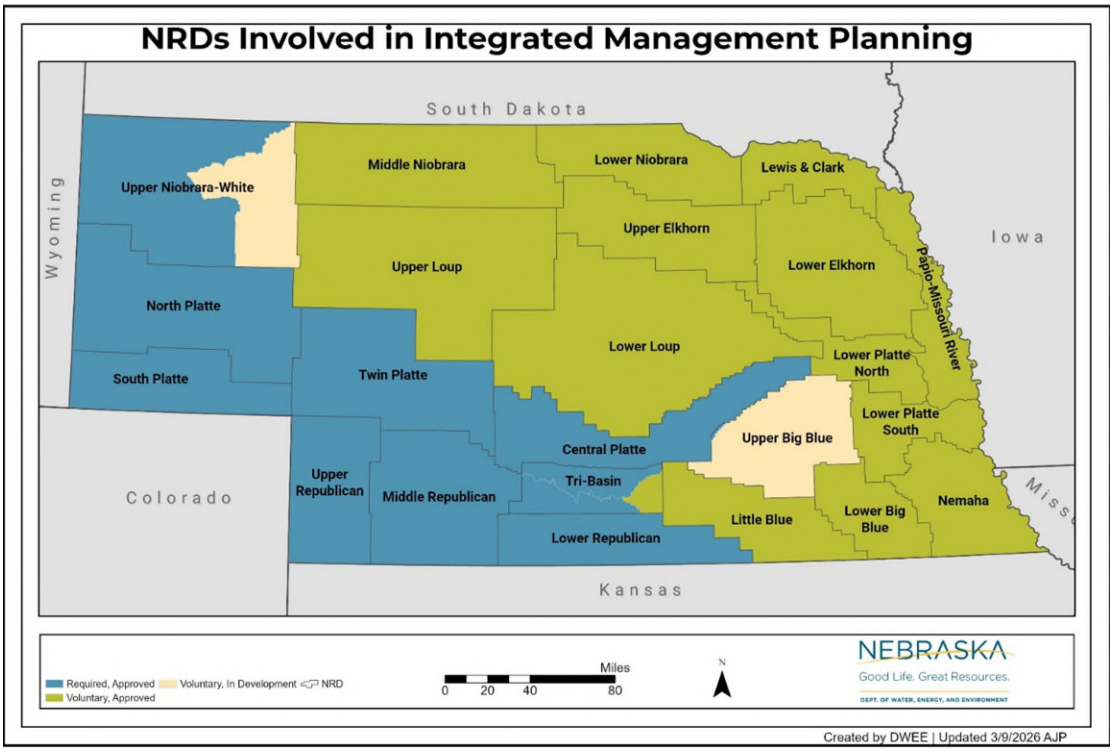


Figure 3. Natural Resources Districts with integrated management plans.

[3] Neb. Rev. Stat. §§ 46-701 to 46-756.
[4] Neb. Rev. Stat. § 46-713.
[5] Neb. Rev. Stat. § 46-1304.

Integrated management plans (IMPs) are required following a final determination by the Chief Water Office of the Department that an area is fully appropriated or overappropriated,[6] while voluntary IMPs may be adopted in areas that have not received such designation.[7] For purposes of this Final Report, a basin is considered overappropriated when it is subject to an interstate cooperative agreement among three or more states, the river basin is subject to a moratorium on the issuance of new surface water appropriations, and if the NRDs that have jurisdiction within the affected basin have closed the issuance of new water well permits or suspended the drilling of new water wells.[8] A fully appropriated basin is one in which current water use is equal to the current supply of water and is not expected to deplete the basin over the long term.[9] A hydrologically connected area describes an area where both surface water and groundwater interact with each other, either by surface water recharging the groundwater supplies, groundwater discharging into a stream or river, or both at the same time. Areas designated as fully appropriated or overappropriated are shown in Figure 4.

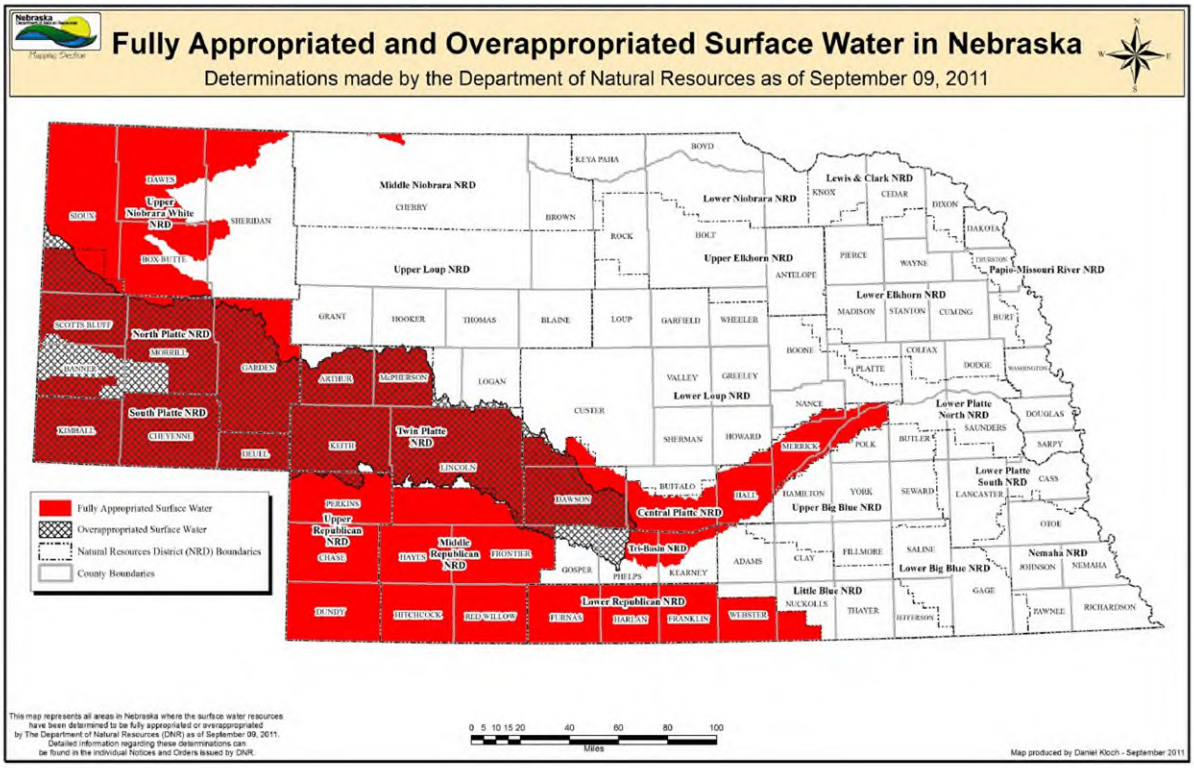


Figure 4. Areas designated as fully appropriated or overappropriated basins, subbasins, and reaches.

[6] Neb. Rev. Stat. § 46-715(1)(a).
[7] Neb. Rev. Stat. § 46-715(1)(b).
[8] Neb. Rev. Stat. § 46-713(4)(a).
[9] Neb. Rev. Stat. § 46-713(3).

Together, these designations and planning tools establish the landscape within which the Task Force evaluated water quantity challenges and developed recommendations intended to balance economic development with sustainable water use.

Water Quality

The Task Force was specifically charged with developing recommendations to improve water quality, with an emphasis on addressing elevated nitrate levels in groundwater. This reflects the fact that more than 85% of Nebraskans rely on groundwater as their primary source of drinking water and that nitrate contamination presents a well-documented risk to public health.

Throughout its process, the Task Force and its subcommittees heard from subject-matter experts to provide education on topics related to nitrate in groundwater, emerging technologies working to address the issue, existing NRD water quality programs, and public health impacts. These presentations informed the Task Force's understanding of both current challenges and feasible solutions. Presentation materials are included in the Appendices of this Final Report.

Nitrate in Groundwater

Nitrate exists in organic and inorganic forms, and is naturally occurring in the soil, though at very low levels. Elevated nitrate concentrations in drinking water can result from excess nitrogen applied at or near the land surface. Depending on local geology, nitrate can reach groundwater within months or may take more than 50 years. Once nitrate enters groundwater, it can persist for decades, and in some cases, longer depending on aquifer conditions and groundwater movement. Both inorganic and organic sources of nitrogen can become nitrate over time as they move through soil and water, combining with oxygen in the environment. Figure 5 illustrates the pathways nitrogen may take before reaching the aquifer.

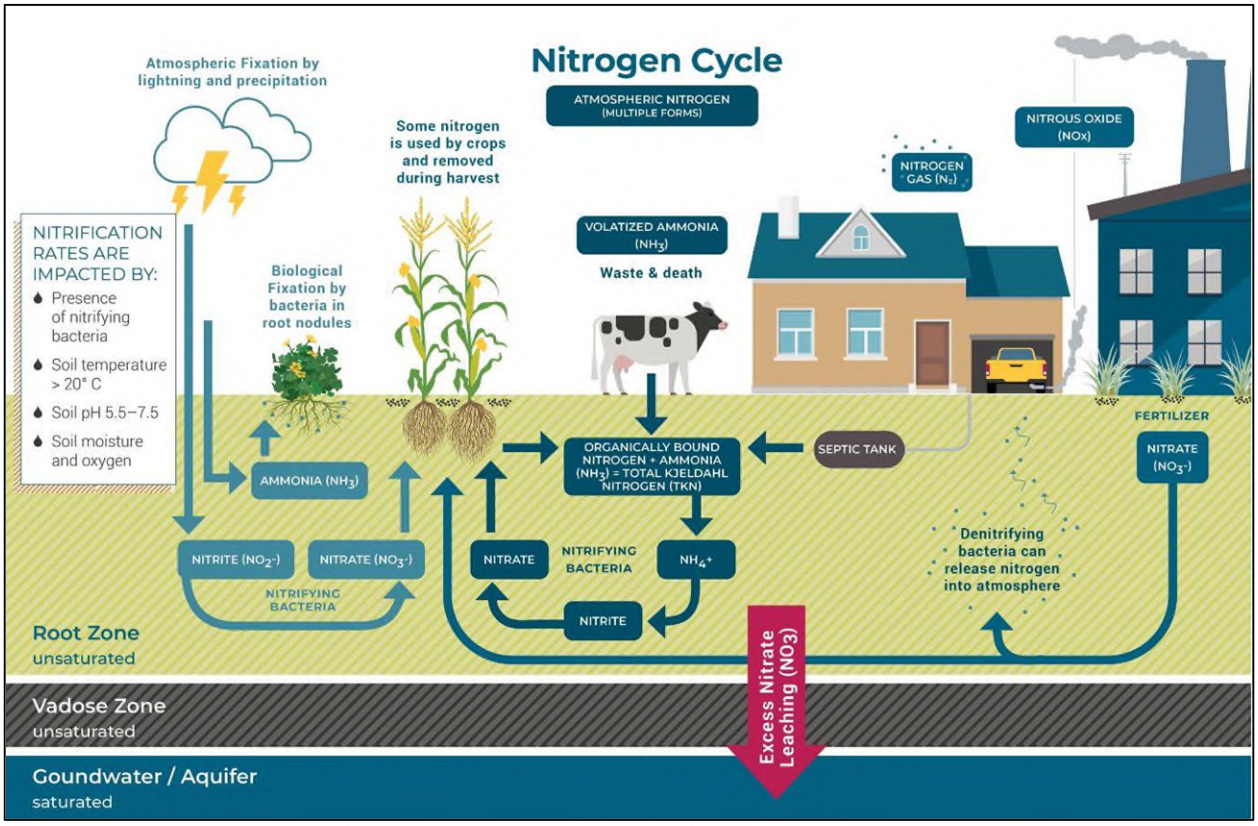


Figure 5. The Nitrogen Cycle (TKN = Total Kjeldahl Nitrogen).

Nitrate contamination has been a persistent issue in Nebraska, with increasing concentrations documented since the 1930s in areas such as the Elkhorn and Platte River Basins. Because of oxygen-rich conditions in groundwater across much of Nebraska, when nitrate leaches past the root zone, it can persist in the vadose zone for decades before entering the groundwater. This delayed response between surface activities and groundwater conditions underscores the importance of long-term, proactive strategies, as reflected in the Task Force's recommendations.

Nitrate Study

In 2023 the Nebraska Legislature, at the request of Governor Jim Pillen, appropriated funding through LB814,[10] for the former Nebraska Department of Environment and Energy (NDEE) to conduct a statewide water quality study. The study analyzed available nitrate samples from wells across Nebraska to identify areas of concern, collected additional data on nitrate in private domestic wells, and identified trends in nitrate concentrations in community water systems. The findings of this study provided important technical and policy context for the Task Force's work. Additional information

[10] https://nebraskalegislature.gov/FloorDocs/108/PDF/Slip/LB814.pdf.

about the study is available on the Department's Nitrate Drinking Water Study webpage.[11]

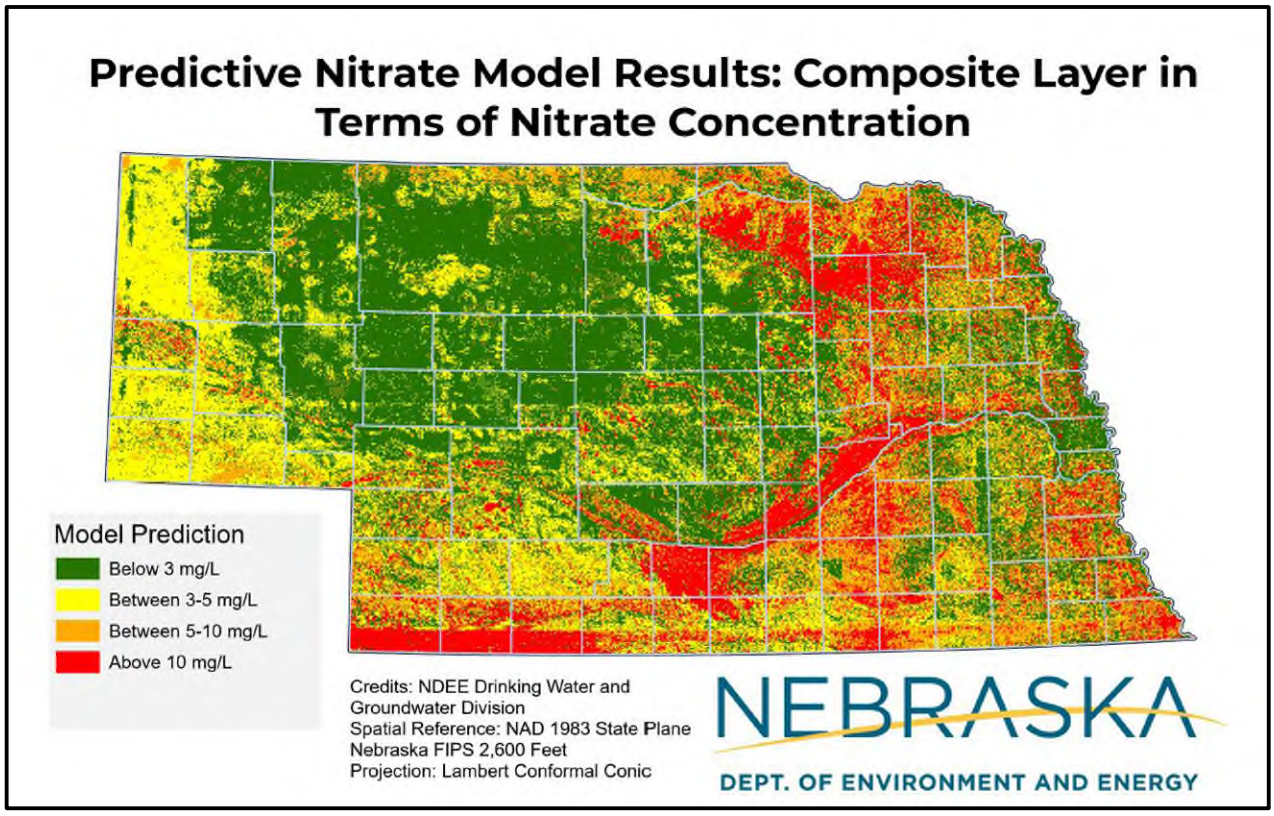


Figure 6. Predictive Nitrate Model Results: Composite Layer in Terms of Nitrate Concentration.

Existing State Programs

Resilient Soils and Water Quality Act

In 2019, LB925[12] created the Resilient Soils and Water Quality Act to protect and improve soil and water quality throughout the State. The legislation also resulted in the formation of the Nebraska Strategic Ag Coalition (NSAC or Coalition), a peer-to-peer group that continues to meet monthly. The Coalition connects producers with essential resources, peer networks, and opportunities that support resilient, profitable farming. By emphasizing best management practices (BMPs), the Coalition aims to improve soil and water health while empowering producers with the tools needed to adopt environmentally sound practices that can lead to more sustainable long-term operations. DWEE has continued to expand the Coalition's online platform[13] engaging

[11] https://dee.nebraska.gov/water-quality/nitrate-drinking-water-study.
[12] https://nebraskalegislature.gov/FloorDocs/107/PDF/Slip/LB925.pdf.
[13] https://nebraskastrategicagcoalition.org/.

producers across the State while also promoting educational tools and technical resources. The Coalition also facilitates connections to technical service providers and hosts events such as field days and conferences, creating a strong support network across Nebraska's agricultural community. The Resilient Soils and Water Quality Act also triggered the development of the Nebraska Soil Health Coalition and the Nebraska Grazing Exchange. Both entities are designed to support producer-led adoption of practices that strengthen soil health, water quality, and farm resilience.

Nitrogen Reduction Incentive Act (NiRIA)

Implemented by LB1368[14] in 2024, the Nitrogen Reduction Incentive Act (NiRIA) is an initiative aimed at encouraging producers to reduce the use of nitrogen fertilizers. The program is administered by DWEE in collaboration with local NRDs and offers financial incentives to producers who verify a reduction in nitrogen fertilizer application rates by the lesser of 40 pounds per acre or 15% of their baseline application rate. The program is administered in three priority areas, shown in Figure 7, and is offered to corn, sugar beet, and potato producers. In the first year, DWEE received over 1,300 applications totaling more than the original appropriated amount. The program has received additional funding from the Nebraska Corn Board for the 2026 growing season to continue the effort and expand a pilot nitrogen use efficiency (NUE) focused program in target areas, which is planned to roll out in 2026.

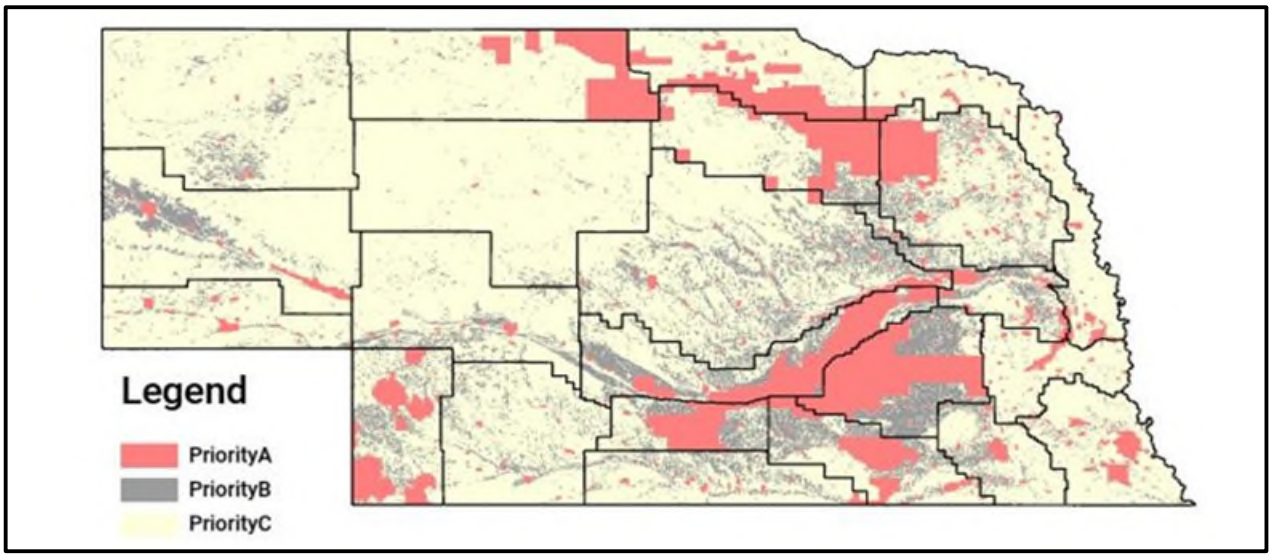


Figure 7. Map showing Priority Areas for the Nitrogen Reduction Incentive Program. Priority A includes wellhead protection areas and NRD Phase II or higher phase areas, Priority B includes areas throughout the State that have been certified to irrigate crops, and Priority C areas include all other areas of the State, including dryland.

[14] https://nebraskalegislature.gov/FloorDocs/108/PDF/Slip/LB1368.pdf.

State Revolving Fund (SRF) Programs for Drinking Water and Wastewater

The Drinking Water State Revolving Fund (DWSRF) program provides below-market rate loans, with forgiveness and grant assistance, to owners of public water systems (PWSs). The DWSRF is unique in that loans may also be awarded to privately-owned non-for-profit PWSs. Loan principal repayments revolve back into new loans, and interest earnings on the DWSRF are used to pay off Nebraska Investment Finance Authority (NIFA) bonds issued for the required EPA capitalization grant match. These funds play a key role in supporting PWSs investments in infrastructure and treatment systems that ensures safe drinking water for Nebraskans.

The Clean Water State Revolving Fund (CWSRF) program provides below-market loan financing with forgiveness assistance to municipalities for construction of wastewater treatment facilities and sanitary sewer collection systems to alleviate public health and environmental problems. The loan principal repayments revolve back into new loans, and interest earnings on the fund are primarily used to pay off the State match bonds.

More detailed information on the DWSRF and CWSRF regarding need, cost projections, and timing of loan activities is available in the annual Intended Use Plan on the department's website. [15]

Nonpoint Source Water Quality

The goal of the Nebraska Nonpoint Source Pollution Management Program is to protect and improve water quality impacted by nonpoint source pollution through an integrated statewide effort. The program is of particular significance because nonpoint source pollution is the most prevalent, widespread cause of water quality degradation in Nebraska, and is associated with runoff and percolation from agricultural and urban areas to waters of the State. The program is largely funded by the EPA through Section 319 of the federal Clean Water Act (CWA) and involves key federal, State, and local partners.

Source Water Protection

The purpose of the Source Water Protection (SWP) program is to protect water used as public or private drinking water for human health. The SWP program coordinates closely with the Clean Water Act 319 Program to engage with Nebraska's communities and producers to develop alternative 9-element Watershed Management Plans known as Drinking Water Protection Management Plans (DWPMPs) that proactively address nonpoint source contamination. SWP funds from the DWSRF are used to develop the plans, encourage community involvement through stakeholder groups, and hold public

[15] https://dee.nebraska.gov/sites/default/files/publications/IUP%20SFY%202026%20Final.pdf.

meetings to promote the projects. These plans are non-regulatory, community-based plans that provide an implementation strategy for protecting drinking water by reducing groundwater contamination. SWP funds have been distributed to complete 100 separate projects throughout the State since 2004. Projects include public education on SWP, workshops on BMPs, water conservation programs, contaminant identification and pathway removal, restoration of the SWP area, and water quality monitoring. Completed DWPMPs can enable entities in the planning area to request 319 funds through a competitive proposal process to implement projects to address the priorities identified in the plan.

Wellhead Protection Areas

Under the Wellhead Protection Area Act,[16] communities may voluntarily designate a wellhead protection area (WHPA) and adopt controls pursuant to the Wellhead Protection Area Act for the purpose of protecting the public water supply system. DWEE is the agency responsible for providing assistance to participating communities and is charged with wellhead protection plan (WHPP) approval.[17] Task Force members considered recent data evaluating the effectiveness of WHPAs when developing recommended goals and action items, including a recent study[18] using data from the Department's Groundwater Quality Clearinghouse.[19] There are 515 WHPAs delineated in Nebraska, as shown in Figure 8, of which 121 have approved WHPPs.

[16] Neb. Rev. Stat. §§ 46-1501 to 46-1509.
[17] Neb. Rev. Stat. § 46-1506.
[18] Jayasekera, Harshanee. 2025. "Do Wellhead Protection Areas Improve Groundwater Quality? Evidence from Nebraska." https://waterforfood.nebraska.edu/news-and-events/news/2025/10/do-wellhead-protection-areas-improve-groundwater-quality.
[19] https://clearinghouse.nebraska.gov/.

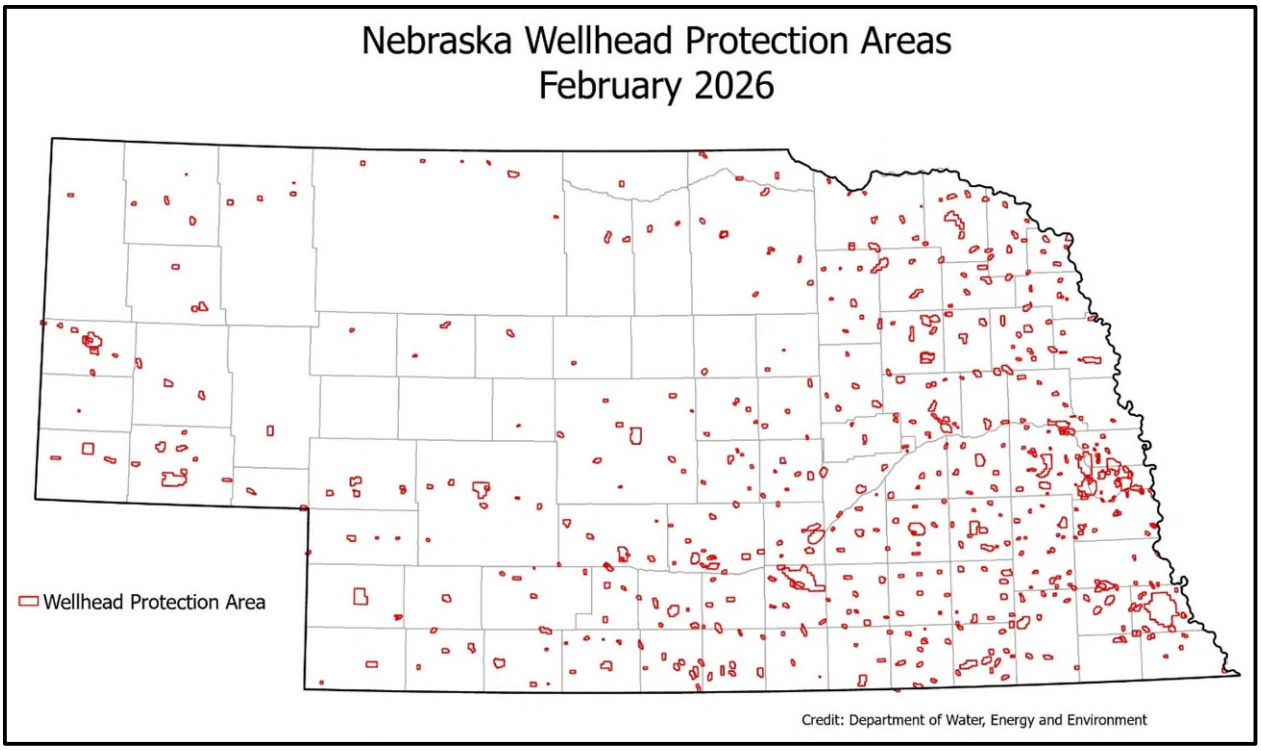


Figure 8. Wellhead protection areas in Nebraska.

Map source: https://www.nebraskamap.gov/datasets/87e5ea995bed4b6ba91ef4d5b2f2bb5e_0/explore.

Water Resources Cash Fund

The Water Resources Cash Fund (WRCF)[20] is administered by DWEE and is intended to be used in any area that has adopted an IMP to aid management actions taken to reduce consumptive uses of water, enhance streamflows, support groundwater recharge, or other activities that support plan implementation. The WRCF may also be used for implementation activities including for purposes of the Resilient Soils and Water Quality Act.

Water Sustainability Fund

The Water Sustainability Fund (WSF) is overseen by the Nebraska Natural Resources Commission (NRC) and annually awards funds to successful project applications that support the goals of the fund.[21] The WSF aims to support cost-effective projects that enhance water availability and quality by increasing aquifer recharge, reducing depletion, improving streamflow, and addressing threats to drinking water. It also promotes integrated water management, assists with sewer infrastructure upgrades, and ensures compliance with State and federal agreements while contributing to

[20] Neb. Rev. Stat. § 61-218.
[21] Neb. Rev. Stat. § 2-1506.

multiple water supply goals such as flood control, agriculture, recreation, and conservation.

ONE RED

The Task Force was provided the opportunity to learn about and consider related statewide initiatives that intersect with its charges. This includes DWEE's ONE RED program ("Opportunity for Nebraska: Reducing Emissions and Decarbonization"), which is working to identify voluntary measures and financial incentive programs that can achieve short-term and long-term emission reductions in all economic sectors by implementing technologies and systems to support industries across the State.[22] In July 2024, the U.S. Environmental Protection Agency (EPA) announced an award of $307 million to NDEE to implement selected measures from Nebraska's Priority Climate Action Plan (PCAP).[23]

The PCAP identifies high-impact actions for agricultural production, including the development of a Carbon Intensity (CI) score registry, incentives for regenerative agricultural practices, and support for precision agriculture technologies. Precision agriculture, in particular, provides producers with tools to optimize nutrient application, reduce losses to groundwater, and improve overall water use efficiency – objectives closely aligned with the Task Force's water quality and water quantity charges.

To achieve these objectives, the PCAP requires guidance from a Stakeholder Advisory Group, which will guide the development and implementation of these items. As such, the Task Force members completed a survey to provide input to the ONE RED Program to identify voluntary measures and financial incentive programs that align with Task Force goals related to implementation of new technologies, incentives, and systems to support producers across the State.[24] Task Force members will continue to provide input for a portion of the funding as identified in the goals and action items below.

Existing NRD Programs

Throughout the State, local NRDs have already taken practical steps to address water quality issues through existing statutory authorities and programs. Under the GWMPA,[25] NRDs are required to maintain groundwater management plans in which they conduct

[22] https://dee.nebraska.gov/aid/one-red-opportunity-nebraska-reducing-emissions-decarbonization.
[23] https://dee.nebraska.gov/sites/default/files/publications/Nebraska%20Priority%20Climate%20Action%20Plan.pdf.
[24] Survey results can be found in Appendix A.
[25] Neb. Rev. Stat. § 46-709.

groundwater quality monitoring to carry out the objectives of those plans. Many have implemented phased management areas as shown in Figure 9. NRDs also develop and maintain various targeted education and incentive programs designed to mitigate water quality issues.[26] The Task Force had the opportunity to become informed on existing NRD programs from Task Force members and other invited presenters. This resulted in the Task Force supporting and expanding existing programs within its goals and action items.

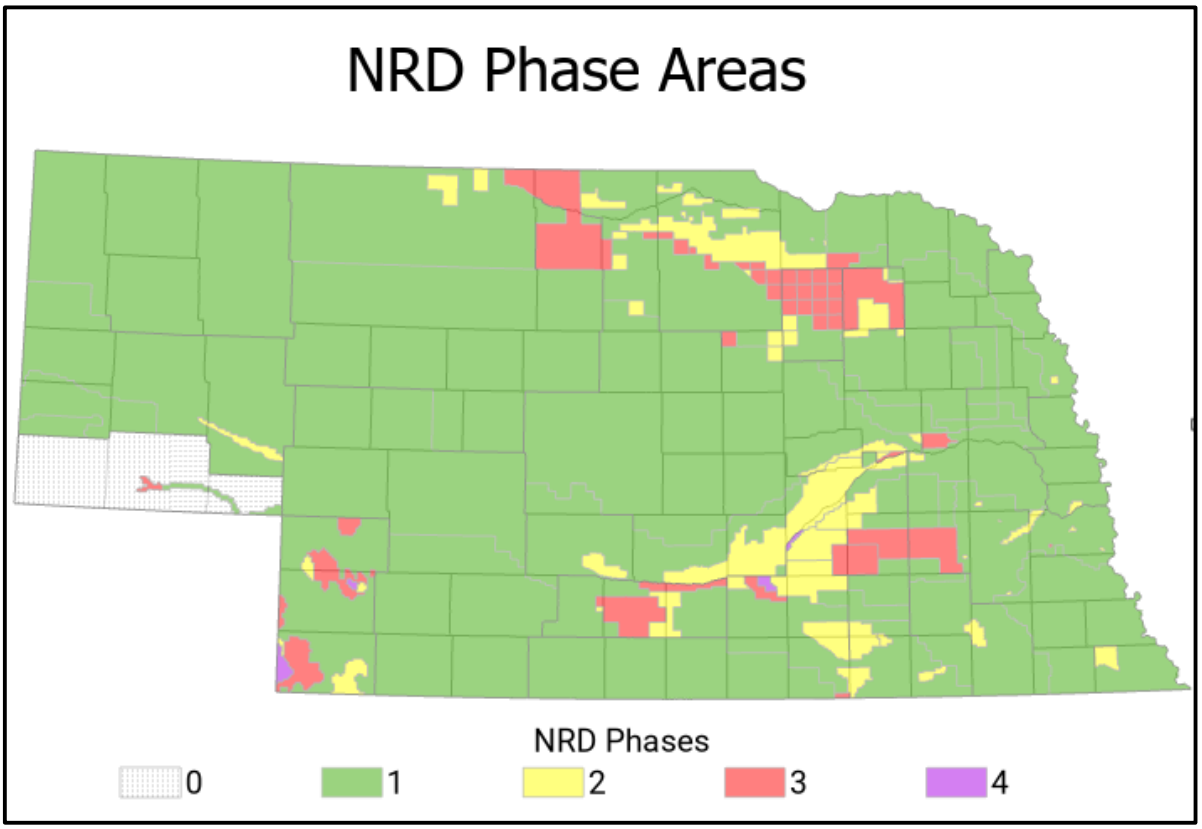


Figure 9. NRD Phase Areas.

Water Quantity

The Task Force also examined water quantity topics to promote the long-term sustainability of Nebraska's water resources. This evaluation included assessing the existing statewide framework for water measurement and identifying opportunities to improve data collection and monitoring, because effective water stewardship depends on understanding how much water is being used. The Task Force acknowledged and considered the importance of balancing water use across agriculture, industry,

[26] For more information on NRD programs see Appendix A or visit: https://www.nrdnet.org/nrds.

municipalities, and ecosystems. Discussions were further informed by long-term groundwater level data and historical trend analyses, as illustrated in Figure 10. This information is essential to sound management decisions regarding current and projected aquifer levels.

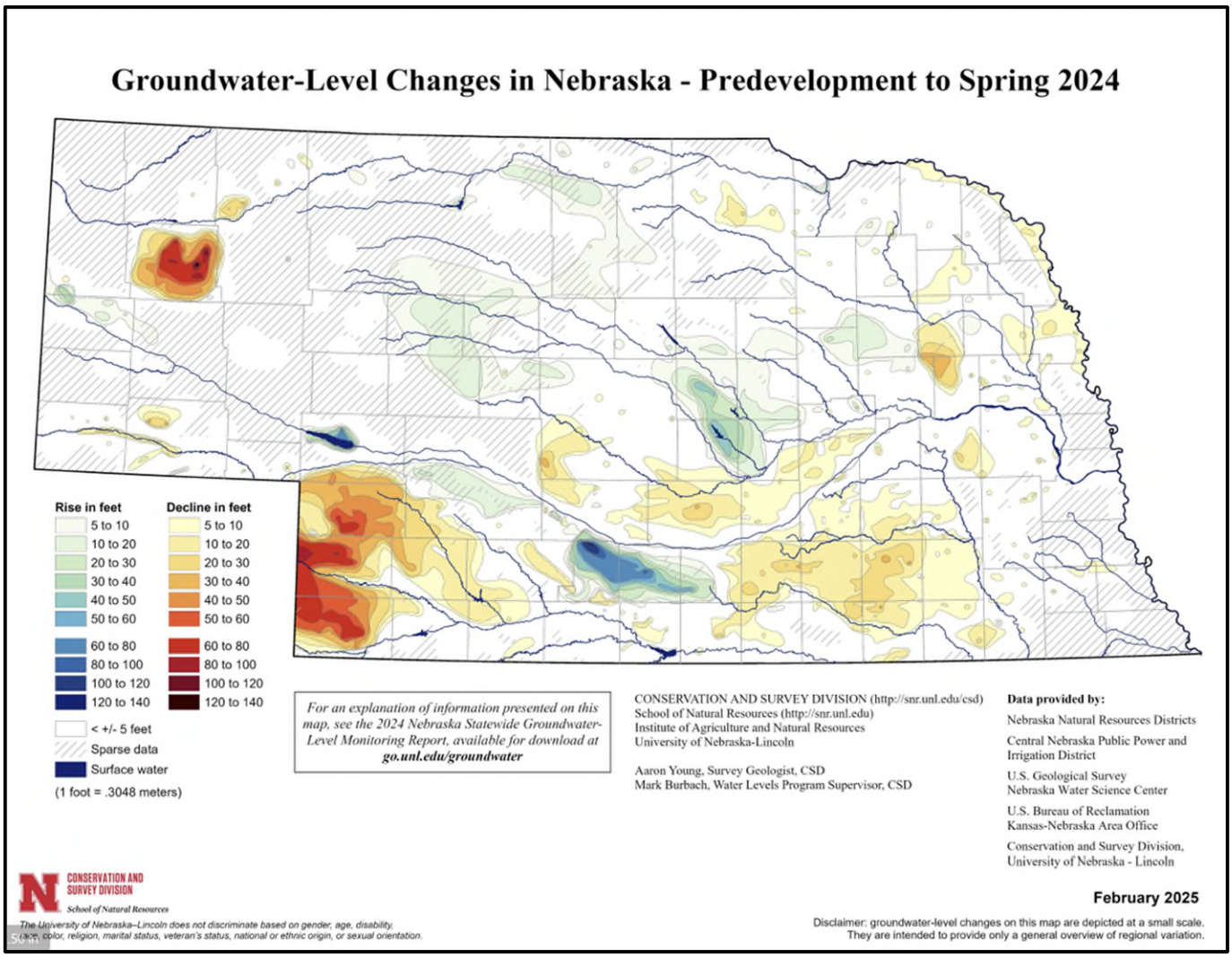


Figure 10. Groundwater level changes in Nebraska (Predevelopment to Spring 2024).

Water Measurement Data

The Task Force, with support from the Nebraska Association of Resources Districts (NARD), surveyed all 23 NRDs and utilized DWEE well registration data to establish a baseline of how water use is currently measured across the State. Tables 3 and 4 show the results from this survey. The results indicated that at least 53% of high-capacity

wells pumping greater than 50 gallons per minute (gpm) throughout the State are currently measured. This information was considered when developing recommended goals and action items related to increasing water measurement across the State.

Table 3. The total number of high-capacity wells pumping greater than 50 gpm in each NRD. Totals are broken down by well type.

High-Capacity Wells (Pumping >50 gpm)									
NRD	**Total**	**Aqua-culture**	**Commercial**	**Pit**	**Irrigation**	**Other**	**Livestock**	**Public w/ spacing**	**Public w/o spacing**
Central Platte	18719	4	94	6	18349	45	21	179	21
Lewis & Clark	1777	0	10	1	1688	3	28	37	10
Little Blue	7342	2	29	0	7142	23	22	118	6
Lower Big Blue	2590	0	15	1	2485	1	5	80	3
Lower Elkhorn	6316	2	99	4	5875	28	115	176	17
Lower Loup	10830	13	143	15	10394	24	74	152	15
Lower Niobrara	2756	0	2	7	2705	3	21	18	0
Lower Platte North	5003	3	73	7	4694	27	31	140	28
Lower Platte South	680	1	57	0	416	42	1	132	31
Lower Republican	3948	2	27	4	3802	8	35	70	0
Middle Niobrara	1316	2	2	1	1244	1	31	33	2
Middle Republican	2777	0	37	0	2641	15	28	56	0
Nemaha	943	0	21	0	772	21	13	112	4
North Platte	2796	51	35	1	2586	7	51	65	0
Papio-Missouri River	1636	7	81	0	1291	47	14	163	33
South Platte	1396	0	65	0	1270	3	0	51	7
Tri-Basin	5475	1	38	0	5364	10	16	43	3
Twin Platte	2573	1	68	12	2365	31	28	46	22
Upper Big Blue	12047	4	52	1	11728	89	52	121	0
Upper Elkhorn	4681	2	19	0	4567	0	37	53	3
Upper Loup	839	1	18	0	811	0	4	5	0
Upper Niobrara-White	2219	0	13	0	2120	3	25	50	8
Upper Republican	3398	0	14	0	3343	12	5	24	0
Total # of Wells	**102057**	**96**	**1012**	**60**	**97652**	**443**	**657**	**1924**	**213**
	DWEE Well Registration Database numbers (may include some inactive wells).								
	NRD provided records.								

Table 4. Total number of metered high-capacity wells pumping greater than 50 gpm in each NRD.

Metered High-Capacity Wells (Pumping >50 gpm)										
NRD	**Total**	**% of Wells Metered**	**Aqua-culture**	**Commercial**	**Pit**	**Irrigation**	**Other**	**Livestock**	**Public w/ spacing**	**Public w/o spacing**
Central Platte	635	3%	0	35	0	500	0	0	100	0
Lewis & Clark	264	15%	0	0	0	258	0	3	3	0
Little Blue	7342	100%	2	29	0	7142	23	22	118	6
Lower Big Blue	711	27%	0	0	0	631	0	0	80	0
Lower Elkhorn	6312	100%	1	59	4	5877	33	133	183	22
Lower Loup	1806	17%	1	15	0	1653	1	38	98	0
Lower Niobrara	255	9%	0	2	0	225	0	10	18	0
Lower Platte North	1587	32%	1	2	1	1441	6	25	109	2
Lower Platte South	516	76%	2	44	0	312	32	3	119	4
Lower Republican	3948	100%	2	27	4	3802	8	35	70	0
Middle Niobrara	287	22%	0	0	0	250	0	10	25	2
Middle Republican	2777	100%	0	37	0	2641	15	28	56	0
Nemaha	216	23%	0	0	0	216	0	0	0	0
North Platte	2522	90%	0	23	0	2436	0	0	63	0
Papio-Missouri River	125	8%	0	0	0	125	0	0	0	0
South Platte	1315	94%	0	20	0	1246	0	0	47	2
Tri-Basin	2649	48%	0	21	0	2577	5	4	39	3
Twin Platte*	2410	94%	0	45	0	2365	0	0	0	0
Upper Big Blue	12047	100%	4	52	1	11728	89	52	121	0
Upper Elkhorn	483	10%	0	0	0	430	0	0	53	0
Upper Loup	835	100%	1	18	0	811		0	5	0
Upper Niobrara-White	1905	86%	0	11	0	1840	0	2	50	2
Upper Republican	3398	100%	0	14	0	3343	12	5	24	0
Total of Metered Wells	**54345**	**53%**	**14**	**454**	**10**	**51849**	**224**	**370**	**1381**	**43**

*Includes the TPNRD Water Data Program where they partner with power companies to use smart meters and ethos devices on non-eclectic wells to measure run times, those are factored with pumping rates to calculate Realtime usage on all irrigation wells in the district.

Some districts highlighted that many non-metered wells are actively measured for water use via mechanisms other than flowmeters. One example is MNNRD, where the district requires water use reports for about two thirds of their irrigated acres, but they do not specify that it has to come from a flowmeter - they note that producers in the district often use engine hours or other pivot telemetry technology to measure water use.

Large Water Users

Task Force discussions focused on strategies to address large water users in the State, while balancing economic development priorities and ensuring growth is not hindered. All water users must obtain necessary permits from the local NRD and the State, where applicable. While there is no statutory definition for what is considered a large water user across the State, generally NRDs have rules regarding when large groundwater user rules are triggered. For example, in certain NRDs, if a user plans to pump over 500 acre feet per year, a hydrogeologic impact study may be required to determine the effects of the pumping on groundwater and surface water resources in the area prior to applying for a well permit. Additionally, different rules and laws apply across the State depending on whether the area is considered not appropriated, fully appropriated, or overappropriated.

As described in the goals and action items, there may be a need for continued conversations surrounding large water users – establishing more consistent message regarding "large water users" statewide, while allowing for regional variability as necessary.

Recommended Goals, Action Items, and Metrics for Success

The following goals and corresponding action items and metrics for success are the result of the Task Force's efforts, which are broken down further in this Final Report. In developing recommendations, the Task Force prioritized incentives, innovation, and education over new regulatory requirements, while acknowledging that additional regulatory measures may be necessary in the future if desired outcomes are not achieved. Building upon and expanding existing coordination among State agencies, NRDs, and other entities and resources was also a priority.

Goal 1: Expand water measurement across the State for groundwater and surface water.

Expanding water measurement is important for sustainable water management in Nebraska. The Task Force recommends beginning with voluntary participation supported by cost-share incentives while acknowledging that mandatory requirements may be considered in the future if desired outcomes are not achieved. Equally as important is educating water users on how to interpret and apply this measurement data, including benchmarking and informed decision-making to optimize water use. Existing measurement efforts will be leveraged to maximize efficiency, collaboration, and informed decision-making.

Action Items:

- Establish an incentive program that supports voluntary metering and measurement for both groundwater and surface water, followed by mandatory requirements if adoption rates do not increase as a result of incentives. The program should offer higher incentives initially, with the rate decreasing over time. The program should address surface water metering separately, considering differences in how surface water is measured.
- Develop recommendations for best management practices for the incentive program. This may include a list of approved metering and measurement devices, may incorporate industry standards, and may consider installation and maintenance details. Such specifications could be modeled after existing rules and policy documents from NRDs who have metering requirements in place.
- The Task Force recommends integrating measurement data within the benchmarking capability of Producer Connect or similar NRD databases. The

water use data should be reported at the NRD level for meaningful local insights, while the State (DWEE) should receive only aggregate information to ensure that individual producer data is not identified. When establishing reporting requirements, producer data privacy concerns must be considered and addressed.

- Develop educational materials and events for producers and agronomists pertaining to water measurement data, including how to use the data to improve producer production and practices, while recognizing that one-on-one interactions often produce more impactful results.
- Explore opportunities to share and leverage existing water-use data collected by pivot manufacturers. This includes identifying what data is already available and evaluating how it could support statewide water-management and reporting efforts for water use.

Metrics for Success:

- Increase in new metering and measurement devices implemented by 2029.
- Percent of statewide producers with water measurement in place and utilizing benchmarking capabilities.

Goal 2: Develop strategies to support large water users and continued economic growth in the State.

Water-intensive industries often serve as critical drivers of local and regional economies throughout the State, but demand can place pressure on water supplies. By implementing proactive planning and coordination, policymakers and stakeholders can support economic development while ensuring water availability for generations to come.

Action Items:

- Improve coordination between State Department of Economic Development, DWEE, NRDs, Power and Irrigation Districts, water and energy utilities, counties and municipalities for siting of new industries.
- Support NRDs in establishing more consistent messaging regarding "large water users" statewide, while allowing for regional variability as necessary.
- Facilitate resource sharing and continued dialogue among NRDs and surface water stakeholders – some of which may include statutory requirements and existing approaches established that could be used as an example.
- Develop a public facing portal for new industries to assess water availability and requirements.

- Convene a group of Nebraska water experts, surface and groundwater managers, to review and reevaluate existing water laws that allow for (or might hinder) continued economic growth.

Metrics for Success:

- Review coordination efforts no less than annually.
- Launch public facing portal within 18 months.

Goal 3: Expand water storage opportunities and management of water consumption.

Expanding water storage opportunities and improving the management of water consumption are essential strategies for enhancing water sustainability. By investing in new and existing reservoirs, aquifer recharge systems, underground storage, and other retention projects, the State can better capture and retain water during periods of surplus for use during droughts or high-demand periods. Education and outreach is also important, helping stakeholders understand the benefits of these water projects.

Action Items:

- Identify and promote existing recharge and storage projects and expand use of excess surface water flows for intentional groundwater recharge and underground storage.
- Invest in existing storage and recharge systems and construct new regional storage or recharge facilities where feasible and when funding is available.
- Educate public and stakeholders on water quality and quantity benefits, including, but not limited to topics such as water conservation and community water consumption; the benefits of recharge for not only quantity, but for water quality as related to nitrates in groundwater.

Metrics for Success:

- Launch publicly available maps identifying storage and recharge opportunities across the State.
- Acre feet (AF) of new/enhanced storage or recharge opportunities developed.

Goal 4: Ensure nitrogen fertilizer recommendations are agronomically, economically, and environmentally appropriate for Nebraska producers.

Nitrogen fertilizer recommendations aim to balance crop needs with responsible resource management. This approach helps ensure optimal crop production while minimizing adverse impacts to the environment and maintaining economic viability for producers. Ensuring that those who provide nitrogen recommendations are properly educated and certified is essential for making fertilizer decisions that are agronomically sound, economically efficient, and environmentally appropriate, especially in NRD Phase II through IV areas and Wellhead Protection Areas (WHPAs).

Action Item:

- Create a nitrogen management education and certification program for fertilizer salespersons or advisors who make nitrogen fertilizer recommendations within two years.
- Include nitrogen management training for Nebraska Certified Crop Advisors (CCAs) as continuing education units (CEUs) within two years.
- Incentivize producers applying commercial nitrogen within NRD Phase II, III, or IV areas and Wellhead Protection Areas to submit a nitrogen application plan to the local NRD. The plan must be created with an NRD staff member or a nitrogen advisor that has completed a nitrogen management education and certification program.

Metrics for Success:

- Nitrogen education and certification program established by 2 years.
- Increase in the number of participants in the nitrogen education and certification program.
- Increase in the number of nitrogen management plans approved by an NRD staff member or other certified advisor.
- Increase in the number of fields using nitrogen in an NRD Phase II, III, or IV, or Wellhead Protection Area having a certified nitrogen management plan submitted to the NRD before nitrogen is applied.

Goal 5: Incentivize producers to increase the percentage of nitrogen applied in season versus out of season to improve overall nitrogen use efficiency.

Increasing the percentage of nitrogen applied in-season, rather than out of season is critical for improving overall nitrogen use efficiency. This targeted timing not only supports better crop growth and higher yield potential but also lowers input costs by reducing for excess application that is needed when applying out of season. Shifting a greater share of nitrogen applications to in-season strengthens both farm profitability and soil and water health.

Action Items:

- Increase the number of fertigation systems or similar technologies by offering cost share dollars to producers in NRD Phase II, III, or IV areas and Wellhead Protection Areas by 2029. Incentives shall be available for both irrigated and dryland acres and consider the cost of pumps, tanks, controls, sprayer components, and other application components.
- Promote practices aimed at minimizing fall and spring pre-plant application of commercial nitrogen considering current UNL nitrogen recommendations (UNL Extension NebGuide G2365, Dec. 2024) and opportunities for reducing overall input cost. Prioritize NRD Phase II, III, or IV areas and Wellhead Protection Areas.
- Encourage NRD boards to review their current requirements regarding fall nitrogen recommendations, particularly in phase areas and Wellhead Protection Areas with increasing nitrate levels to ensure local policies support improved nitrogen management practices and protect water quality.

Metrics for Success:

- Increase in number of acres using fertigation systems or similar technology by January 1, 2029.
- Increase in number of acres in NRD Phase II, III, or IV, and Wellhead Protection Areas applying fertilizer in accordance with UNL recommendations.

Goal 6: Increase adoption of sensor- and model-based nitrogen recommendation technology.

Adopting sensor- and model-based nitrogen recommendation technologies such as Sentinel Ag, Adapt-N, or similar platforms provides real-time or field-specific insights into crop nitrogen status, soil conditions, and expected yield potential. By utilizing these

advanced tools producers are able to tailor nitrogen applications more precisely, improving fertilizer management, timing and placement of nitrogen applications, along with enhanced irrigation management. This approach enhances nitrogen use efficiency and reduces losses below the root zone and reduces loading to groundwater and surface water.

Action Items:

- Incentivize producers to implement sensor- and model-based technologies in at least one field in any NRD Phase II, III, or IV area or Wellhead Protection Area.

Metrics for Success:

- Increase in number of new adopters compared to overall producers within a targeted area.

Goal 7: Increase adoption of soil health practices which will allow producers to increase nutrient cycling and reduce overall nitrogen application rates over time. Improved soil health will also maximize water infiltration and crop utilization while minimizing runoff.

Promoting the adoption of soil health practices enables producers to enhance nutrient cycling and increase plant uptake of applied nitrogen. The implementation of these practices leads to healthier soils capable of maximizing water infiltration, optimizing nutrient availability for crops, and minimizing nutrient runoff and leaching. By investing in healthy soil practices, producers can achieve more efficient and sustainable crop production.

Action Items:

- Create and promote available incentives to enhance soil health practices and accelerate their adoption. Soil health practices are meant to accomplish one or more of four core principles for improving soil health: (1) minimize soil disturbance, (2) maximize the presence of a living root system, (3) maximize soil cover, (4) maximize biodiversity. For more information see: https://www.farmers.gov/conservation/soil-health and https://nebraskastrategicagcoalition.org/.
- Encourage the adoption of practices that will reduce annual nitrogen applications.

Metrics for Success:

- Increase in acres with cover crops.
- Decrease in acres with full or conservation tillage.
- Increase in acres with sampled manure or compost applied.
- Increase in number of producer to producer engagement opportunities.
- Increased utilization of water and soil tests (e.g., Haney test)

Goal 8: Support Nebraska producers by providing education on nitrogen fertilizer and irrigation best management practices to reduce nitrate leaching and to protect groundwater resources.

Continued education opportunities for Nebraska producers on nitrogen fertilizer and irrigation best management practices is important in protecting groundwater quality, specifically in NRD phase areas and Wellhead Protection Areas where nitrate levels are increasing. By focusing outreach on awareness and understanding of proper nitrogen application rates, timing, methods, and efficient irrigation strategies, producers can minimize nitrate leaching to groundwater and potentially increase profits.

Action Items:

- Within three years, provide one hundred percent of producers in NRD Phase II, III, or IV areas and Wellhead Protection Areas with education on nitrogen best management practices (BMPs) including: Use of inhibitors, in season application, reduced fertilizer rates, technology-based recommendation tools (models and remote sensing), soil health practices, and other recommended practices.
- Within three years, provide one hundred percent of producers in NRD Phase II, III, or IV areas and Wellhead Protection Areas with education on irrigation best management practices including: water meters and measurement devices; soil moisture probes (incorporate incentives e.g., incentive paid to the grower for up to 2 soil moisture probes); irrigation modeling, evapotranspiration (ET) monitoring, and other recommended practices.

Metrics for Success:

- Increase in number of producers receiving information on nitrogen and irrigation best management practices within the targeted areas.
- Increase in number of irrigation improvements made including number of added water meters, soil moisture probes, modeling or ET monitoring tools, and fertigation systems.
- Increased in number of acres covered by a nitrogen management plan which may include the following: Nitrification inhibitor, in season application, lower

application rates than in prior years, or advanced technology-based recommendation.

Goal 9: Develop consistent education, marketing, and outreach materials related to water quality, quantity, and public health for use across the State.

Developing consistent, statewide education, marketing, and outreach materials will support Nebraskans in furthering their understanding of key issues related to water quality, quantity, and public health, including nitrate contamination. Uniform materials and messaging ensure that communities receive clear, accurate information about safe water practices, potential health risks, and strategies to reduce nitrate levels in drinking water. This coordinated approach supports public awareness, encourages responsible water use and nutrient management, and leverages ongoing statewide efforts to protect both water resources and public health for the near and long term.

Action Items:

- Within six months, develop strategy for education materials to ensure consistent messaging and appropriate distribution is used throughout the State.
- Within 12 months, develop marketing and outreach materials for water quality, quantity, and public health with an emphasis on vulnerable areas and populations including but not limited to rural areas, newborns, children, and older populations. Public awareness activities may include public service announcements, ads, information kits and brochures, and promoted social media campaigns.
- Coordinate efforts with target audiences including public health agencies, medical professionals, lending institutions, real estate agents, schools, UNMC, UNL, NRDs, DHHS, community water systems, local governments, and others).
- Regularly review, assess, and update the education materials to ensure they are current, engaging, and relevant. Ensure the content reflects the best science, regulatory context, and on-the-ground practices.

Metrics for Success:

- Number of audience specific materials developed and distributed to partners.
- Number of new partnerships formed with target audience.
- Review materials, distribution lists, and list of agency partners no less than annually.
- Review outreach areas and identify where additional focus or modified outreach areas are needed.

Goal 10: Provide support and resources to public and private drinking water well owners to ensure safe and reliable drinking water for Nebraskans.

Ensuring safe and reliable drinking water for all Nebraskans requires a coordinated, proactive approach that supports both public and privately owned wells. By integrating existing State and local water planning efforts, strengthening community engagement, and expanding technical assistance, the State can better identify risks, address contamination concerns, and improve long-term water reliability. Enhanced data use and stronger partnerships with nutrient management staff will help protect vulnerable recharge areas and support informed decision-making. Continued efforts to connect well owners, communities, NRDs, and State agencies with resources will safeguard public health and promote sustainable drinking water management practices across the State.

Action Items:

- Leverage and integrate existing water planning efforts (capacity development, source water protection, wellhead protection, integrated management plans, and watershed plans) with UNL Extension and UNMC to create community driven stakeholder groups that inform and educate residents on the connection between drinking water quality and public health.
- Provide resources regarding the availability of water testing assistance, the need for ongoing annual sample collection, analysis, and interpretation of lab results for domestic well users.
- Utilize available DWEE and other data and tools to proactively support community water systems.
- Build upon existing local, State, and federal resources to establish Source Water Protection and Wellhead Protection Area Coordinator positions (nutrient management) that collaborate with NRDs, DWEE, Nebraska Rural Water Association (NeRWA), and Natural Resources Conservation Service (NRCS) to provide technical assistance and guidance on working agricultural lands that intersect with areas of recharge for public water supply wells.
- Identify NRDs with full-time nutrient management and source water protection staff, and available funding opportunities to expand these positions. Develop a report on NRDs without nutrient management staff, including estimated funding needs and opportunities for shared staffing across adjacent NRDs.
- Develop and implement nitrogen management plans for producers in WHPAs and summarize important variables contained within the plans for communities.

Metrics for Success:

- Percentage of the communities with WHPAs engaged in water planning efforts.
- Percentage of known (registered and non-registered) domestic wells sampled annually.
- Percentage of NRDs with full-time nutrient management and source water protection staff.

Goal 11: Expand rural water systems and regionalization of water systems.

Regionalization of water systems is a tool that could be utilized for those communities that do not have enough resources to continue to sustainably operate a public water system nor build and maintain water treatment systems. By combining water systems, an economy of scale can be realized and management efforts can be focused on maintaining high quality source water for those communities. The development of regional water systems will likely be a foundation for the expansion/development of future rural water systems.

Action Items:

- DWEE shall identify potential water system regionalization opportunities and report on findings. Include identification of communities based on water quality, status of assets, distance between systems, and fiscal health of the system needing support and those that could potentially provide potable water.
- Survey all Nebraska communities with their own groundwater wells and NRDs for potential water system regionalization opportunities.
- Evaluate regionalization opportunities for potential State Revolving Loan Funds and other funding opportunities. Identify loan and loan forgiveness conditions.
- Provide assistance with interpreting water quality monitoring data and understanding regional water quality trends.

Metrics for Success:

- Complete survey and reporting by DWEE within 24 months.
- Complete survey of communities and NRDs identified for potential water system regionalization and determine status and needs within 24 months.
- Completion of water system regionalization assessment alternative for those communities interested in regionalization opportunities.

Goal 12: Establish a centralized clearinghouse to inventory and prioritize water quality and quantity projects across Nebraska.

Establishing a centralized clearinghouse for water projects in Nebraska would create a coordinated platform to inventory, track, and prioritize initiatives addressing both water quality and quantity. Consolidating information on ongoing and proposed projects, funding opportunities, and regional needs, would serve as a valuable resource for State agencies, local governments, and other stakeholders to improve decision-making, reduce duplication of efforts, and ensure resources are directed to high priority projects. This approach can enhance Nebraska's ability to manage its water resources sustainably, support local communities, while protecting public health.

Action Items:

- Establish a clearinghouse platform to compile, organize, and maintain information on water project needs across the State.
- Designate a point person within DWEE responsible for maintaining the clearinghouse who shall be responsible for coordinating with the Department of Economic Development to capture public and private investment opportunities.
- Create and apply standardized criteria for prioritizing projects based on factors such as environmental impact, public health, regional needs, cost-benefit, urgency, and alignment with State and local water goals.
- Create and implement annual review process to update the clearinghouse, reassess priorities, and track project progress.

Metrics for Success:

- Point person assigned: Designation of Water Project Coordinator or equivalent role within six months.
- Clearinghouse launch: Minimum viable product established within six months and functional clearinghouse established within 12 months of the onboarding of the Water Project Coordinator.
- Complete annual review and maintenance of clearinghouse to best serve the State.

Goal 13: Identify and implement sustainable, diversified funding models to support the development, implementation, and maintenance of priority water projects in Nebraska.

The Task Force recommends identifying and implementing diversified funding to ensure that Nebraska's water systems can meet both current and future needs efficiently and

sustainably. By leveraging a mix of federal, State, local, and private resources, these funding strategies can provide consistent financial support while reducing reliance on any single source.

Action Items:

- DWEE will conduct a funding analysis to identify existing State, federal, local, and private funding sources.
- Work to secure financial resources that will assist with upgrades and improvements to ensure long-term financial stability but most importantly, to ensure that residents of the State have access to safe and reliable drinking water.
- DWEE will evaluate gaps, limitations, and overlap within existing funding mechanisms.
- Based on the findings from abovementioned analysis DWEE will collaborate with communities, irrigation districts, NRDs, and producers, etc. DWEE should also review available funding opportunities to determine when partnerships should be developed to pursue grants and other funding opportunities from the clearinghouse in Goal 12.
- Explore innovative funding models including but not limited to private funds (outside investments like Google, Frito Lay, Amazon, etc.); tax revenue; revolving loan funds; or bonds.

Metrics for Success:

- Funding analysis complete: Existing funding and funding gap analysis completed within 12 months.
- Funding alternatives identified: Identify alternatives or innovative funding models and present with pros and cons within 24 months.
- Dollars secured and new funding allocations (private donations and expanded grant opportunities)
- Maintain and update fund analysis and partnership opportunities with no less than annual reviews.

Goal 14: Recommend funding priorities for ONE RED funding and other potential funding sources.

Task Force members were surveyed to identify priorities for ONE RED funding and will continue to serve as a strategic advisory body for a portion of these funds, supporting the implementation of Task Force recommendations that align with grant requirements. The results of the survey can be found in Appendix A of the Final Report. The Task Force has identified as equally important the ongoing identification of funding mechanisms

and opportunities to leverage federal, State, local, and private resources for water projects in the long term.

Action Items:

- Develop a tiered incentive program based on ONE RED survey results, allowing each NRD flexibility in setting scoring criteria and prioritizing practices. The program should be simple and scalable for producers and crop consultants, outline clear steps to achieve measurable outcomes, and consider alignment with existing regulatory frameworks. This includes offsetting costs or prioritizing eligibility for practices that create strategic partnerships to incentivize compliance with NRD regulations or other laws.
- Communicate enhanced market value to producers and crop consultants by demonstrating how operating at an improved carbon intensity ("CI") score can create additional value for their commodities in other markets.
- Identify additional funding and incentive priorities that encourage greater adoption of innovative technologies by producers across the State.

Metrics for Success:

- ONE RED Incentive Program Established: Launch a minimum viable program within one year and provide incentives to producers for the 2027, 2028, and 2029 growing seasons in accordance with grant requirements.
- Continued Feedback: Provide annual feedback on funding utilization and priorities.

Implementation

Task Force members recognize that implementing the goals and action items identified under this charge is a substantial and complex undertaking. Accordingly, the items set forth in this Final Report are intended as recommendations and the need for continued discussion of specific topics may be necessary and, where appropriate, may materialize into future legislation or other policy development. Implementation of short-term goals will focus on enhancing partnerships and collaboration across the multiple groups represented on the Task Force and other key stakeholders across the State. The Department, through realignment conducted during the recent agency merger, will utilize the actions items of the Task Force to prioritize program activities and leverage in new and existing resources to support those efforts. Coordinated planning activities, such as IMPs, will be structured to align with Task Force goals and support implementation activities that are prioritized toward accomplishing those goals. Notably, many of the Task Force recommendations align with and build upon initiatives already underway

across the State. With the additional resources available through the ONERED program, significant emphasis will be placed on leveraging those resources toward implementation of the recommendations and action items identified by the Task Force. As shown in Table 5, several activities are planned for initiation in year one.

Table 5. Implementation activities, funding sources, and year one activities related to Task Force Goals and Action Items.

Implementation Task	Goal	Funding Source(s)	Year One Activities
Develop a resource inventory for measurement programs and resources	Goal 1	DWEE; NRDs	Identify current technologies available to producers for real-time water measurement and best practices associated with the implementation of those technologies.
Provide incentives for installation of measurement equipment and technologies	Goal 1	Water Resources Cash Fund; ONERED; NRCS	Stand up ONERED incentive options for producer enrollment
Enhance Producer Connect and other similar platforms to provide benchmarking information	Goal 1; Goal 4	Water Resources Cash Fund; ONERED	Continue to provide enhancements to Producer Connect that allow for benchmarking of nitrogen use efficiency and water application.
Establish a water availability dashboard to improve planned economic developments	Goal 2	Water Resources Cash Fund; ONERED	Develop dashboard to distribute key water availability data and other water related metrics for consideration in economic development strategies.
Convene a group of water experts to review current surface water and groundwater laws to ensure current regulatory frameworks are effective	Goal 2	DWEE; NRD; Public Power and Irrigation Districts; Water Users	Convene water users engaged in implementation of current regulatory frameworks to discuss and identify potential improvements
Create maps and other products highlighting current and potential additional opportunities to enhance groundwater recharge	Goal 3	DWEE	Survey water users to identify potential recharge opportunities across the State.
Create curriculum for agronomist providing nitrogen management recommendations and stand up online platform for distribution and tracking	Goal 4	Water Resources Cash Fund	Coordinate with UNL to create new curriculum and launch online portal through existing structure

Implementation Task	Goal	Funding Source(s)	Year One Activities
Incentivize producers to submit nitrogen management plans to NRDs annually	Goal 4	Water Resources Cash Fund; ONERED; NRD's existing and expanded activities	Provide support to complete updates to Producer Connect. Integrate tracking of NRD data with ONERED platform. Stand up ONERED incentive options for producer enrollment, requiring a nitrogen management plan
Provide incentives for installation of fertigation equipment	Goal 5	ONERED; NRCS	Stand up ONERED incentive options for producer enrollment
Coordinate water planning efforts between DWEE and NRDs to review quality and quantity programs and adjust programs as necessary	Goal 5	Water Resources Cash Fund	Discuss current planning frameworks between DWEE and NRDs and determine if modifications are necessary
Provide incentives for installation of sensor- and model-based nitrogen application methods	Goal 6	Water Resources Cash Fund; ONERED; NRCS	Stand up ONERED incentive options for producer enrollment. Work on pilot programs to promote technology adoption
Provide support and promotion for producer to producer education opportunities (soil health, irrigation management, and nitrogen management)	Goal 7	Water Resources Cash Fund; ONERED	Continue to expand producer to producer events in partnership with NRDs, UNL extension, and other entities
Provide education opportunities for producers on nitrogen management and irrigation management techniques to limit nitrate leaching	Goal 8	NRDs, Water Resources Cash Fund	Continue and expand education events in partnership with NRDs, UNL extension, and other entities
Develop consistent education, marketing, and outreach materials related to water quality, quantity, and public health for use across the State.	Goal 8; Goal 9	Water Resources Cash Fund; ONERED	Work with diverse groups to develop materials specific to producers, communities, and public health agencies
Support NRDs in implementing nitrogen management plan requirements with an emphasis on increasing one-on-one producer engagements	Goal 8; Goal 10	Water Resources Cash Fund; ONERED	Identify the current network of NRDs with these resources and develop a plan for coordinated efforts to expand these resources in priority areas
Review source water and well head protection plans to prioritize communities for engagement and targeted focus	Goal 10	DWEE; ONERED	Distribute information to communities in Nebraska illustrating current water quality trends for public water supply systems and develop "top tier" communities to target resources for

Implementation Task	Goal	Funding Source(s)	Year One Activities
			maintaining or improving water quality
Identify currently available funds for water testing of domestic wells and maintain a list of resources for private well owners	Goal 10	DWEE	Create a resource map for private well owners to understand risks and access to resources for testing and reverse osmosis.
Identify communities that may benefit from water supply regionalization	Goal 11	DWEE	Distribute a survey to identify a list of high priority communities/regions that could benefit from water supply regionalization and host initial engagements with those communities
Inventory water project priorities across the State	Goal 12	DWEE	Conduct a survey with NRDs, Irrigation Districts, communities, and other water users to identify priority water projects and benefits derived from those projects
Inventory available funding resources for water projects and potential partnerships that could strengthen funding opportunities	Goal 13	DWEE	Review and catalog available funding resources for local, State, and federal funds. Develop a list serve for distribution of upcoming funding opportunities.
Coordinate with Task Force to ensure ONERED implementation activities are aligned with Task Force goals	Goal 14	DWEE	Meet at least semi-annually with Task Force members to review current and planned ONERED implementation activities.

Appendix A: Task Force Meeting Materials

Attachment 1
Task Force Meeting Schedule

DATE	LOCATION
June 2, 2025	Kearney
September 24, 2025	Kearney
December 16, 2026	Norfolk
March 25, 2026	Lincoln

Attachment 2
Meeting Notices and Affidavits of Publication

PUBLIC NOTICE

MEETING OF GOVERNOR'S WATER QUALITY AND QUANTITY TASK FORCE

NOTICE IS HEREBY GIVEN pursuant to Neb. Rev. Stat. § 84-1411, that the Governor's Water Quality and Quantity Task Force will hold a public meeting on June 2, 2025, beginning at 10:00 A.M. Central Time (CT) at the Kearney Holiday Inn, 110 2nd Avenue, Kearney, Nebraska 68847.

The meeting agenda, which is being kept continually current, is available for inspection during normal business hours at the office of the Department of Natural Resources, 245 Fallbrook Blvd, Suite 201, Lincoln, Nebraska 68521 and online at: https://dnr.nebraska.gov/water-quality-and-quantity-task-force.

Please contact BJ Green at (402) 471-2363 by May 30, 2025 if auxiliary aids or reasonable accommodations or alternate formats of materials are needed.

Omaha World-Herald

PROOF OF PUBLICATION

See Proof on Next Page

AFFIDAVIT

State of Florida , County of Orange , ss:

I, Ankit Sachdeva being of lawful age, being duly sworn upon oath, hereby depose and say that I am agent of Column Software, PBC, duly appointed and authorized agent of the Publisher of Omaha World Herald, a legal daily newspaper printed and published in the counties of Douglas and Cass and State of Nebraska, and of general circulation in the Counties of Douglas, and Sarpy and State of Nebraska, and that the attached printed notice was published in said newspaper on the dates stated below and that said newspaper is a legal newspaper under the statutes of the State of Nebraska.

PUBLICATION DATES:
May. 28, 2025

NOTICE NAME: WQQ Task Force Mtg Notice

PUBLICATION FEE: $31.60

Ankit Sachdeva

(Signed)_____

JESSICA GORDON-THOMPSON
Notary Public - State of Florida
Commission # HH301656
Expires on August 17, 2026

VERIFICATION

State of Florida
County of Orange

Subscribed in my presence and sworn to before me on this: 05/30/2025

_____
Notary Public

Notarized remotely online using communication technology via Proof.

PUBLIC NOTICE

MEETING OF GOVERNOR'S WATER QUALITY AND QUANTITY TASK FORCE

NOTICE IS HEREBY GIVEN pursuant to Neb. Rev. Stat. § 84-1411, that the Governor's Water Quality and Quantity Task Force will hold a public meeting on June 2, 2025, beginning at 10:00 A.M. Central Time (CT) at the Kearney Holiday Inn, 110 2nd Avenue, Kearney, Nebraska 68847. The meeting agenda, which is being kept continually current, is available for inspection during normal business hours at the office of the Department of Natural Resources, 245 Fallbrook Blvd, Suite 201, Lincoln, Nebraska 68521 and online at: https://dnr.nebraska.gov/water-quality-and- quantity-task-force.

Please contact BJ Green at (402) 471-2363 by May 30, 2025 if auxiliary aids or reasonable accommodations or alternate formats of materials are needed.

2025, (5) 28 - Wednesdays, ZNEZ

PUBLIC NOTICE

MEETING OF GOVERNOR'S WATER QUALITY AND QUANTITY TASK FORCE

NOTICE IS HEREBY GIVEN pursuant to Neb. Rev. Stat. § 84-1411, that the Governor's Water Quality and Quantity Task Force will hold a public meeting on September 24, 2025, beginning at 1:00P.M. Central Time (CT) at the Younes Conference Center North, 707 W. Talmadge St, Kearney, Nebraska 68845.

The meeting agenda, which is being kept continually current, is available for inspection during normal business hours at the office of the Department of Water, Energy, and Environment, 245 Fallbrook Blvd, Suite 100, Lincoln, Nebraska 68521 and online at: https://dnr.nebraska.gov/water-quality-and-quantity-task-force.

Please contact BJ Green at (402) 471-2186 by September 22, 2025 if auxiliary aids or reasonable accommodations or alternate formats of materials are needed.

Omaha World-Herald

PROOF OF PUBLICATION

AFFIDAVIT

State of Florida, County of Broward, ss:

I, Anjana Bhadoriya, being of lawful age, being duly sworn upon oath, hereby depose and say that I am agent of Column Software, PBC, duly appointed and authorized agent of the Publisher of Omaha World Herald, a legal daily newspaper printed and published in the counties of Douglas and Cass and State of Nebraska, and of general circulation in the Counties of Douglas, and Sarpy and State of Nebraska, and that the attached printed notice was published in said newspaper on the dates stated below and that said newspaper is a legal newspaper under the statutes of the State of Nebraska.

PUBLICATION DATES:
Sep. 17, 2025

NOTICE NAME: WQQTF_mtg_09242025

PUBLICATION FEE: $32.20

Anjana Bhadoriya

(Signed)_____

SHERI SMITH
Notary Public - State of Florida
Commission # HH269383
Expires on May 31, 2026

VERIFICATION

State of Florida
County of Broward

Subscribed in my presence and sworn to before me on this: 09/17/2025

S Smith
_____
Notary Public

Notarized remotely online using communication technology via Proof.

PUBLIC NOTICE
MEETING OF GOVERNOR'S WATER QUALITY AND QUANTITY TASK FORCE

NOTICE IS HEREBY GIVEN pursuant to Neb. Rev. Stat. § 84-1411, that the Governor's Water Quality and Quantity Task Force will hold a public meeting on September 24, 2025, beginning at 1:00P.M. Central Time (CT) at the Younes Conference Center North, 707 W. Talmadge St, Kearney, Nebraska 68845. The meeting agenda, which is being kept continually current, is available for inspection during normal business hours at the office of the Department of Water, Energy, and Environment, 245 Fallbrook Blvd, Suite 100, Lincoln, Nebraska 68521 and online at: https://dnr.nebraska.gov/water-quality-and-quantity-task-force.

Please contact BJ Green at (402) 471-2186 by September 22, 2025 if auxiliary aids or reasonable accommodations or alternate formats of materials are needed.

2025, (9) 17 - Wednesdays, ZNEZ

PUBLIC NOTICE

MEETING OF GOVERNOR'S WATER QUALITY AND QUANTITY TASK FORCE

NOTICE IS HEREBY GIVEN pursuant to Neb. Rev. Stat. § 84-1411, that the Governor's Water Quality and Quantity Task Force will hold a public meeting on December 16, 2025, beginning at 1:00P.M. Central Time (CT) at the Divots Conference Center, 4200 W Norfolk Ave, Norfolk, Nebraska 68701.

The meeting agenda, which is being kept continually current, is available for inspection during normal business hours at the office of the Department of Water, Energy, and Environment, 245 Fallbrook Blvd, Suite 100, Lincoln, Nebraska 68521 and online at: https://dnr.nebraska.gov/water-quality-and-quantity-task-force.

Please contact BJ Green at (402) 471-2186 by December 12, 2025 if auxiliary aids or reasonable accommodations or alternate formats of materials are needed.

Omaha World-Herald

PROOF OF PUBLICATION

AFFIDAVIT

State of Florida, County of Orange, ss:

I, Ankit Sachdeva, being of lawful age, being duly sworn upon oath, hereby depose and say that I am agent of Column Software, PBC, duly appointed and authorized agent of the Publisher of Omaha World Herald, a legal daily newspaper printed and published in the counties of Douglas and Cass and State of Nebraska, and of general circulation in the Counties of Douglas, and Sarpy and State of Nebraska, and that the attached printed notice was published in said newspaper on the dates stated below and that said newspaper is a legal newspaper under the statutes of the State of Nebraska.

PUBLICATION DATES:
Dec. 9, 2025

NOTICE NAME: WQQTF_Mtg_Notice

PUBLICATION FEE: $32.80

Ankit Sachdeva

(Signed)_____

VERIFICATION

State of Florida
County of Orange

JESSICA GORDON-THOMPSON
Notary Public - State of Florida
Commission # HH301656
Expires on August 17, 2026

Subscribed in my presence and sworn to before me on this: 12/10/2025

_____
Notary Public

Notarized remotely online using communication technology via Proof.

PUBLIC NOTICE
MEETING OF GOVERNOR'S WATER QUALITY AND QUANTITY TASK FORCE

NOTICE IS HEREBY GIVEN pursuant to Neb. Rev. Stat. § 84-1411, that the Governor's Water Quality and Quantity Task Force will hold a public meeting on December 16, 2025, beginning at 1:00P.M. Central Time (CT) at the Divots Conference Center, 4200 W Norfolk Ave, Norfolk, Nebraska 68701.
The meeting agenda, which is being kept continually current, is available for inspection during normal business hours at the office of the Department of Water, Energy, and Environment, 245 Fallbrook Blvd, Suite 100, Lincoln, Nebraska 68521 and online at: https://dnr.nebraska.gov/water-quality-and-quantity-task-force .
Please contact BJ Green at (402) 471-2186 by December 12, 2025 if auxiliary aids or reasonable accommodations or alternate formats of materials are needed.
2025, (12) 9 - Tuesdays, ZNEZ

PUBLIC NOTICE

MEETING OF GOVERNOR'S WATER QUALITY AND QUANTITY TASK FORCE

NOTICE IS HEREBY GIVEN pursuant to Neb. Rev. Stat. § 84-1411, that the Governor's Water Quality and Quantity Task Force will hold a public meeting on March 25, 2026, beginning at 9:00AM. Central Time (CT) at the Department of Water, Energy, and Environment Office, Hearing Room 031, 245 Fallbrook Blvd., Lincoln, Nebraska 68521.

The meeting agenda, which is being kept continually current, is available for inspection during normal business hours at the office of the Department of Water, Energy, and Environment and online at: https://dnr.nebraska.gov/water-quality-and-quantity-task-force.

Please contact BJ Green at (402) 471-2186 by March 20, 2026 if auxiliary aids or reasonable accommodations or alternate formats of materials are needed.

Omaha World-Herald

PROOF OF PUBLICATION

AFFIDAVIT

State of Florida, County of Orange, ss:

I, Anjana Bhadoriya, being of lawful age, being duly sworn upon oath, hereby depose and say that I am agent of Column Software, PBC, duly appointed and authorized agent of the Publisher of Omaha World Herald, a legal daily newspaper printed and published in the counties of Douglas and Cass and State of Nebraska, and of general circulation in the Counties of Douglas, and Sarpy and State of Nebraska, and that the attached printed notice was published in said newspaper on the dates stated below and that said newspaper is a legal newspaper under the statutes of the State of Nebraska.

PUBLICATION DATES:
Mar. 18, 2026

NOTICE NAME: WQQTF 03.25.2026 Mtg Notice

PUBLICATION FEE: $32.20

Anjana Bhadoriya

(Signed)_____

VERIFICATION

State of Florida
County of Orange

JESSICA GORDON-THOMPSON
Notary Public - State of Florida
Commission # HH301656
Expires on August 17, 2026

Subscribed in my presence and sworn to before me on this: 03/18/2026

_____
Notary Public

Notarized remotely online using communication technology via Proof.

PUBLIC NOTICE
MEETING OF GOVERNOR'S WATER QUALITY AND QUANTITY TASK FORCE

NOTICE IS HEREBY GIVEN pursuant to Neb. Rev. Stat. § 84-1411, that the Governor's Water Quality and Quantity Task Force will hold a public meeting on March 25, 2026, beginning at 9:00AM. Central Time (CT) at the Department of Water, Energy, and Environment Office, Hearing Room 031, 245 Fallbrook Blvd., Lincoln, Nebraska 68521.
The meeting agenda, which is being kept continually current, is available for inspection during normal business hours at the office of the Department of Water, Energy, and Environment and online at: https://dnr.nebraska.gov/water-quality-and-quantity-task-force .
Please contact BJ Green at (402) 471-2186 by March 20, 2026 if auxiliary aids or reasonable accommodations or alternate formats of materials are needed.
2026, (3) 18 - Wednesdays, ZNEZ

Attachment 3
Meeting Agendas

Agenda

Governor's Water Quality and Quantity Task Force
June 2, 2025
Kearney Holiday Inn, 110 2nd Avenue, Kearney, NE 68847
10:00 AM – Noon (Central)

1. Introductions (20 minutes)

2. Overview of Task Force Goals (15 minutes)

3. Presentation of State Water Quality and Quantity Programs (20 minutes)

4. Subcommittee Formation and Discussion (30 minutes)

A. **Financing and Incentives Committee**
B. **Nitrate Legacy and Drinking Water Access Committee**
C. **Water Conservation and Quantity Committee**
D. **Methods and Resources Committee**

5. Homework - Strategies for Driving Change (10 minutes)

6. Scheduling and Logistics (10 minutes)

7. Public Comment (15 minutes)

8. Adjourn

Agenda

Governor's Water Quality and Quantity Task Force
September 24, 2025
Younes Conference Center North (707 W. Talmadge St, Kearney, NE 68845)
1:00p.m. – 4:00p.m. (Central)

1. **Open Meetings Act Information**
2. **Approval of minutes from 6/2/2025**
3. **Presentations**
    A. **Producer Connect**
    B. **Nitrogen Use Efficiency Dashboard**
4. **Subcommittee Updates**
    A. **Financing and Incentives Committee**
    B. **Nitrate Legacy and Drinking Water Access Committee**
    C. **Water Conservation and Quantity Committee**
    D. **Methods and Resources Committee**
5. **Scheduling and Logistics**
    A. **Next Task Force Meeting: December 16, 2025**
6. **Public Comment**
7. **Adjourn**

Agenda

Governor's Water Quality and Quantity Task Force
December 16, 2025
Divots Conference Center (4200 W Norfolk Ave, Norfolk, NE 68701)
1:00p.m. – 4:00p.m. (Central)

1. **Open Meetings Act Information**
2. **Approval of minutes from 9/24/2025**
3. **Final Subcommittee Recommendations**
    A. **Methods and Resources Subcommittee**
    B. **Nitrate Legacy and Drinking Water Access Subcommittee**
    C. **Water Conservation and Quantity Subcommittee**
    D. **Financing and Incentives Subcommittee**
4. **Scheduling and Logistics**
    A. **Next Task Force Meeting: March 25, 2026 (Lincoln)**
5. **Public Comment**
6. **Adjourn**

Agenda

Governor's Water Quality and Quantity Task Force
March 25, 2026
Dept. of Water, Energy, and Environment Office
Hearing Room 031, 245 Fallbrook Blvd., Lincoln, NE 68521
9:00a.m. – 11:00a.m. (Central)

1. **Open Meetings Act Information**
2. **Approval of Meeting Minutes from 12/16/2025**
3. **Presentation: Overview of Task Force Final Recommendations**
4. **Approval of Final Task Force Report**
5. **Public Comment**
6. **Adjourn**

Attachment 4
Meeting Minutes

Governor's Water Quality and Quantity Task Force
Meeting Minutes
Monday, June 2, 2025
Kearney Holiday Inn
110 2nd Avenue, Kearney, NE 68847

Members Present: Joe Anderjaska, Brittany Bartak, Don Batie, Jesse Bradley, Brian Bruckner, Devin Brundage, Russ Callan, Tom Downey, Jessica Groskopf, Brandon Hunnicutt, Brian Kissinger, Scott Knobbe, Steve Kyes, Matt Manning, Scott Schaneman, John Shadle, Marty Stange, Annette Sudbeck

Members Absent: Tim Mundorf & Dean Settje

Staff and Audience Present: Isabella Peterson, Nebraska Department of Natural Resources; Cicely Wardyn, Governor's Policy Research Office; Andrew Dunkley, Nebraska Department of Environment and Energy; Tylr Naprstek, Lower Loup NRD; Josh Jelden, U.S. Sen. Deb Fischer's Office; Mick Reynolds; Kristine Jameson; Erica Gnuse, Ducks Unlimited; Jeff Shafer, NPPD; Lyndon Vogt, Central Platte NRD; Joshua Shimkus, Flatwater Free Press; Chance Thayer; Walt Traudt, Nebraska Pork Producers; Seth Mitchell, Nebraska Pork Producers; David Kracman; Samantha Dowler; Dean Edson, NARD; James Banahan, Central Valley Ag; Michael Dibbern, NeCGA; Sarah Cathcart, Sen. Pete Ricketts Office; Heidi Borg, Congressman Adrian Smith's Office.

The meeting was called to order at 9:57 a.m. by Jesse Bradley. Bradley stated that the meeting was being conducted in accordance with the Nebraska Open Meetings Act and a copy of the current Open Meetings Act was posted and available for inspection and review on the south wall of the room. Bradley stated that a public meeting notice was published in the Omaha World Herald newspaper and the Nebraska Department of Natural Resources website in accordance with state law.

Governor Jim Pillen gave opening remarks and addressed members about why he initiated the Task Force.

Task Force members and support staff went around the room and gave introductions.

Bradley provided an overview of three initial broad goals for the Task Force, including: (1) identify strategies to promote improved on-farm nitrogen management efficiency, (2) review available resources that support the use of real-time data in water management and recommend strategies to increase their adoption, and (3) develop short-term, mid-term, and long-term goals to monitor outcomes. Bradley noted that these goals may change over time as the Task Force continues to meet and discuss.

Bradley gave a presentation on water quality and quantity programs currently being implemented by the state. The presentation can be found on the Task Force webpage at: https://dnr.nebraska.gov/water-quality-and-quantity-task-force.

Members discussed subcommittee assignments and reviewed a handout with potential discussion topics for each subcommittee, a copy of which can be found on the Task Force webpage. It was noted that additional subcommittees may be identified and formed as the Task Force continues to meet and discuss. The following assignments for subcommittees were made:

Financing and Incentives Subcommittee
- Jessica Groskopf
- Jesse Bradley
- Brandon Hunnicutt
- Devin Brundage

Nitrate Legacy and Drinking Water Access Subcommittee
- Dean Settje
- Marty Stange
- Brian Bruckner
- Annette Sudbeck
- Tom Downey
- Matt Manning

Water Conservation and Quantity Subcommittee
- Scott Schaneman
- Steve Kyes
- Don Batie
- Russ Callan
- John Shadle
- Devin Brundage
- Brian Bruckner
- Matt Manning

Methods and Resources Committee
- Tim Mundorf
- Joe Anderjaska
- Scott Knobbe
- Don Batie
- Russ Callan
- Brittany Bartak
- Annette Sudbeck
- Brian Kissinger
- Jesse Bradley

Members expressed willingness and preference to have in-person subcommittee meetings. Bradley noted that Department staff will help coordinate future Task Force meeting dates and help initiate first subcommittee discussions. Members discussed a tentative meeting schedule of monthly subcommittee meetings and full Task Force meetings once a quarter – agreeing that the next full Task Force meetings should take

place in September and December. Subcommittees will meet in the interim and report back to the full group at the next Task Force meeting.

Don Batie informed the group that there will be a field day at his farm on June 24th.

Bradley opened the meeting for public comment. There was no public comment.

The meeting adjourned at 11:33 a.m.

Notice for the meeting was published on the Department of Natural Resources website on May 21, 2025 and in the Omaha World Herald newspaper on May 28, 2025.

Governor's Water Quality and Quantity Task Force
Meeting Minutes
Wednesday, September 24, 2025
Younes Conference Center North
707 W. Talmadge St. Kearney, NE 68845

Members Present: Joe Anderjaska, Brittany Bartak, Don Batie, Jesse Bradley, Brian Bruckner, Devin Brundage, Russ Callan, Tom Downey, Jessica Groskopf, Brandon Hunnicutt, Brian Kissinger, Scott Knobbe, Matt Manning, Tim Mundorf, Scott Schaneman, John Shadle, Marty Stange, Annette Sudbeck

Members Absent: Steve Kyes & Dean Settje

Staff and Audience Present: Isabella Peterson, Nebraska Department of Water, Energy, and Environment; Cicely Wardyn, Governor's Policy Research Office; Wade Ellwanger, Lower Niobrara NRD; Tylr Naprstek, Lower Loup NRD; John Thorburn Tri-Basin NRD; Jeff Shafer, NPPD; Jennifer Swanson, NARD; Lyndon Vogt, Central Platte NRD; Dustin Wilcox, NARD; Courtney Widup, Central Platte NRD.

The meeting was called to order at 1:00p.m. by Jesse Bradley. Bradley stated that the meeting was being conducted in accordance with the Nebraska Open Meetings Act and a copy of the current Open Meetings Act was posted and available for inspection and review near the back of the room. Bradley stated that a public meeting notice was published in the Omaha World Herald newspaper and the Nebraska Department of Water, Energy, and Environment's website on September 17, 2025 in accordance with state law.

Approval of Meeting Minutes from 6/2/2025

Brundage moved and Hunnicutt seconded the motion to approve the Task Force meeting minutes from June 2, 2025. There was no opposition. Motion carried.

Presentations

Jennifer Swanson, NARD, gave a presentation on the Producer Connect platform. Courtney Widup, Central Platte NRD, gave a presentation on the Nitrogen Use Efficiency Dashboard. The presentations can be found on the Task Force webpage at: https://dnr.nebraska.gov/water-quality-and-quantity-task-force.

Members took a break from 2:08 to 2:20pm.

Bradley gave an overview of Task Force goals looking forward, noting that the group should work toward having their goals translated into short-, mid-, and long-term goals with action items between now and December. The tentative goal is to finalize and

publicize the report at a final meeting in March. The Task Force has meetings scheduled out until June of 2026, but want to be respectful of everyone's time.

Subcommittee Updates

Each subcommittee provided updates to the group.

A. Financing & Incentives

Hunnicutt gave the report for the Financing and Incentives Subcommittee. The goals are as follows:

1. Establish a centralized clearinghouse to inventory, manage, and prioritize water quality and quantity projects across Nebraska
2. Identify and implement sustainable, diversified funding models to support the development, implementation, and maintenance of priority water projects in Nebraska

B. Nitrate Legacy & Drinking Water Access

Stange gave the report for the Nitrate Legacy & Drinking Water Access Subcommittee. The goals are as follows:

1. Develop and consistent education, marketing, and outreach program across the state
    i. Statewide, but look at local issues
    ii. Aimed at the general population and those who can make a difference including producers, agronomists, well drillers, etc.
2. Develop data and planning to support community water system protections
    i. Wellhead protection areas
    ii. Water use and quality information to NRDs, DWEE, communities
    iii. Smaller communities
3. Expand rural water systems and regionalization of water systems
    i. Get the data in the hands of the decisionmakers
    ii. Work to promote nutrient management and bring in the experts

C. Water Conservation & Quantity

Schaneman gave the report for the Water Conservation & Quantity Subcommittee. The goals are as follows:

1. Expand metering and measurement across the state

    i. This would be long-term, bigger goal that could include legislative changes
    ii. Public perception is important and must address that allocations and taxes are not coming next, but the goal is to measure what you are using; need standard messaging
    iii. Many NRDs have already done this and we can look to them as case studies and see lessons learned
    iv. Data privacy must be addressed; data individual level at the NRD, but aggregate when passed along to the State
    v. Consider NRD administrative costs and resources
    vi. Must consider surface water users and small districts with limited funds
    vii. Education component
    viii. Nebraska is a leader in water management, and this goal aligns with that
2. Develop strategies to support large water users and continued economic growth
    i. Law that applies to Upper Platte could be a template for other areas of the state
    ii. Don't want to hinder economic growth, but must offset new large water users coming in
    iii. Establish increased communication with economic development folks
3. Expand water storage opportunities and management of water consumption
    i. Address efficiency in practices that may hinder return flows
    ii. Incentives and education components

D. Methods & Resources

Batie gave the report for the Methods & Resources Subcommittee. The goals are as follows:

1. Create standards that ensure proper nitrogen recommendations being provided to farmers
    i. Professional certification to sign off on N recommendations
    ii. Integrate with UNL to do online certifications
    iii. Use well drillers as a case study
2. Increase the percentage of nitrogen that is applied during the growing season

    i. Incentivize and promote fertigation, side dress, water amount
    ii. Must address what types of fertilizer
    iii. Education
3. Support movement toward sensor- and model-based nitrogen recommendations
    i. Sentinel, Adapt N, etc.
4. All producers in all phase areas of all NRDs utilize tools like Producer Connect in order to increase benchmarking and aggregate data

Members discussed how to frame goals with timeframes and whether some goals were more regulatory than incentive or education based. Wardyn offered the example of the E-15 bill structure in which incentives are offered on the front end and if certain targets are not met by a certain date, regulatory components are triggered. Members noted that there are many goals that can utilize incentives to target behavioral changes, including using ONE RED money on the front end, and then structure the goals to pivot to a plan B if metrics are not met and widespread behavioral changes are not made.

Scheduling & Logistics

Members confirmed availability for upcoming subcommittee meetings for October and November. The next full Task Force meeting will be held December 16, 2025 in Kearney.

Public Comment

John Thorburn, Tri-Basin NRD stated that some of the recommendations related to crop consultants may not be feasible and that if the type of fertilizer recommendations are changed and the nitrogen still goes into the aquifer, then there is no gain.

The meeting adjourned at 3:39p.m.

Governor's Water Quality and Quantity Task Force
Meeting Minutes
Tuesday, December 16, 2025
Divots Conference Center
4200 W Norfolk Ave, Norfolk, NE 68701

Members Present: Joe Anderjaska, Jesse Bradley, Brian Bruckner, Devin Brundage, Russ Callan, Tom Downey, Jessica Groskopf, Brandon Hunnicutt, Brian Kissinger, Scott Knobbe, Steve Kyes, Matt Manning, Tim Mundorf, Scott Schaneman, Dean Settje, John Shadle, Marty Stange, Annette Sudbeck

Members Absent: Brittany Bartak, Don Batie

Staff and Audience Present: Isabella Peterson, Nebraska Department of Water, Energy, and Environment (DWEE); Clint Verner, Legislative Fiscal Office; Mike Murphy, Middle Niobrara Natural Resources District (NRD); Mark Hall; Wade Ellwanger, Lower Niobrara NRD; Traci Bruckner, Audubon Great Plains; Melissa Temple, Lower Elkhorn NRD; Sara Mechtenberg, Houston Engineering; Crystal Powers, UNL Extension; Chittaranjan Ray, UNL Nebraska Water Center; Jacob Garder, Houston Engineering; Jonathan Rempel; Audrey Woita, Hillside Solutions; Rachel Whitehair, Nebraska Corn Board.

Open Meetings Act Information: The meeting was called to order at 1:16 p.m. by Jesse Bradley. Bradley stated that the meeting was being conducted in accordance with the Nebraska Open Meetings Act and a copy of the current Open Meetings Act was posted and available for inspection and review near the back of the room. Bradley stated that a public meeting notice was published in the Omaha World Herald newspaper and the Nebraska Department of Water, Energy, and Environment's website on December 9, 2025 in accordance with state law.

Task Force members and audience introduced themselves. Governor Jim Pillen thanked the Task Force members for their commitment and the time dedicated over the past six months to advancing water quality and quantity discussions.

Approval of Meeting Minutes from 9/24/2025: Groskopf moved, and Sudbeck seconded, a motion to approve the Task Force meeting minutes from September 24, 2025. There was no opposition. Motion carried.

Final Subcommittee Recommendations: Subcommittee chairpersons presented overviews of the goals and action items developed by each subcommittee. Members reviewed a

redline draft document that was provided as a handout, which will also be posted to the Task Force webpage.

A. Methods and Resources Subcommittee

Report by Mundorf, on behalf of Chairperson Batie.

Goal 1 is to ensure nitrogen recommendations are agronomically, economically, and environmentally appropriate for Nebraska producers. Discussion focused on educating individuals who provide nitrogen recommendations, including consideration of a certified crop advisor program and potential use of an existing UNL online certification and badging platform.

Goal 2 is to incentivize producers to increase the percentage of nitrogen that is applied in season versus out of season to improve overall nitrogen use efficiency. The aim is to decrease the amount of fall-applied anhydrous ammonia and move toward more in-season nitrogen application. Members discussed variability in fertilizer timing practices across the state and the importance of understanding spring versus fall application rates.

Goal 3 is to increase adoption of sensor- and model-based nitrogen recommendation technology, such as Sentinel Ag, Adapt-N, or similar technologies. Fertigation was highlighted as a strategy to apply nitrogen later in the season based on crop need. Members emphasized inclusion of dryland practices and appropriate incentives for non-irrigated operations.

Goal 4 is to increase adoption of soil health practices which will allow producers to increase nutrient cycling and reduce overall nitrogen application rates over time. Improved soil health will also maximize water infiltration and crop utilization while limiting runoff.

Goal 5 is to educate Nebraska producers on nitrogen fertilizer and irrigation best management practices to limit nitrate leaching to groundwater. This goal focuses on nitrogen fertilizer and irrigation best management practices to limit nitrate leaching to groundwater. Includes irrigation technologies, inhibitors, in-season application of nitrogen, soil moisture probes, water meters, irrigation modeling, and evapotranspiration monitoring.

B. Nitrate Legacy & Drinking Water Access Subcommittee

Report by Chairperson Stange.

Goal 6 is to develop consistent education, marketing, and outreach materials related to water quality, quantity, and public health for use across the state. Stange noted some of the timeframes are aggressive, but that is because there are a lot of existing educational materials out there. Existing resources will be organized into a uniform framework while

allowing for local variation. Members noted the importance of outreach to medical providers serving rural communities.

Goal 7 is to provide support and resources to public and privately owned drinking water wells to ensure safe and reliable drinking water for Nebraskans. Discussion emphasized the need for improved planning tools and better communication of nitrate trends, including potential outreach to realtors.

Goal 8 is to expand rural water systems and regionalization of water systems. The goal is to connect communities with limited water resources to systems with greater capacity. Members emphasized coordination among NRDs, DWEE, communities, and municipalities, as well as addressing financial barriers through loans and other assistance.

C. Water Conservation & Quantity Subcommittee

Report by Chairperson Schaneman.

Goal 9 is to expand water measurement across the state for groundwater and surface water. Members discussed integrating data into Producer Connect or a similar NRD database, while addressing data security concerns. Survey results indicated that more than 50% of wells statewide are already metered, with some NRDs fully metered. Real-time metering was discussed, including benefits and challenges.

Goal 10 is to develop strategies to support large water users and continued economic growth in the State, noting that concerns exist regarding water availability for industries, especially in water-short areas. This purpose of this goal is to determine how to accommodate industry water needs, starting with launching a public-facing portal within 18 months. Members noted that a statewide “large water user rule” has been in place since 2012, but the definition of “large water user” is generic. Callan noted that Lower Loup NRD is currently working with HDR to define “large water user” based on variations throughout the district, with the aim being to require users exceeding a certain threshold to demonstrate they are not causing adverse effects. Integration of economic development professionals into water availability discussions was emphasized.

Goal 11 is to expand water storage opportunities and management of water consumption, noting that opportunities exist to work with surface water entities to recharge groundwater. Strategies include reservoirs, recharge systems, and retention projects, as well as outreach to educate stakeholders. Metrics include development of a public resource or map identifying storage opportunities and increased stakeholder engagement.

D. Financing and Incentives Subcommittee

Report by Chairperson Hunnicutt.

Goal 12 is to establish a centralized clearinghouse to inventory and prioritize water quality and quantity projects across Nebraska. The clearinghouse will be updated annually to reassess priorities and monitor progress.

Goal 13 is to identify and implement sustainable, diversified funding models to support the development, implementation, and maintenance of priority water projects in Nebraska. DWEE will conduct a funding analysis to identify existing resources, gaps, limitations, and overlaps. Members discussed opportunities to leverage private investment and the value of a clearinghouse in directing outside funding to Nebraska projects. Bradley provided an example that Google is already working with farmers in the state on various projects. Creating a clearinghouse can help to guide outside investments to specific projects – the goal is to make it easy for them to choose Nebraska over other states for funding.

Goal 14 is to recommend funding priorities for ONE RED funding and other potential funding sources. Discussion focused on developing a tiered incentive program informed by ONE RED survey results provided in a handout and effectively communicating market value and education benefits to producers and crop consultants.

Scheduling and Logistics

Bradley outlined next steps for the Task Force. A full draft report will be distributed to the Task Force in about a month. Members will have from mid-January through mid-February to review again and provide additional comments. The final report is expected to be completed by the March meeting.

The next full Task Force meeting will be held March 25, 2026 in Lincoln (location to be determined). Meeting materials will continue to be updated on the Task Force webpage at: https://dnr.nebraska.gov/water-quality-and-quantity-task-force.

Public Comment

Mike Murphy, Middle Niobrara NRD, emphasized that water quality is a statewide issue and benefit, and recommended protecting areas with currently high-quality water in addition to addressing higher-risk areas.

Crystal Powers, UNL Extension, described existing and upcoming UNL Extension resources related to nitrates in groundwater, including programs for early childhood educators, farmers, and rural health clinics, and expressed interest in coordinating outreach with the Task Force.

Chittaranjan Ray, Nebraska Water Center, commented on Goal 10 and requested additional information regarding excess water system capacity in Omaha, the Tri-Cities, and western Nebraska.

Melissa Temple, Lower Elkhorn NRD Board member (speaking in her individual capacity), recommended increased well registration and education, addressing abandoned wells, incorporating public health considerations into agronomist education, considering limits on fall fertilizer application, evaluating lower nitrate thresholds, and expanding requirements related to well testing and landlord responsibilities. Temple recommended that UNMC's recommended limit of 3 ppm for nitrate should be considered instead of the EPA's 10 ppm limit.

Jonathan Rempel, individual, discussed logistical and economic challenges associated with in-season fertilizer application on his operation and urged the Task Force to consider cost impacts and data-driven justification before implementing new requirements. He also expressed concern regarding the economic impacts of expanded water metering.

Adjourn

The meeting adjourned at 3:41 p.m.

Attachment 5
Presentations and Handout Materials

Overview of State/NRD Initiatives on Water Quality/Quantity

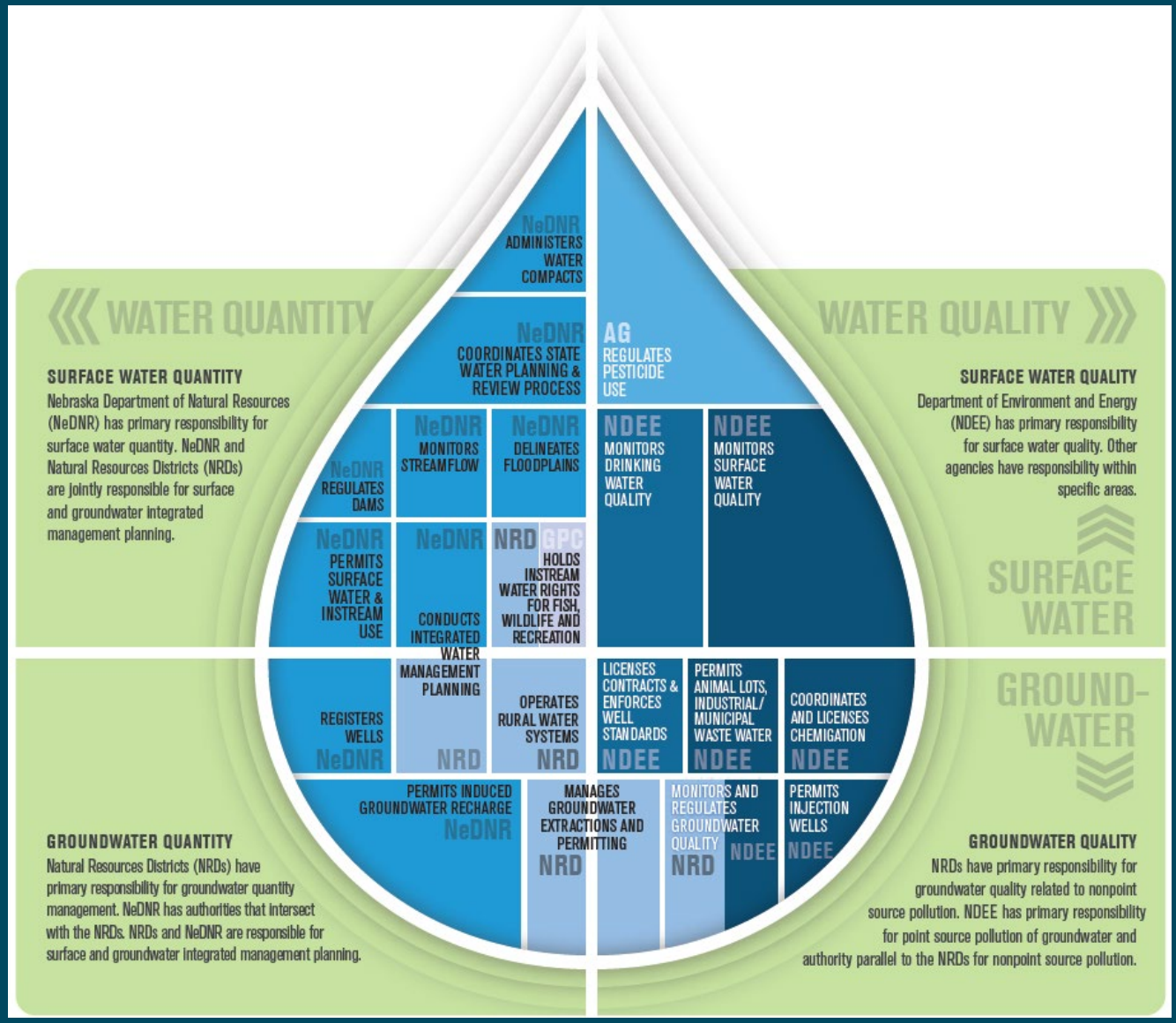
June 2, 2025

Jesse Bradley

NEBRASKA
Good Life. Great Resources.
DEPT. OF ENVIRONMENT AND ENERGY

NEBRASKA
Good Life. Great Water.
DEPT. OF NATURAL RESOURCES

Water Management Agencies



State Programs

- Resilient Soils and Water Quality Act (Healthy Soils Task Force)
- Nitrogen Reduction Incentive Act
- Reverse Osmosis Program
- ONE RED
- Nitrate in Drinking Water Study
- Non-Point Source Water Quality
- SRF programs for drinking water and waste water
- Planning for well-head protection, source water protection, and integrated management
- Water Sustainability Fund

Resilient Soils and Water Quality Act

NEBRASKA
Good Life. Great Water.
DEPT. OF NATURAL RESOURCES

Resilient Soil and Water Quality Act

- Develop partnerships with other conversation organizations
- Support development of producer led education opportunities
- Streamline access to conservation resources and program information


Nebraska
Corn


NEBRASKA
Good Life. Great Water.
DEPT. OF NATURAL RESOURCES


N
EXTENSION


USDA
Natural
Resources
Conservation
Service


U.S.
FISH & WILDLIFE
SERVICE
DEPARTMENT OF THE INTERIOR


NEBRASKA
SOYBEAN BOARD


Nebraska Dry Bean
Commission


The Nature
Conservancy


RAINWATER
BASIN
JOINT VENTURE
ESTABLISHED 1992


CENTER for RURAL AFFAIRS


NW
NEBRASKA WHEAT


Nebraska's
Natural Resources
Districts
www.nrdnet.org
Protecting Lives • Protecting Property • Protecting the Future


NEBRASKA
Good Life. Great Resources.
DEPT. OF ENVIRONMENT AND ENERGY

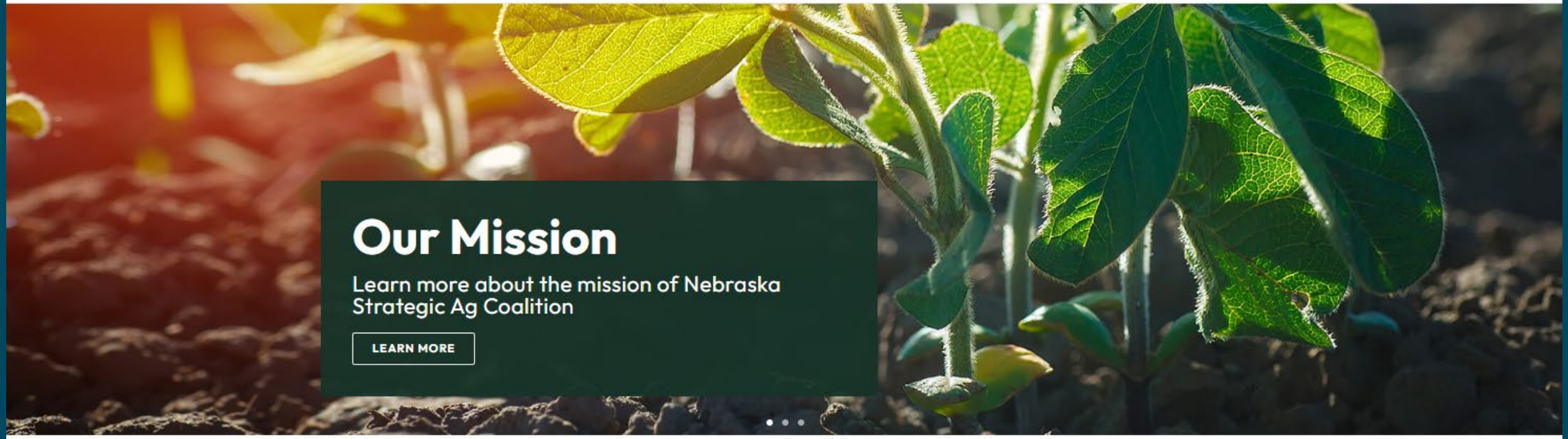

Midwest
Cover
Crops
Council


N
AGRONOMY AND HORTICULTURE
Institute of Agriculture and Natural Resources
NEBRASKA
Good Life. Great Water.
DEPT. OF NATURAL RESOURCES

NEBRASKA STRATEGIC AG COALITION

402.471.3948 SUBMIT WEBSITE CONTENT

ABOUT THE COALITION TECHNICAL SUPPORT EDUCATIONAL RESOURCES COST-SHARE OPPORTUNITIES IN YOUR REGION EVENTS



RESOURCES

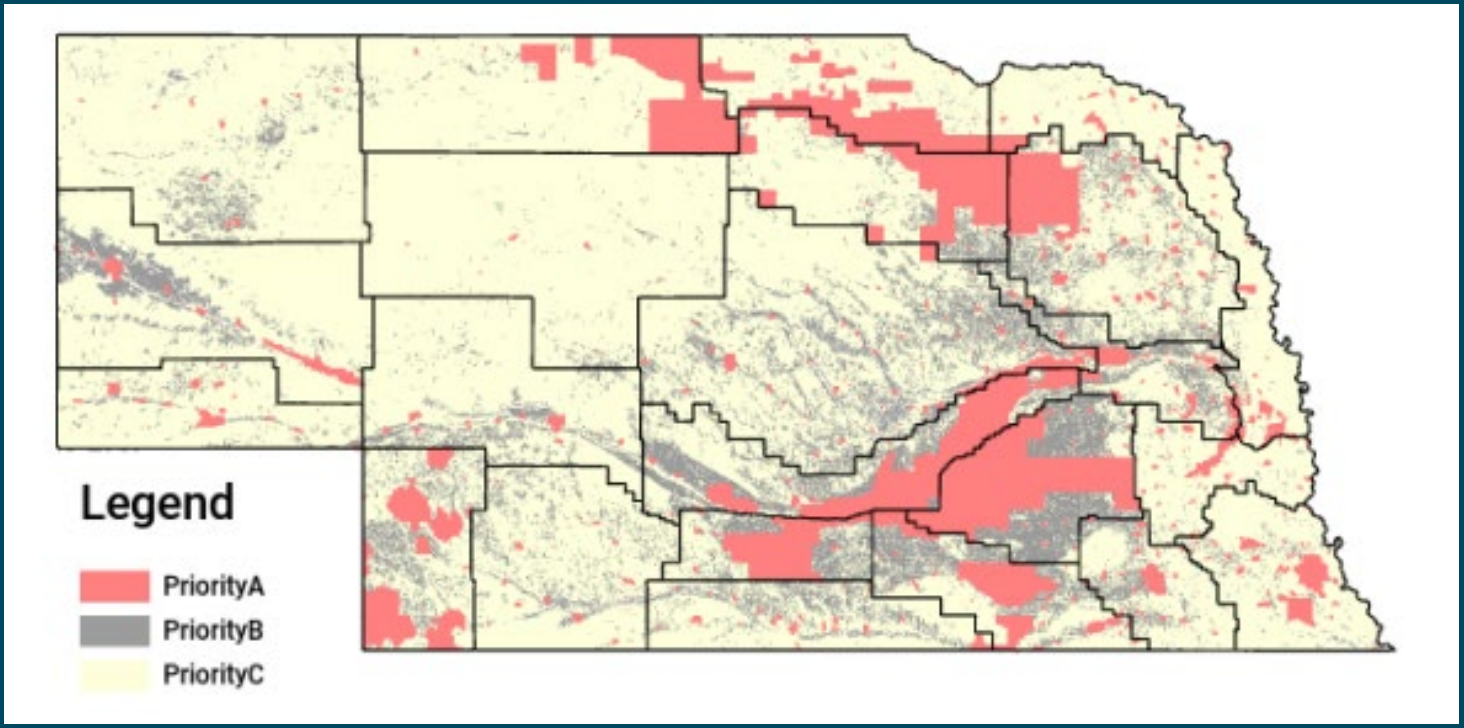
Find Opportunities In Your Region

While many programs are available throughout Nebraska, some are especially

Nitrogen Reduction Incentive Act (NiRIA) Program

NEBRASKA
Good Life. Great Water.
DEPT. OF NATURAL RESOURCES

Nitrogen Reduction Incentive Act



Priority Areas and Incentive Payments

The Department and NRDs have determined the program will operate under three priority areas (Figure 1) and **will be offered to corn, sugar beet, and potato producers**. **Priority A Area** will be wellhead protection areas and phase II, or higher phase areas established by an NRD, for purposes of water quality management. **Priority B Area** will be areas throughout the state that have been certified to irrigate crops. **Priority C Areas** will be all other areas of the state, including dryland. **Contact your local NRD to know which Priority Area you are in.** *Figure 1 data is supplied by NeDNR permitted irrigated lands, wellhead protection areas, and NRD phase areas as of June 28, 2024.*

Nitrogen Reduction Incentive Act (NiRIA) Program Application 2024

Name of Producer: _____

Primary Contact: _____

Primary Contact Phone Number: _____

Primary Contact Email (if available): _____

Name of Natural Resources District (NRD): _____

Are you already enrolled in a federal nutrient management plan? ☐No ☐Yes
If yes, list what program(s)_____

Type of Crop: ☐Corn ☐Sugar Beet ☐Potato
Legal Description (Submit one application per field): _____

Total Acres to Be Enrolled in this field (Limit of 280 acres): _____ Average Yield: _____

Crop Year: _____

Will you apply manure or lagoon water to this field? ☐Yes ☐No
If yes, attach documentation with the known amount of nitrogen in manure or lagoon water.

Do you apply nitrogen in the fall? ☐Yes ☐No

Identify the practice(s)/ product(s) you plan to implement to achieve the 40lbs or 15% reduction of commercial fertilizer by checking a box below. *Note that the below options do not represent a ranked list and practices/products are subject to individual NRD approval.

☐ Reduction in Nitrogen Application
☐ Implementation of Biological Nutrition (Example: *Proven40*)
☐ Implementation of a Nitrogen Use Efficiency Technology (Example: *N-Time*)
☐ Implementation of a Nitrogen Stabilizer (Example: *Agrotain*)
☐Other Please Describe_____

Select type of documentation that will be used to determine baseline and to evaluate nitrogen reduction:

☐ NRD or producer crop reports (Priority A Areas)

☐ Submit all data required on local NRD phase reports for the prior 3 growing seasons (Priority B or C Areas)

☐ Complete soil sampling, as established by the NRD, prior to the cropping season (Priority B or C Areas)

*Please note that individual NRDs may require additional information.

Applicant Signature (Receiving 1099): _____ **Date:** _____

NRD Signature: _____ **Date:** _____

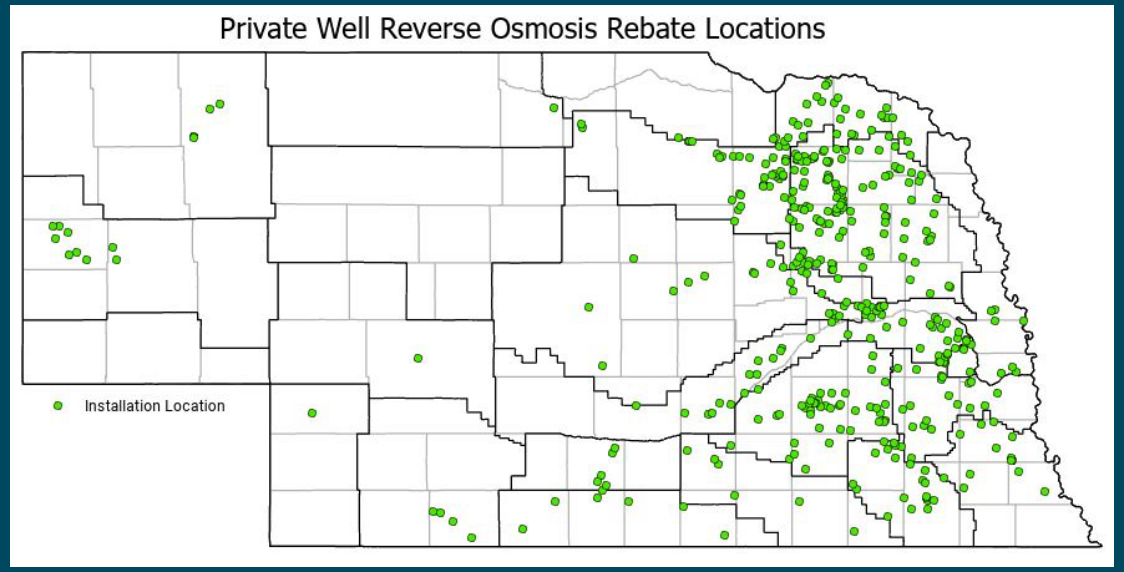
https://dnr.nebraska.gov/lb-1368-nitrogen-reduction-incentive-program 1

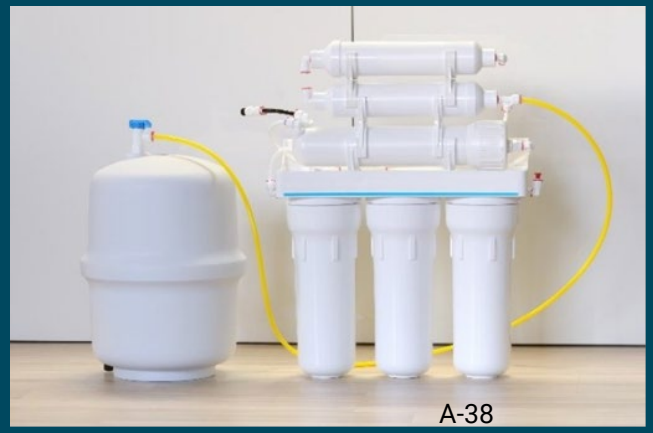
Reverse Osmosis Rebate Program

NEBRASKA
Good Life. Great Water.
DEPT. OF NATURAL RESOURCES

Private Well Reverse Osmosis Program

- Private well reverse osmosis system rebates were available to property owners of private wells with drinking water levels above 10 parts per million of nitrate
- Eligible for up to $4,000 in rebates per small treatment installation
- Opened January 2023, and closed May 2024
- NDEE received 370 applications requesting a funding total of $1.3M





Source: https://www.epa.gov/watersense/point-use-reverse-osmosis-systems

ONE RED

NEBRASKA
Good Life. Great Water.
DEPT. OF NATURAL RESOURCES

ONE RED

- In July 2024, EPA announced an award of $307 million to NDEE
- $160M to support data collection, regenerative, and precision ag. practices

ONE RED — Opportunity for Nebraska: Reducing Emissions & Decarbonization

ONE RED Update—November 12, 2024. Nebraska has been awarded $307 million to implement the measures listed below over a five-year period. Participation in all incentive programs will be strictly voluntary and will not rely on new rulemaking or requirements. Program designs and timeframes for implementation will be worked out over the coming months.

Measure*	Funding	Metric Tons GHG Reduction	
		By 2030	By 2050
Non-Residential Energy Efficiency Program: Projects for industrial, commercial, agricultural, public, and nonprofit buildings and facilities.	$30.3 MM	536,393	2,933,544
Residential Pre-Weatherization Program: Funding to address critical home repairs for low-income residents to allow eligibility for the Weatherization Assistance Program.	$4.1 MM	13,103	72,405
ONE RED Irrigation Engine Program: Rebates to farmers to replace diesel irrigation pump engines with electric motors or pumps connected to the electric grid.	$6.1 MM	14,291	124,901
Rural Community Solar Program: Solar arrays to provide partial power to water and waste-water facilities, reducing energy cost.	$16.4 MM	9,183	25,148
Non-Residential Solar Program: Funds for solar projects in locations that do not displace other productive uses: industrial, commercial, and municipal rooftops; brownfield community solar; solar canopies over parking lots and cattle feedlots.	$28.1 MM	12,180	29,481
Ag Registry and Grants Program: Three interdependent strategies: 1) Develop a Carbon Intensity (CI) Score Registry with incentives for participation; 2) Incentives for adoption of Regenerative Agriculture Practices to improve soil health and reduce N fertilizer use; 3) Incentives for Precision Agriculture equipment for more efficient production.	$160.4 MM	25,128,828	155,051,209
Anaerobic Digester/Biogas Hub Program: Establish a regional biogas cleaning facility near an existing natural gas pipeline, with biogas supplied by digesters at nearby animal feeding operations to benefit multiple producers.	$57.2 MM	261,907	2,007,957
Biochar Incentive Program: Funding for biochar processing facilities to convert woody organic waste into biochar to store carbon in soil.	$4.4 MM	12,050	65,608
TOTALS	**$307 MM**	**25,987,935**	**160,310,253**

* The order of measures in this list does not indicate any NDEE preference or priority.

SECTORS AFFECTED:

- ☒ Industry
- ☒ Electricity Generation
- ☒ Commercial and Residential Buildings
- ☒ Agriculture/Natural and Working Lands
- ☒ Waste and Materials Management
- ☐ Transportation

More info:

Nitrate in Drinking Water Study

Nitrate Drinking Water Study

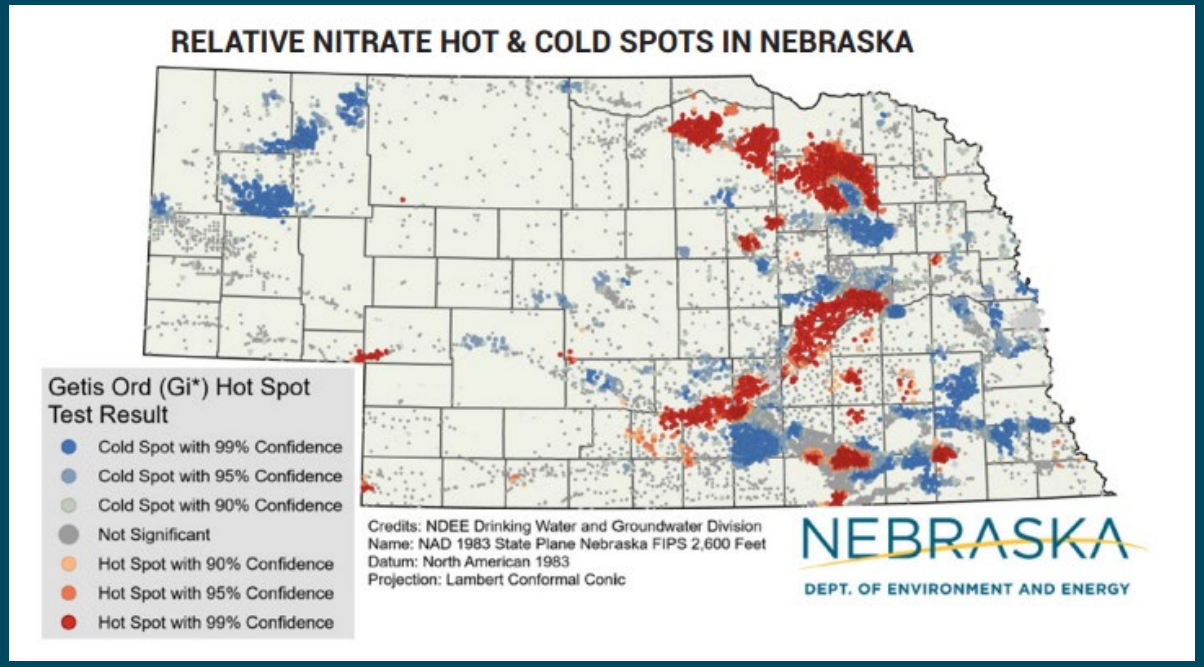
- Study analyzed available nitrate samples from wells across Nebraska to identify areas of concern, collected additional data on nitrate in private domestic wells, and identified trends in nitrate concentrations in community water systems.

RESULTS:

Private Domestic Wells: Approximately 15% of the nearly 3,500 private domestic wells tested had nitrate levels exceeding the federal Safe Drinking Water Act (SDWA) limit of 10 milligrams per liter (mg/L).

Public Water Systems: About 1/3 of the 444 public water systems analyzed showed rising nitrate levels, indicating a growing concern for communities relying on these sources.

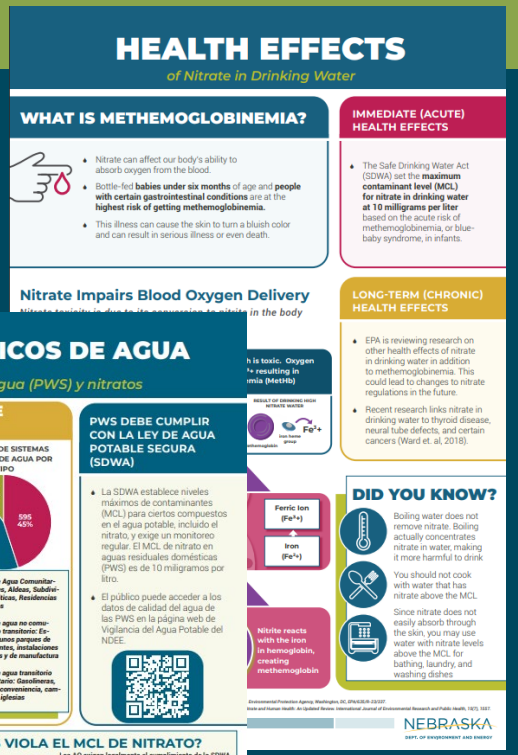
Geographic Hotspots: High-risk areas for nitrate contamination were identified, including the Platte River Valley, Elkhorn River Valley, Republican River watershed, and the Little and Big Blue River basins.

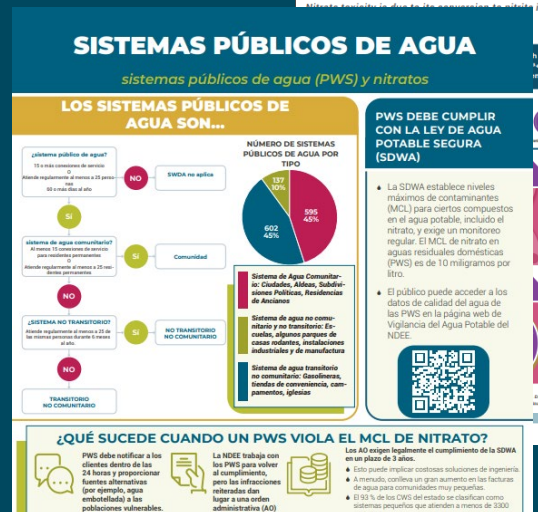


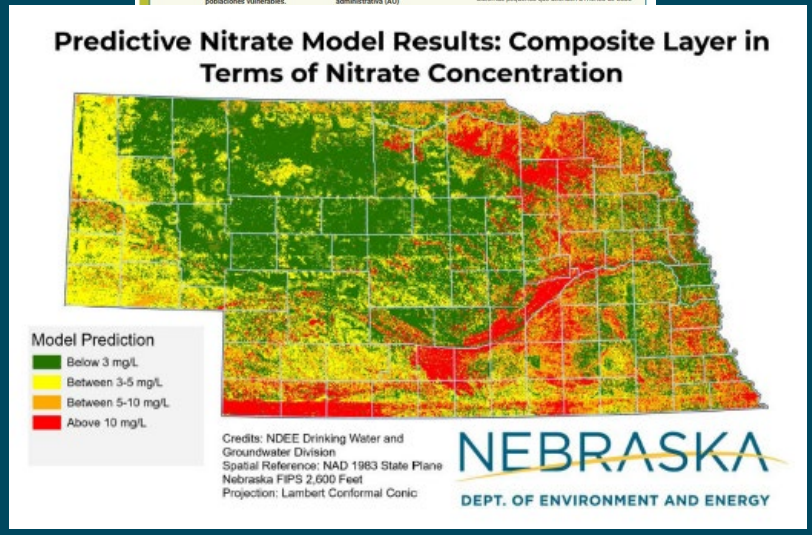
Tools and Resources from the study

- An interactive, web-based GIS tool for NDEE and resource partners to assess nitrate risk
- A nitrate outreach toolbox and guidance documents
- A public water system assistance ranking system to target outreach and funding
- Nitrate summary reports* available to community water systems to show trends in their source water

*(English and Spanish)



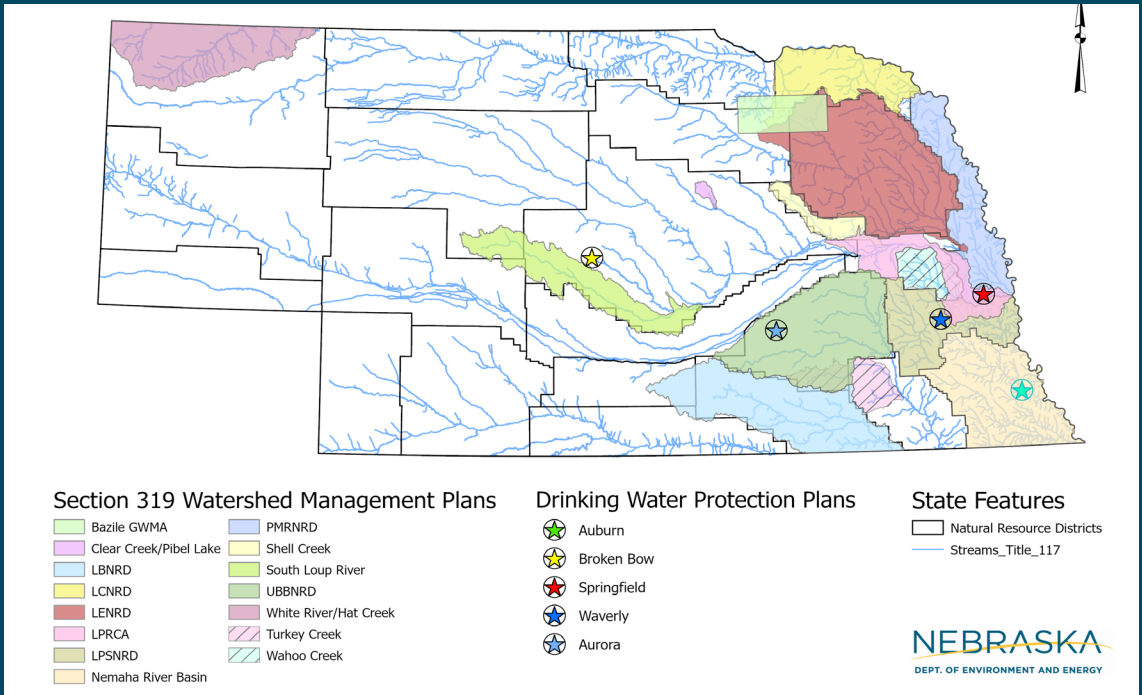


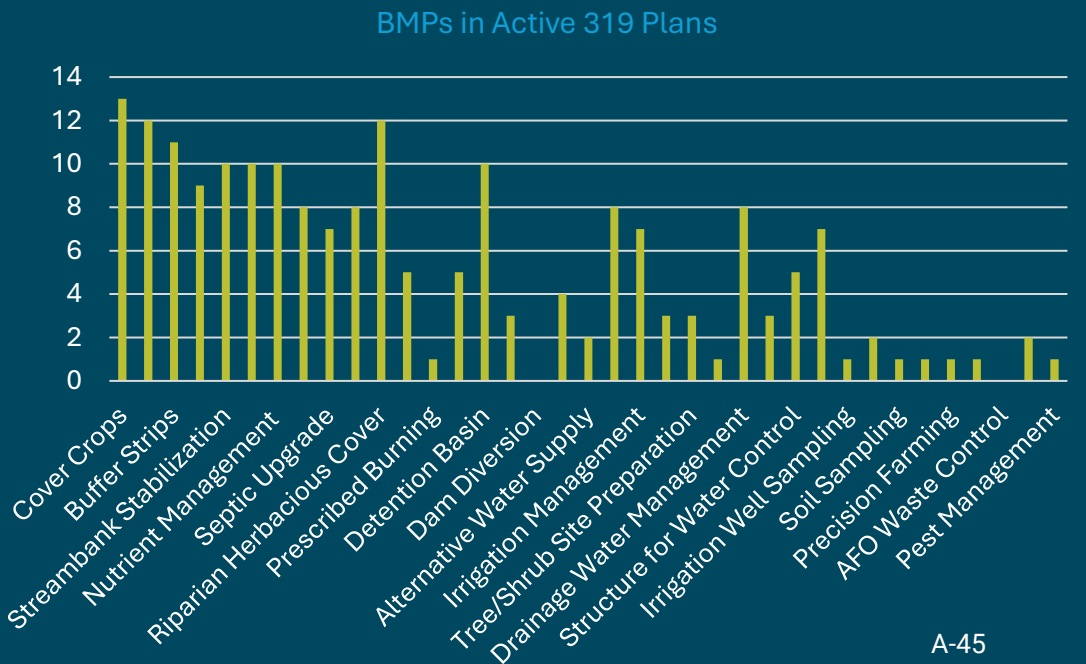


Non-Point Source Water Quality

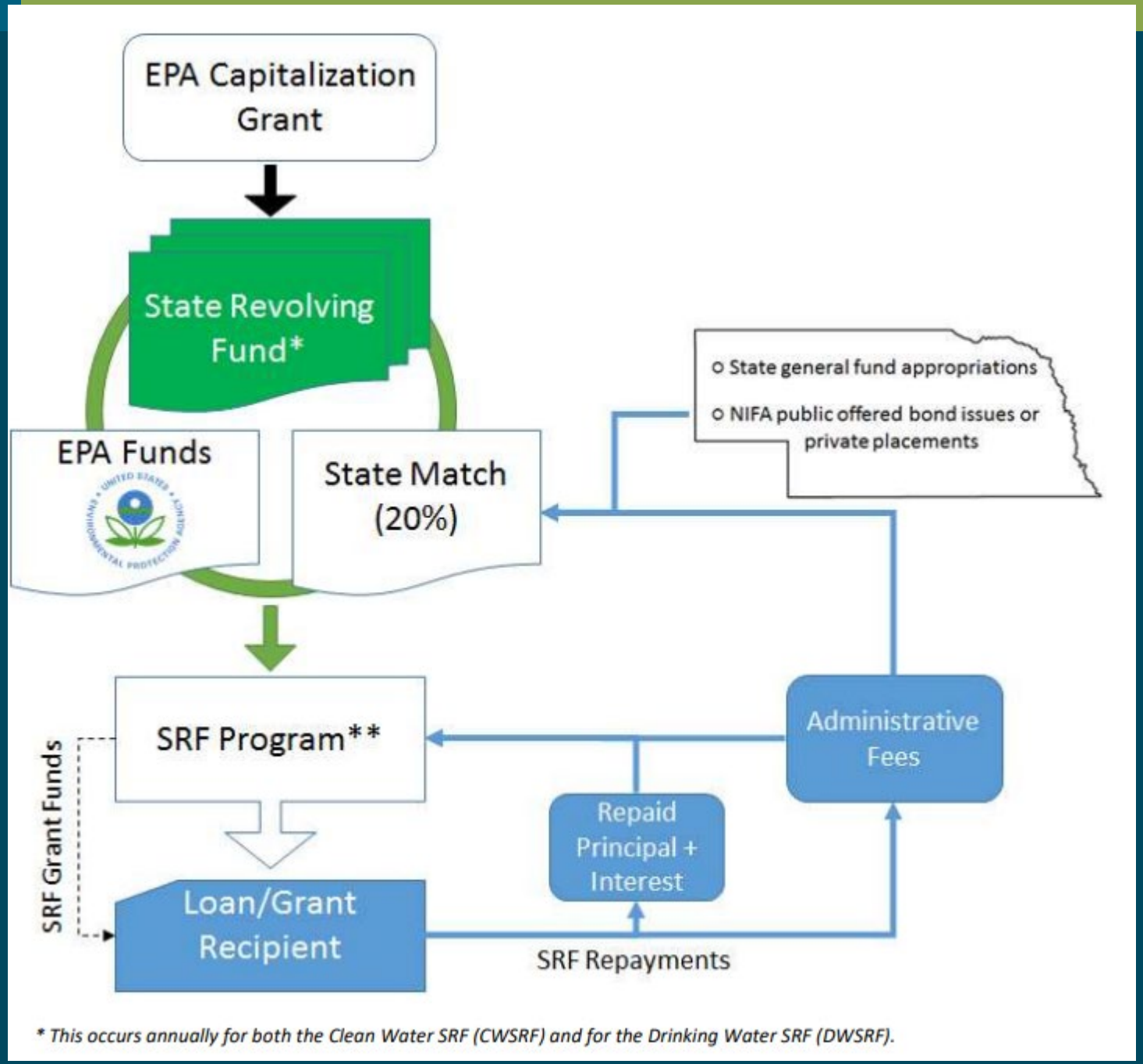
Reducing nonpoint source pollution to state waters

- Two funding options:
  - Competitive projects (~$300,000 for 2–3-years)
  - Small grants (≤ $15,000 for around 1 year)
- Nebraska receives an average grant award of ~$2.5 million from year to year.





State Revolving Funds (SRF) programs for drinking water and waste water


EPA Capitalization Grant
State Revolving Fund*
EPA Funds
State Match (20%)
State general fund appropriations
NIFA public offered bond issues or private placements
SRF Program**
Administrative Fees
Repaid Principal + Interest
SRF Grant Funds
Loan/Grant Recipient
SRF Repayments
* This occurs annually for both the Clean Water SRF (CWSRF) and for the Drinking Water SRF (DWSRF).

Clean Water State Revolving Fund (CWSRF)

- The CWSRF was created to provide below market financing for construction of publicly owned (wastewater) treatment works (POTWs) and nonpoint source control systems
  - Construction of wastewater treatment facilities and sanitary sewer collection systems to alleviate public health and environmental problems
- Just over $21.8M of program funding in 2026 fiscal year
- Projects include:
  - Wastewater treatment work projects
  - Nonpoint Source projects
  - Stormwater projects
  - Emerging Contaminants: testing and treating
  - Water conservation, efficiency, and reuse projects
  - Security measures at publicly owned treatment works
  - Technical assistance

Drinking Water State Revolving Fund (DWSRF)

- The DWSRF was created to provide low-cost financing for construction of publicly or privately owned public water systems (PWS)
  - Construction of water works, and for land acquisition from willing sellers for source water protection. Funds can be used to plan, design and construct drinking water facilities
- Just over $72.1M of program funding in 2026 fiscal year
- Projects include:
  - Treatment installation or upgrading for Public Water Systems
  - Transmission and distribution systems
  - Source water rehabilitation
  - Water Storage Options
  - Consolidation – interconnecting two or more water systems
  - Creation of new systems for homes with contaminated individual wells.
  - Emerging Contaminants: testing and treating
  - Lead Service Line: testing, education, replacement

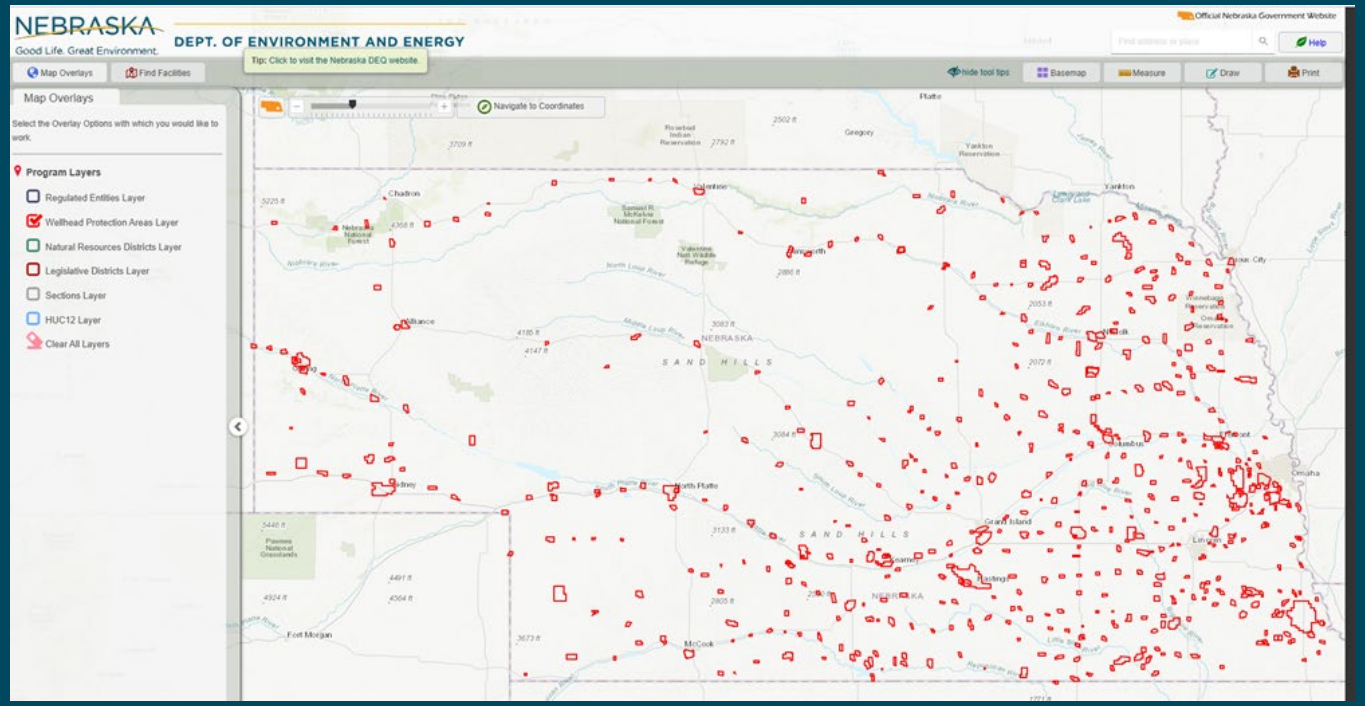
Water Planning

Well-head protection, source water protection, and integrated management

NEBRASKA
Good Life. Great Water.
DEPT. OF NATURAL RESOURCES

Well-head Protection (WHP)

- Voluntary program, but every community water system with its own active source has a plan
- 516 WPH areas in Nebraska, 116 are approved



EFFECTIVE DATE
APRIL 4, 2010

NEBRASKA DEPARTMENT OF
HEALTH AND HUMAN SERVICES

179 NAC 7

CATEGORY	DISTANCE Feet
Water Well	1,000
Sewage Lagoon	1,000
Land application of municipal/industrial waste material	1,000
Feedlot or Feedlot Runoff	1,000
Underground disposal system (septic system, cesspool, etc.)	500
Corral	500
Pit Toilet/Vault Toilet	500
Wastewater Holding Tanks	500
Sanitary Landfill/Dump	500
Chemical or Petroleum Product Storage	500
Sewage Treatment Plant	500
Sewage Wet Well	500
Sanitary Sewer Connection	100
Sanitary Sewer Manhole	100
Sanitary Sewer Line	50

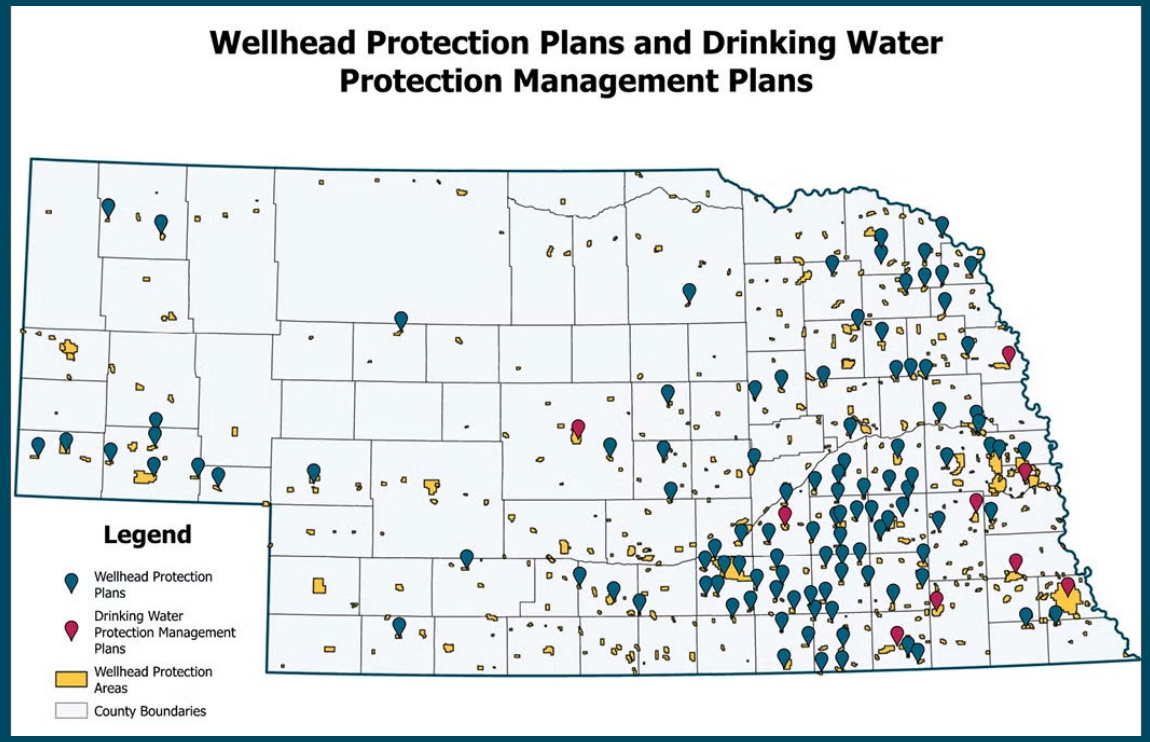
NOTE: If the distance requirements in 179 NAC 13 Attachment 2 are not met, the well is subject to testing to determine if it is ground water under the direct influence of surface water. If a well meets that definition, it is treated as a surface water source subject to all the requirements of the rules regarding surface water.

A-51

Budget in 2024 ~$50K

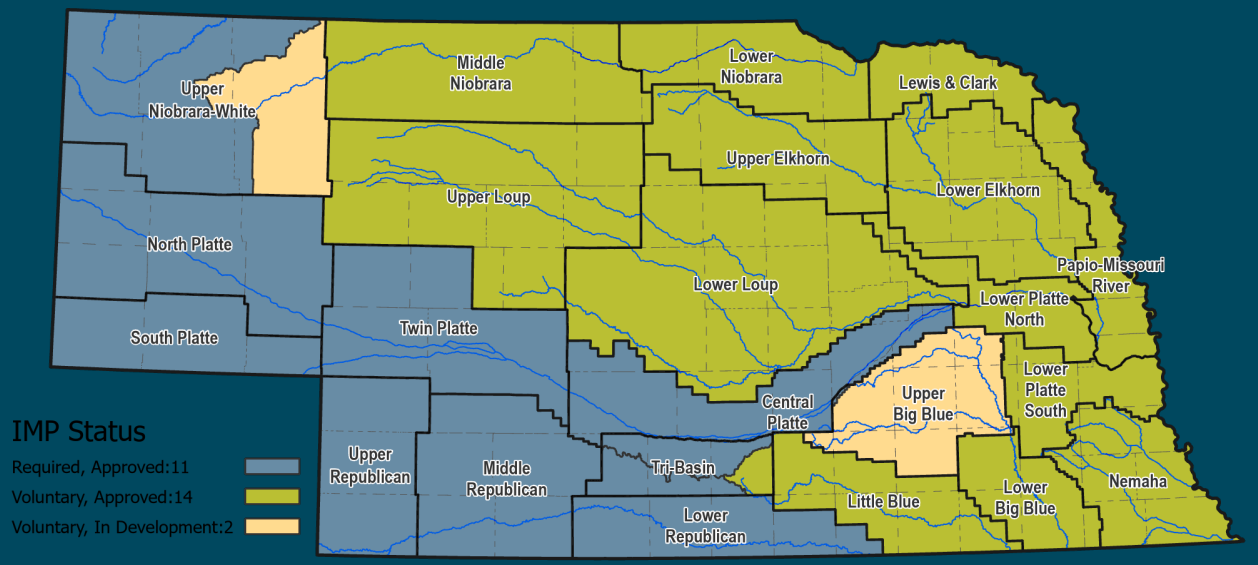
Source Water Protection (SWP)

- Protecting water used as public or private drinking water for human health
- $150,000 per year may be available to finance projects that protect public drinking water sources
- Projects include:
  - Public Education on Source Water Protection, workshops on Best Management Practice (BMP)
  - Implementation and evaluation of agricultural and urban BMPs
  - Water Conservation Programs
  - Contaminant source identification – research / investigation
  - Contaminant pathway removal (such as the proper decommissioning of unused wells, or structures to divert contaminated runoff from a source)
  - Restoration and/or conservation of the source water protection area
  - Water quality monitoring at critical points in protection areas

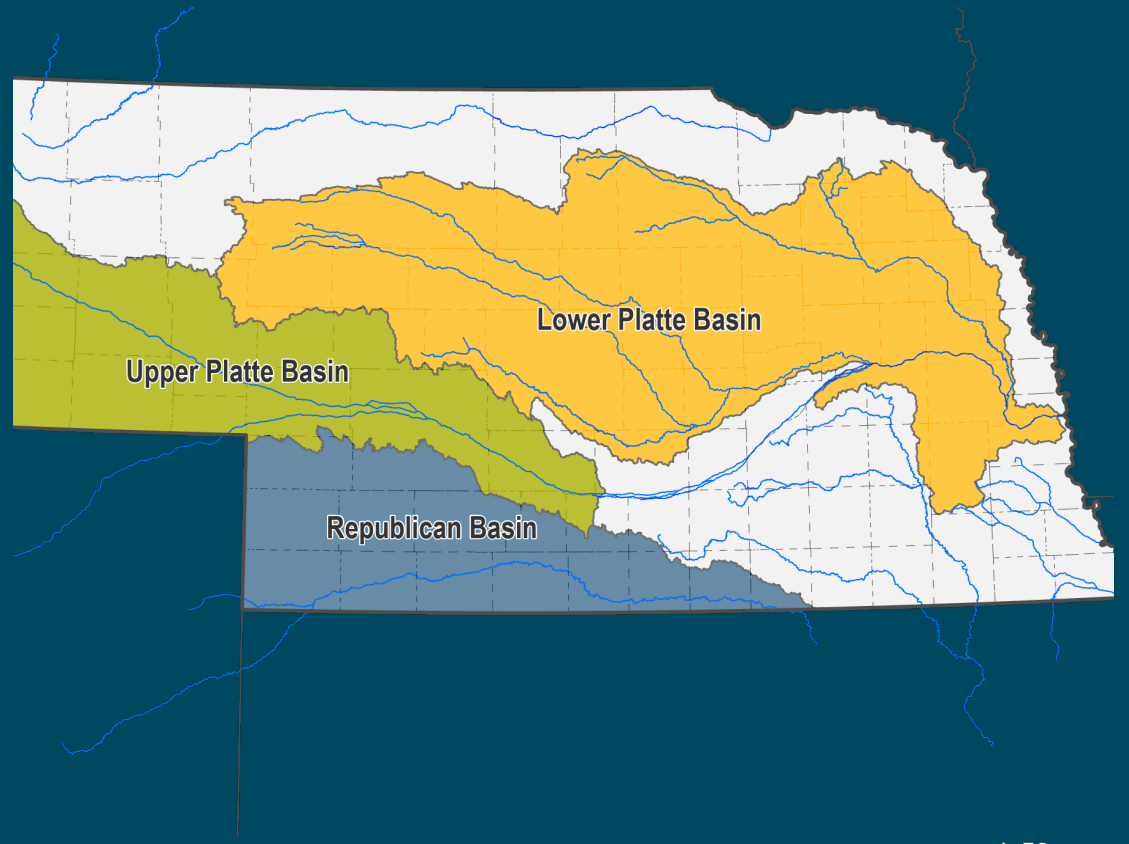


Integrated Water Planning Areas

- Integrated Management Plan Areas



- Basin-wide Plan Areas



Water Resources Cash Fund

- The fund is to be used in any area that has adopted an integrated management plan
  - To aid management actions taken to reduce consumptive uses of water;
  - To enhance stream flows or ground water recharge;

Groundwater Recharge and Wetland Habitat Project (2017-2020)

Parties: Tri-Basin NRD, CNPPID, USFWS, NeDNR

The **Groundwater Recharge and Habitat Project** increased groundwater recharge and water quality within the **Tri-Basin NRD** and enhanced wetland habitat in five **Waterfowl Production Areas (WPAs)**. CNPPID provided excess flows through their canal system to *improve wetland function and recharge the excess flows* within Tri-Basin NRD's boundaries. Tri-Basin NRD installed dedicated observation wells in the WPAs to ensure the project benefits were achieved.

Platte Basin Habitat Enhancement Project (PBHEP) (2009-2019)

Parties: North Platte NRD, South Platte NRD, Twin Platte NRD, Central Platte NRD, and Tri-Basin NRD (Upper Platte NRDs), Nebraska Game and Parks Commission (NGPC), NeDNR

PBHEP was a shared venture to fund projects that help Nebraska meet its PRRIP compact obligations. Funding was primarily provided by the 5 NRDs ($2 million) and NeDNR ($2 million) with an average annual $1 million grant from the Nebraska Environmental Trust (NET).

The Phelps County Canal, part of the Central Nebraska Public Power and Irrigation District in south-central Nebraska. Photo courtesy of Nebraskaland Magazine/Nebraska Game and Parks Commission.

Groundwater Recharge from Excess Flows (2013-Present)

Excess surface flow projects can provide groundwater recharge year-round via a canal system or recharge pit. Excess surface flows are those beyond what is required to support existing uses in a basin. Diverted to a canal or pit, the water seeps through the sides and bottom, moving into the groundwater zone.

Meeker-Driftwood Canal Automation Project (2020-Present)

Parties: Frenchman-Cambridge Irrigation District (FCID)

FCID began an **automation and remote signaling project on the Meeker-Driftwood Canal** in 2020. The project was given $2 million in funding from the Colorado Settlement portion of the WRCF.

Upgraded flow measurement devices and newly installed control gates connect to a Supervisory Control and Data Acquisition (SCADA) radio telemetry network that can be remotely accessed. Results include:

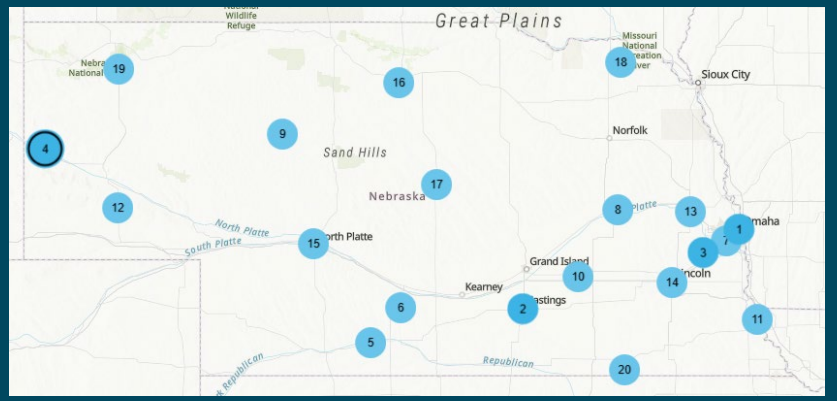
- Decreases unintended operation spills,
- Increases water storage in the Swanson Reservoir, and
- Increases groundwater recharge.

Water Sustainability Fund

NEBRASKA
Good Life. Great Water.
DEPT. OF NATURAL RESOURCES

Goals of the Water Sustainability Fund

- Provide financial assistance to programs, projects, or activities that increase aquifer recharge, reduce aquifer depletion, and increase streamflow
- Remediate or mitigate threats to drinking water
- Promote the goals & objectives of approved integrated or ground water management plans
- Contribute to multiple water supply management goals including flood control, reducing threats to property damage, agricultural uses, municipal and industrial uses, recreational benefits, wildlife habitat, conservation, and preservation of water resources
- Assist municipalities with the cost of constructing, upgrading, developing, and replacing sewer infrastructure facilities as part of a combined sewer overflow project
- Provide increased water productivity and enhance water quality
- Comply with interstate compacts, decrees, other state contracts and agreements and federal law



NEBRASKA

Good Life. Great Water.

DEPT. OF NATURAL RESOURCES

NEBRASKA

Good Life. Great Resources.

DEPT. OF ENVIRONMENT AND ENERGY

THANK YOU

245 Fallbrook
Lincoln, NE 68521-6729
402-471-2363

dee.nebraska.gov

dnr.nebraska.gov

Governor's Water Quality and Quantity Task Force

Subcommittees

A. Financing and Incentives Committee

- Examine ROI of sustainable practices like precision ag, cover crops, etc.
- Explore fee/tax models to address nitrate legacy (e.g., Title 200 gas tax analogy)
- Reframe incentives to support early adopters and expand education

B. Nitrate Legacy and Drinking Water Access Committee

- Support water treatment costs for communities
- Review community management within source water and wellhead protection areas
- Discuss rural water system development as a long-term potable water strategy
- Discuss monitoring and best practices for self-served domestic water supplies

C. Water Conservation and Quantity Committee

- Irrigation well water metering requirements
- Review allocation systems to determine most effective strategies
- Review water availability for industries and economic growth

D. Methods and Resources Committee

- Identify existing effective practices to reduce nitrogen and water use
- Determine regionally appropriate metrics for incentives or restrictions
- Establish benchmarks for measuring the success of the task force initiatives
- Discuss potential information clearinghouse (e.g., pivot company tech)
- Consider tools like "Producer Connect" to improve adoption
- Discuss generational change gap and how to address it

Ag Registry and Grants Program:

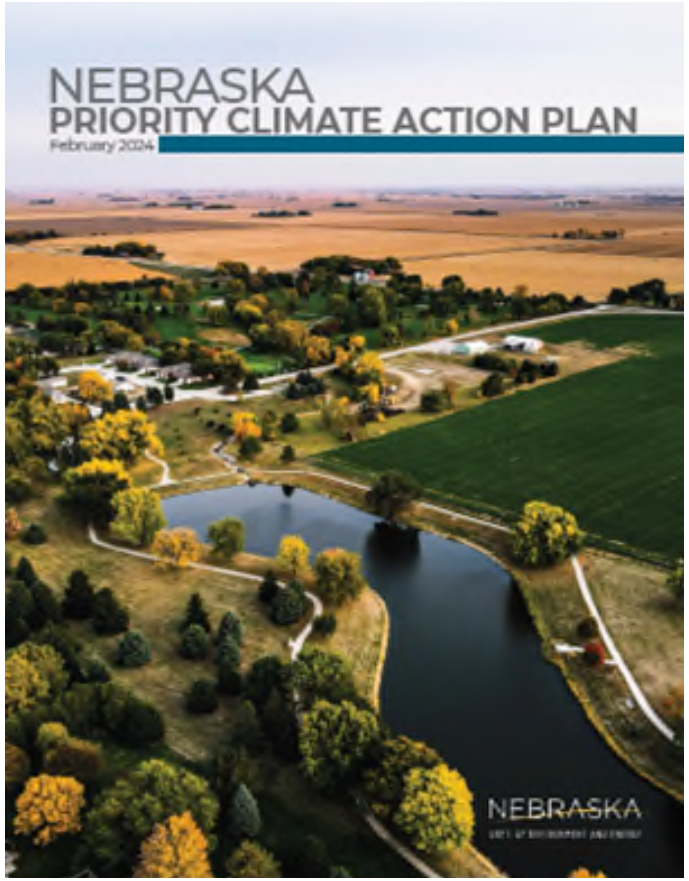
Task Force Oversight

NEBRASKA
DEPT. OF WATER, ENERGY, AND ENVIRONMENT

Agenda

- Background on ONE RED
- Ag Registry and Grants Program Overview
  - Carbon Intensity Registry
  - Regenerative Agriculture Grants
  - Precision Agriculture Grants
- Task Force Role, Expectations, and Timeframe

Climate Pollution Reduction Grant Program (CPRG)



A CPRG planning grant funded the development of Nebraska's Priority Climate Action Plan (PCAP) in 2023.

The plan identified 12 ***voluntary, incentive-based measures*** to reduce greenhouse gas (GHG) emissions throughout the state.

In October of 2024, the Department was awarded a $307 million implementation grant to fund eight programs drawn from Nebraska's PCAP.

ONE RED Program Categories

DWEE

People, Soil, and Nitrogen Work

- Nebraska Strategic Ag Coalition (NSAC)
- Nebraska Conservation Mentorship Network
- Nitrogen Reduction Incentive Act (NiRIA) Program
- Nebraska Soil Health Coalition (NSHC)
- Numerous field and networking events for Nebraska producers

Ag Registry and Grants Program

Aims to support Nebraska's Ag producers in adopting regenerative ag practices and precision ag technologies

Goals:

- Enhance farm sustainability by building soil health and reducing input costs
- Reduce nitrate
- Reduce emissions

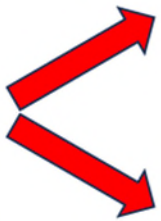
Three-Pronged Approach

Carbon Intensity Registry	$60M
Regenerative Agriculture	$17M
Precision Agriculture	$70M

CI as a Proxy for Economic and Environmental Outcomes

Lower CI Scores driven by:

- **Yield**
- **Efficient Nitrogen Utilization**
  - Lower Use
  - More efficient use
- **Soil Carbon Sequestration**
  - Reduced Tillage
  - Cover Crop Use
  - Manure or Compost Use



Potential <u>Economic Outcomes</u>

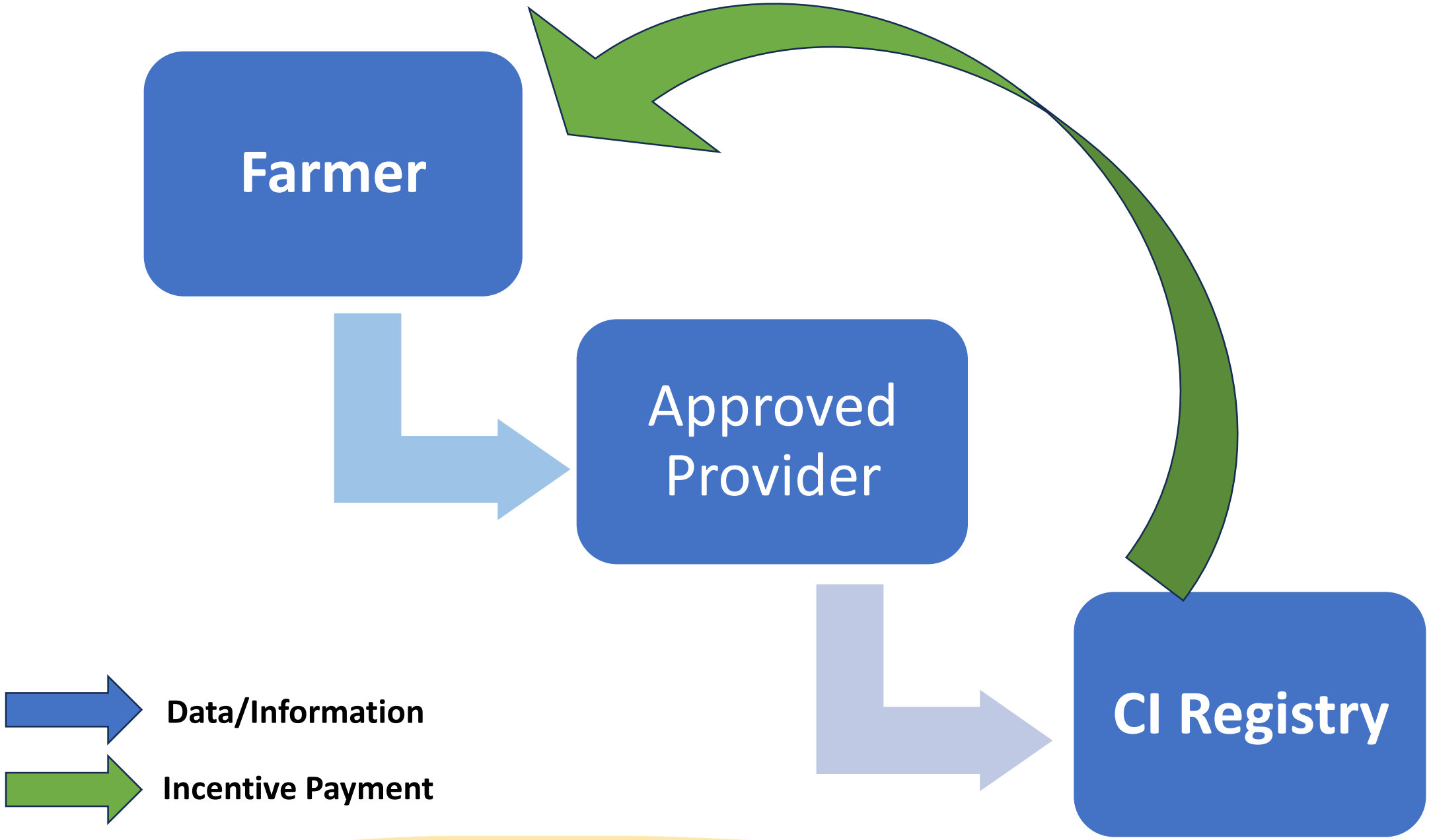
- Reduced input costs
- Soil and crop resilience – economic stability
- Access to additional markets and premiums
- Data as a second cash crop

Potential <u>Environmental Outcomes</u>

- Reduced nitrates in groundwater
- Reduced soil & nutrient loss to erosion
- More efficient water use
- Improved crop resiliency to biotic/abiotic stress

Carbon Intensity (CI) Registry ($60M)

- Carbon intensity is a measure of the amount of GHG emissions resulting from a process.
- The CI score for a crop is calculated by an Ag consultant based on inputs and practices
- The Registry will initially pay farmers to submit their CI score
- Ethanol producers will be seeking low-CI feedstocks to take advantage of the West Coast market and any federal tax credits
- The CI Score registry will provide growers with an established performance metric to track the impact of sustainable farming practices and gain premium pricing for their crops


Farmer
Approved Provider
CI Registry
Data/Information
Incentive Payment

Input Variables for CI Calculation

- Field size
- Crop yield
- Fuel and energy usage
- Fertilizer/chemical use
- Management practices (e.g., tillage, manure, cover crops)
- Soil organic carbon

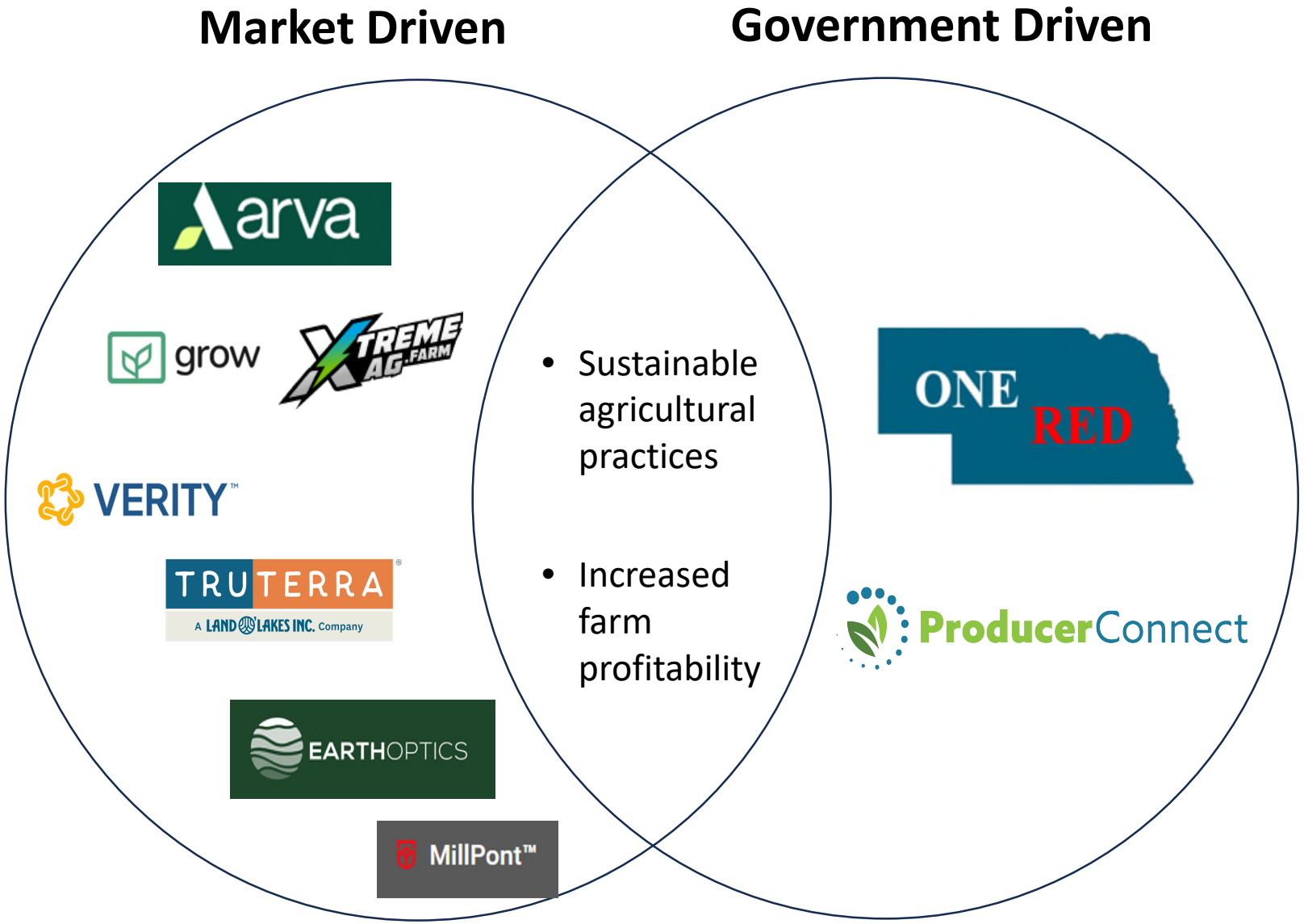
Registry

- **Independent Design & Operation**:
  The Registry will be designed and operated by an independent software vendor, selected in collaboration with DWEE and our partners.
- **Security & Isolation**:
  The system will be both physically and digitally isolated to ensure a high level of security and data protection.
- **Approved Third-Party Providers**:
  Producers will have the option to work with approved third-party providers to gather the environmental data required to calculate their carbon intensity (CI) scores.
- **Data Privacy & Security**:
  All approved providers will be held to strict standards for maintaining data privacy and security before and during the submission of data to the Registry.

Data Collection

Outputs/ Performance Measures	Outcomes / Projected Environmental or Programmatic Improvement
• # of farms logging original CI score • # of farms logging subsequent scores • # of acres represented in Registry per year • # of bushels recorded in Registry per year • Change in CI Scores within and across operations • # of operations applying/receiving grants • Total amount of grants/year • Geographic diversity of CI scores and grants • Participation rate of small/medium farms	Reduced CI of corn and soybeans Reduction in metric tons CO2e Higher profits for small/medium farms

Invested agricultural GHG reductions



Grant Programs

Regenerative Ag Grant Program

Precision Ag Grant Program

Regenerative Agriculture Grant Program ($17M)

Full or Cost-share funds to implement Regen Practices

Potential Eligible Equipment/Programs:

Equipment

- Roller-Crimper Systems
- No-till Drill and Strip-till Equipment
- Cover Crop Seeders and Interseeders

Programs

- NiRia
- Community-Based Programs to encourage adoption

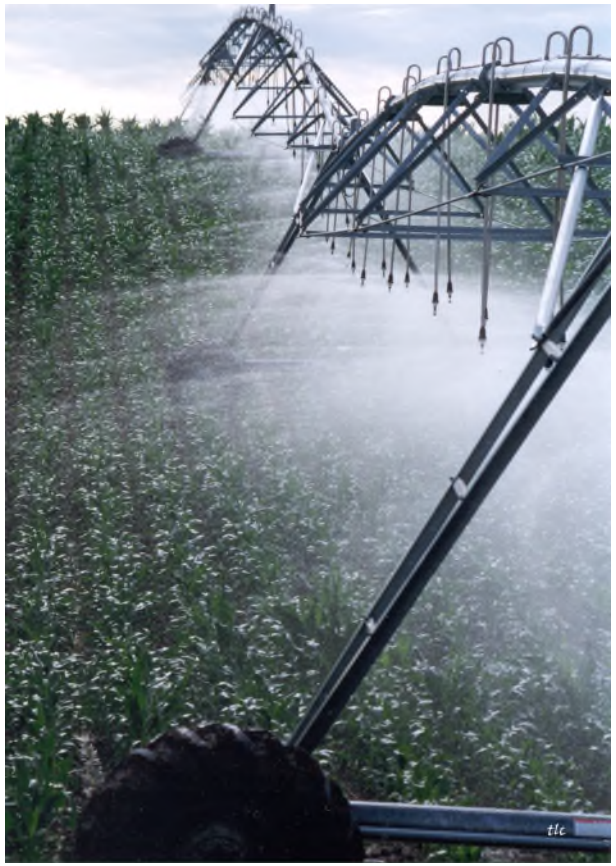
Nutrient Management Plans

Precision Agriculture Grant Program ($70 M)

Full or Cost-share funds for Precision Ag Practices

Potential Eligible Equipment:

- Subscription Costs for Crop Management Systems
- In-ground sensors
- Remote Sensing Services
- Variable Rate Technology
- Water Management and Irrigation Systems
- Fertigation Systems
- Other Precision Agriculture Equipment



How the Grant Programs Will Work

DWEE and Task Force Determine Eligibility Requirements

- Identify/prioritize programs, practices, equipment types

Application Process

- Once Launched, application open to farmers, co-ops, eligible entities
- Proposal to include:
  - Description of precision/regenerative ag projects
  - Requested technologies/practices
  - Demonstrate how the application aligns with their farm management plan.

Awardees must:

- Every grant awarded will require a carbon intensity score for the impacted crops/fields to be registered (Base-line and annually for the grant period)

Role of the Task Force (TF)

The Ag Registry and Grants Program TF will serve as a strategic advisory body.

It will function as a sounding board to ensure effective coordination and implementation of the program's three core strategies:

1) Establish a Carbon Intensity (CI) Score Registry

2) Regenerative Agriculture Grants

3) Precision Agriculture Grants

Task Force Ask

- Identifying Eligible Practices
  - Define and periodically review criteria for regenerative and precision ag practices eligible for grants.
- Aligning Policy
  - Coordinate with local, state, and federal policies to ensure consistency and maximize impact.
- Providing feedback and input on the various components of the program
  - CI Registry
  - Data Security - ensure transparency and farmer trust in data handling.

Timeline and Milestones

- Time Commitment:
  - Monthly Meetings or in alignment with other subcommittee meetings.
  - Quarterly afterwards until completion of the Grant in 2029.
- Ag Registry and Grants Program Timeline and Milestones
  - 2025-2026: Finalize registry criteria, develop grant framework, initial outreach
  - 2026–2028: Full program rollout, monitor adoption and impact, refine incentives
  - 2029: Sunset of ONE RED Task Force; delivery of final recommendations and program review

Further Information

ONE RED — *Opportunity for Nebraska: Reducing Emissions & Decarbonization*

Program website: http://dee.ne.gov/ndeqprog.nsf/onweb/cprg

The ONE RED portion of the Department website includes several pages:

- Program home page
- Priority Climate Action Plan
- Comprehensive Action Plan
- Implementation Grant
- Contact Information

Check the website frequently for information as plans & programs develop.

Sarah Starostka

402-471-4371

Sarah.Starostka@Nebraska.gov

DWEE.ONERED@nebraska.gov

ProducerConnect

Smarter Nitrogen & Irrigation Management

Supporting Nebraska Producers for a More Profitable & Sustainable Future

A Longstanding Commitment to Water Management

Nebraska's NRDs have collected crop and water use data from producers for decades.

NRDs also have a long history of groundwater monitoring for quantity and quality

Long-term concern: rising nitrate concentrations in groundwater

While this data has guided NRD decisions and policies, it wasn't always accessible for producers.

Connecting the Dots: From Data to Insights

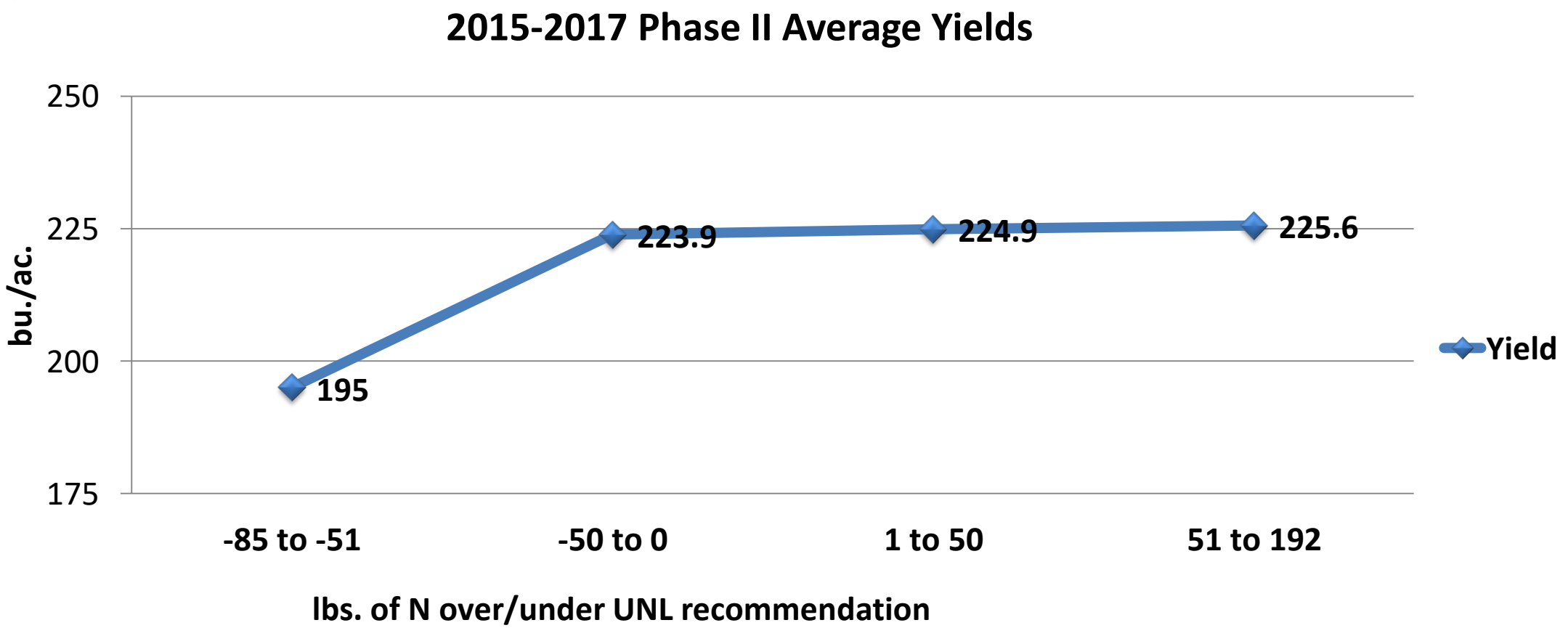
NRDs observed a clear pattern in crop report data:

- Overapplication of nitrogen fertilizer was common
- Groundwater in high-application areas showed elevated nitrate levels

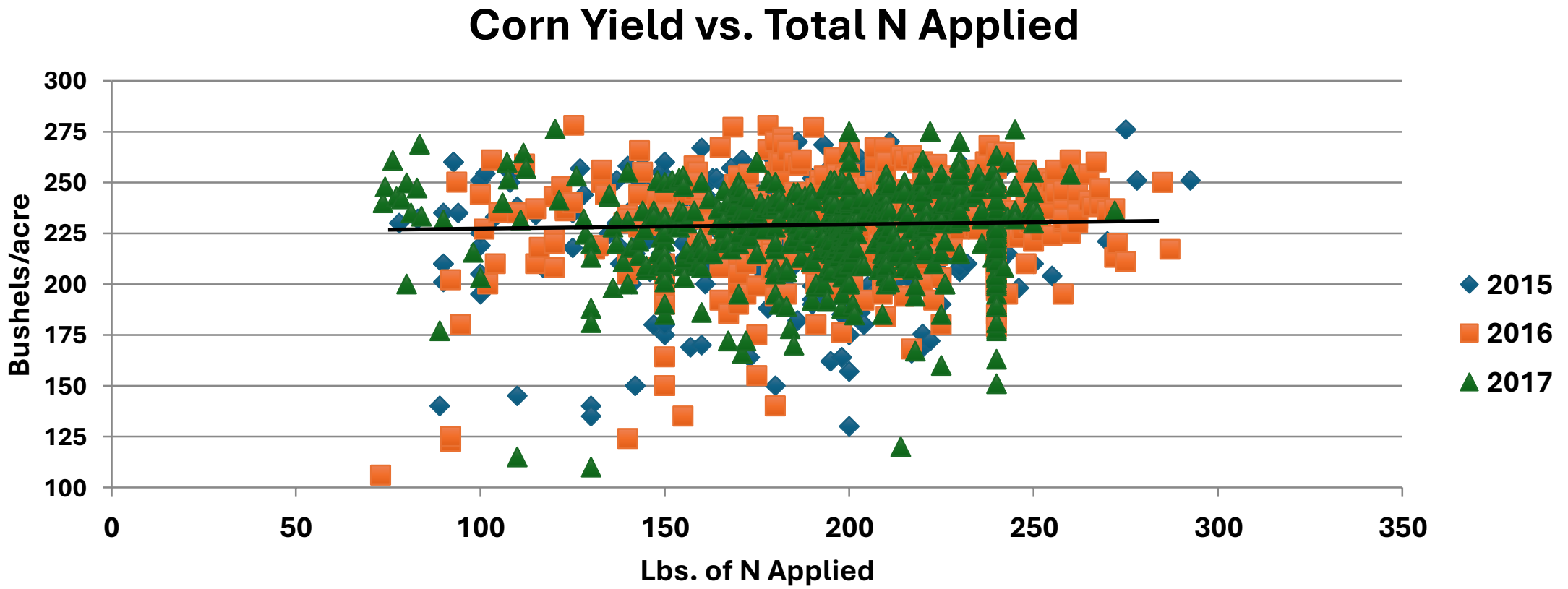
Yields plateaued beyond a certain nitrogen rate-highlighting a point of diminishing return

NRDs needed a better way to share this insight with producers

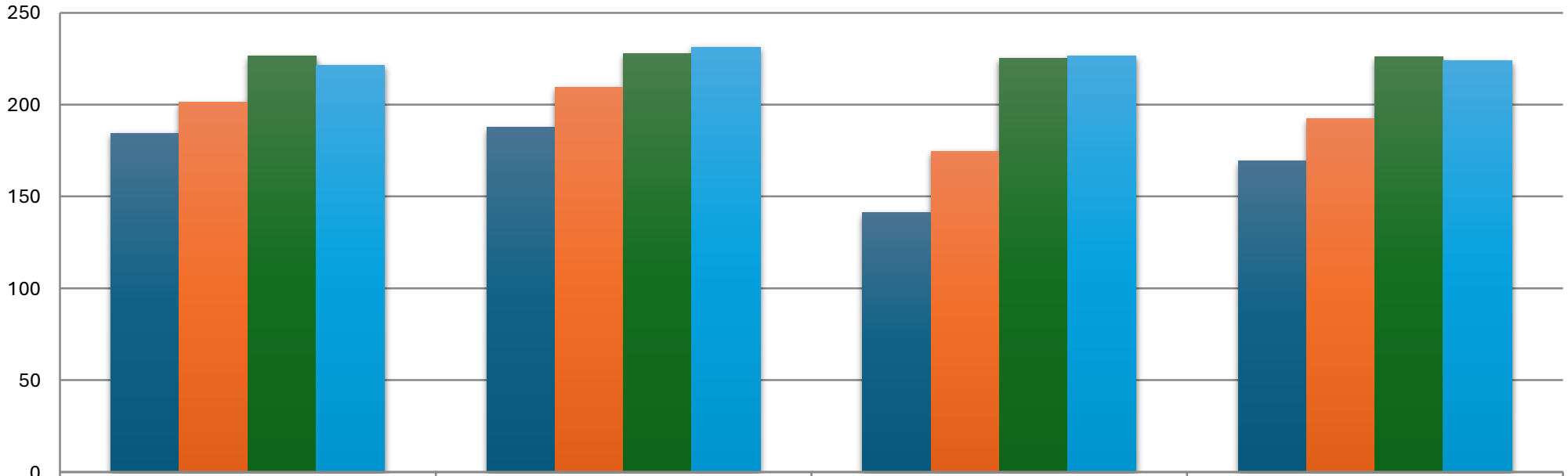
2015-2017 LNNRD Phase II Crop Reporting Data. Represents 190,000 corn acres.



2015-2017 LNNRD Phase II Crop Reporting Data. Represents 190,000 corn acres.



Actual Nitrogen and Yields



	Corn on Corn	Corn on Specialty	Corn on Soybeans	Averages*
N Recommended	184.42	187.7	141.15	169.44
N Applied	201.27	209.51	174.61	192.35
Expected Yield	226.53	227.61	225.24	226.13
Actual Yield	221.63	231.31	226.55	223.84

2015-2017 LNNRD Phase II Crop Reporting Data. Represents 190,000 corn acres.

The Vision: A Nitrogen Dashboard

NRDs wanted to empower producers with the same data used in NRD decision-making

Goal: Empower better nitrogen & irrigation management

Goal: connect farm practices to environmental outcomes

This idea would eventually evolve into a broader, more functional tool: Producer Connect

Turning Vision into Reality

- Partnerships made it possible:
  - NRDs align on shared goals
  - Partner with Longitude 103 for development
  - Support from state, federal, and private partners
- The result: Producer Connect, a Nebraska-built platform for Nebraska producers

What is Producer Connect?

Producer Connect has two goals:

1. Simplified crop reporting (step-by-step platform)
2. Deliver actionable data to producers, helping them:
   - Understand the environmental impacts of their nitrogen and irrigation decisions
   - Improve on farm-management for both productivity and sustainability

Producer Connect transforms data into decisions-benefiting producers, NRDs, and Nebraska's water resources.

Purpose of Producer Connect

- Address nitrogen overapplication and improve irrigation efficiency
- Protect Nebraska's groundwater quality and quantity
- Provide field specific nitrogen recommendations
- Streamline reporting across all NRDs
- Supports crop yields and farm profitability

Key Features

Empowering Producers: personalized recommendations, farm insights

Simplified Reporting: fast uploads, easy data entry

Secure & Private: password protected, confidential

Tracking & Feedback: NUE, yield trends, historical data

ProducerConnect

Home Features Details Download

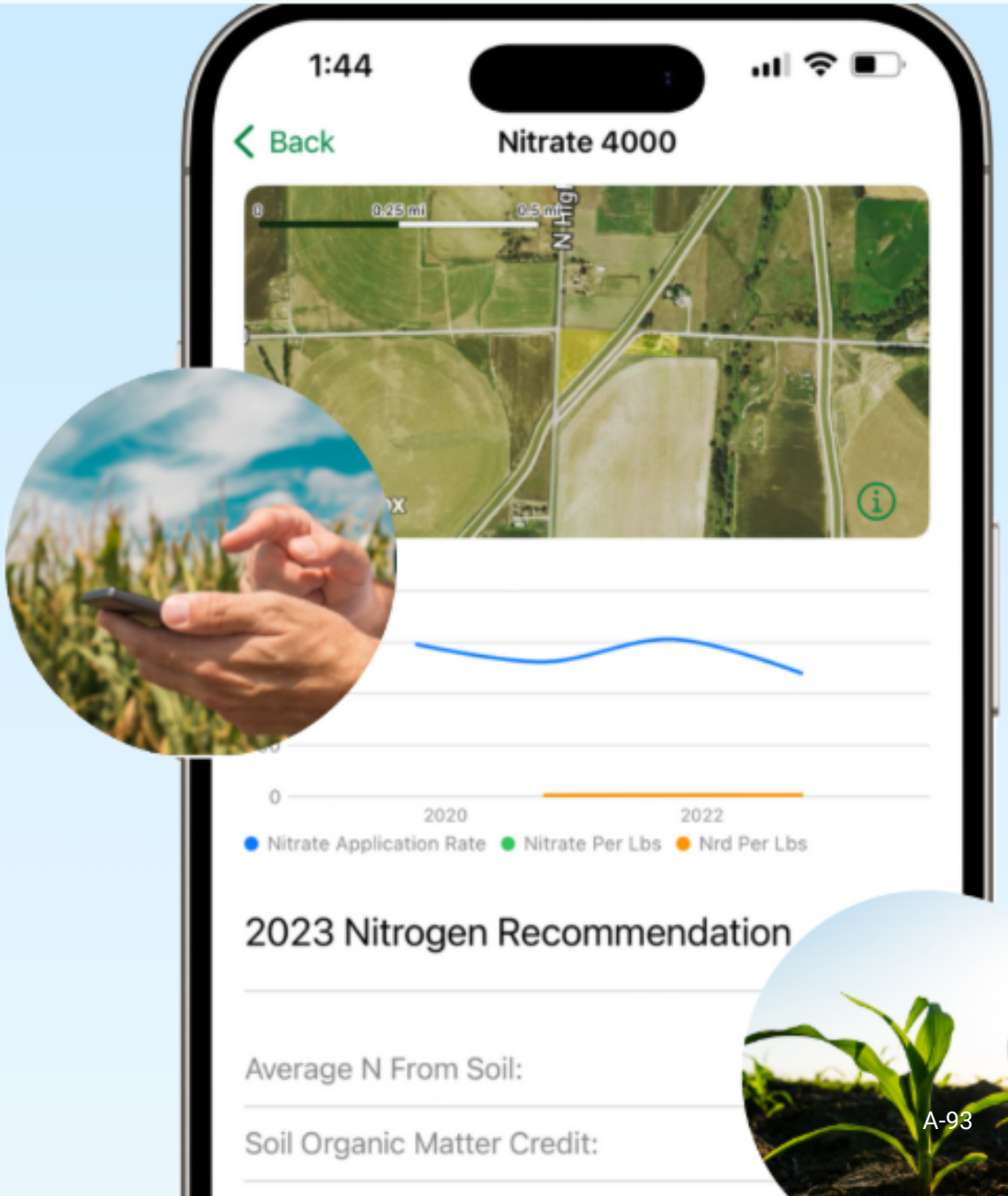
Water Usage and Nitrogen Insights

Get district data and update your information while seeing water use and nitrogen recommendations

Web Version

Download

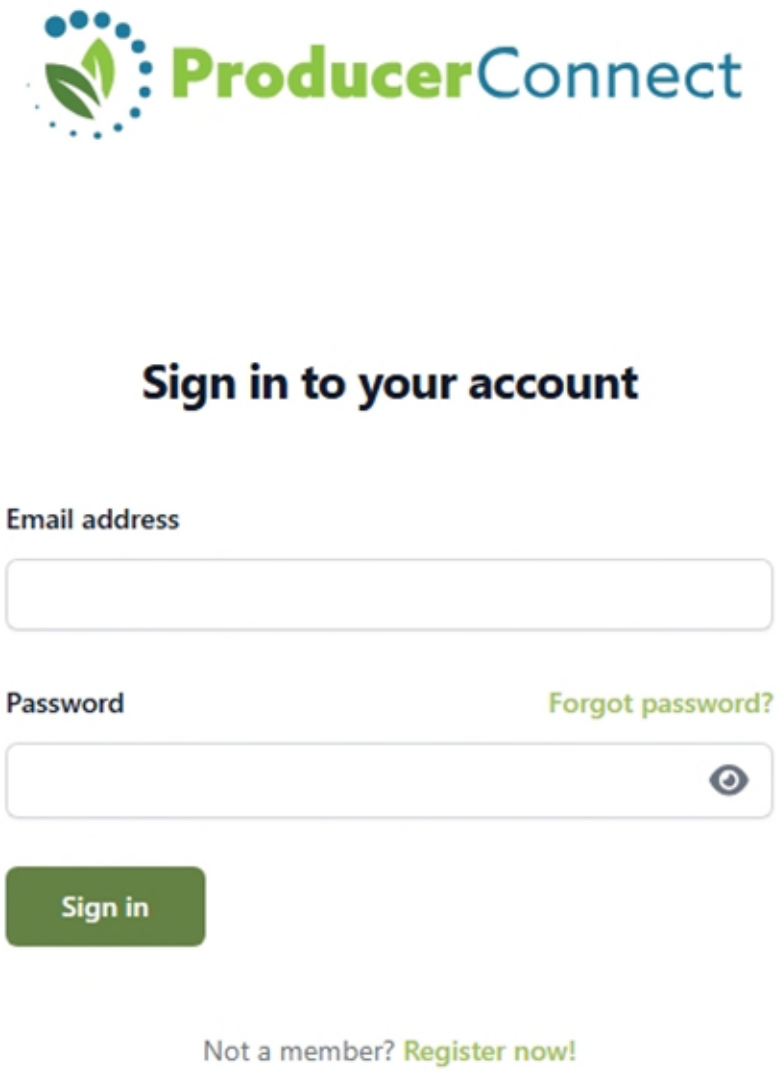
Download



Secure & Private

Your Data, Your Control

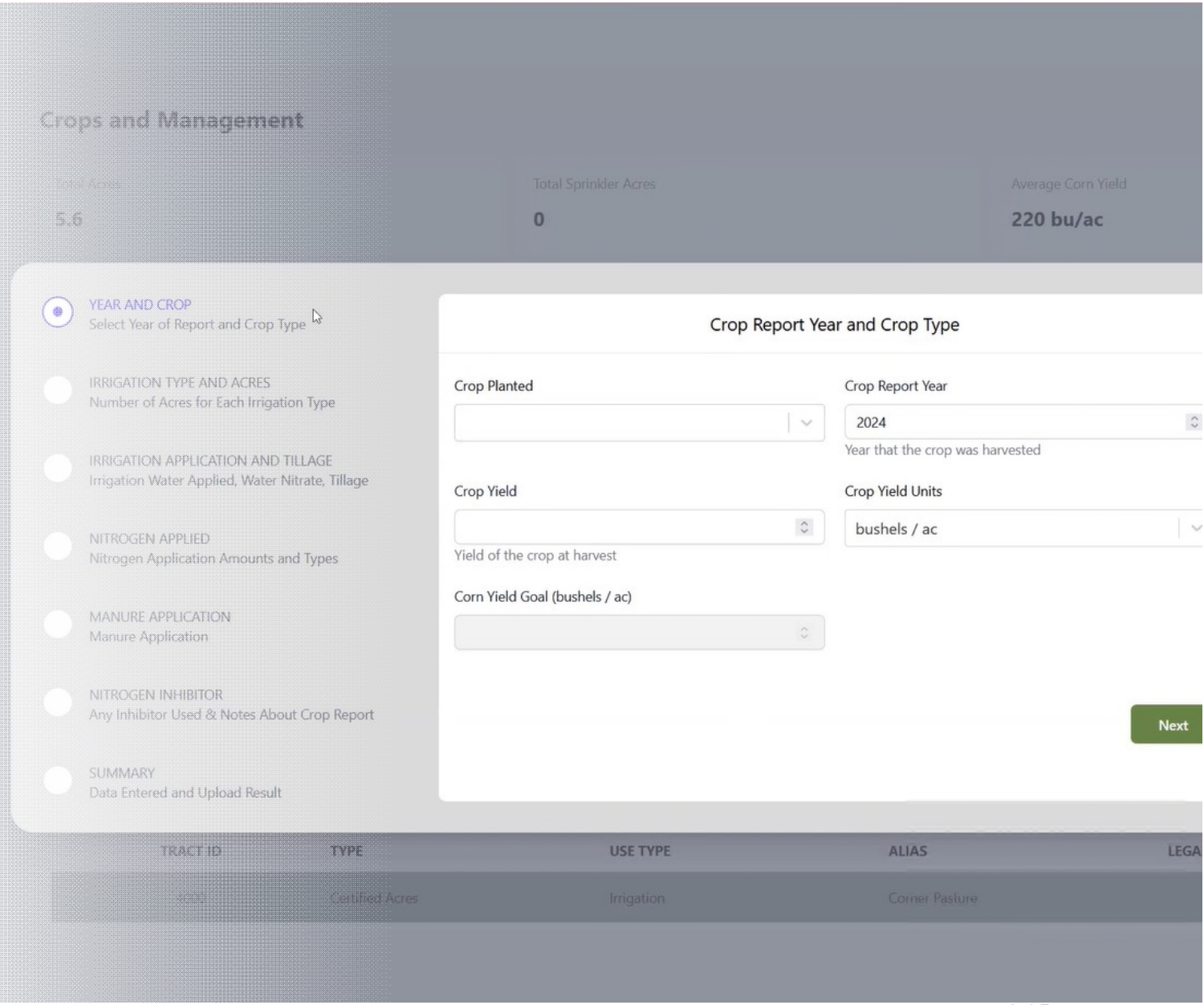
- Secure, password-protected logins
- Private access for each producer
- Confidential farm data storage



Empowering Producers

Farm-Specific Insights at your Fingertips

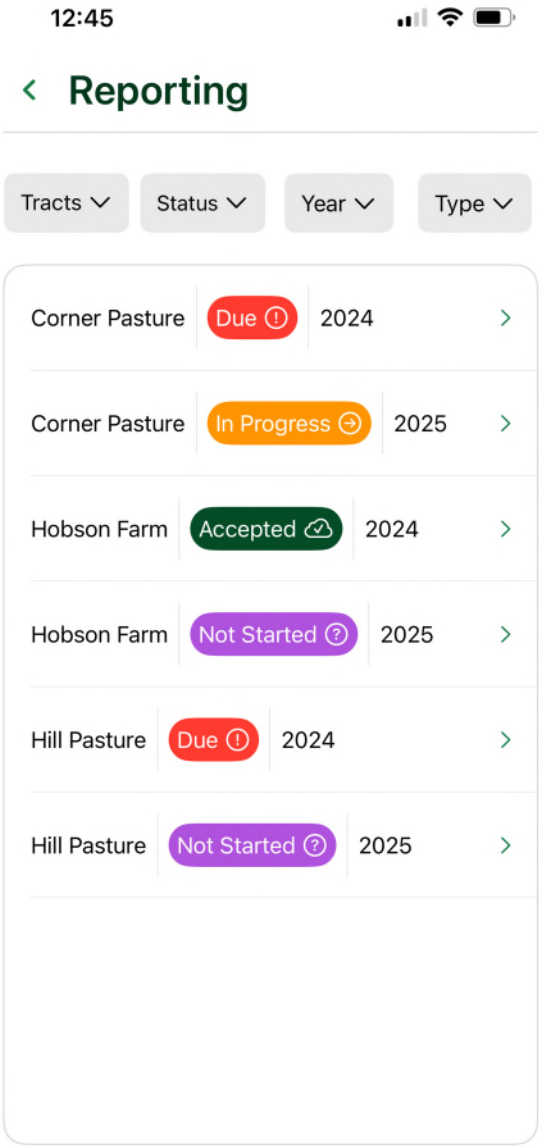
- Step-by-step data entry
- Personalized nitrogen recommendations
- Intuitive, user-friendly interface



Simplified Crop and Water Reporting

Fast, Accurate, Hassle-Free

- Upload flow meter photos directly from your phone
- Submit irrigation, soil, and crop data in seconds
- Save time and improve data quality



Producer Connect

app.producerconnect.com/pools

ProducerConnect

Thad Kuntz

- Home
- Reporting
- Tract
- Pools
- Wells
- Flowmeters
- Chemigation
- Soil Samples
- Crops & Management
- Nitrogen
- Settings

7.39 inches remaining

Based on current data, subject to change

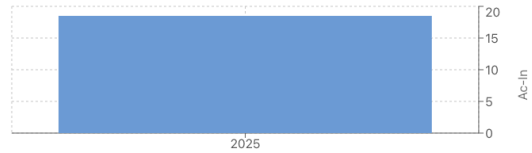
No irrigation data

Total Acres / Pool Count

203.3 / 1

Name	Acres
Kuntz	203.3

Usage Annual | Monthly | Daily



Allocations

Filters

Date	Description	Amount	Balance
12/31/2024	Carry Forward	11.97 AF	121.97 AF or 7.48 in / acre
12/31/2024	Initial Allocation	110 AF	110 AF or 6.75 in / acre

https://app.producerconnect.com/pools

connect.com/flowmeters

Thad Kuntz

Flowmeter and Usage Overview

Total Water Usage

40.66 ac-in

18.85% ↑ than last year

Water Use per Acre

0.19 in / ac

0.09% ↑ than last year

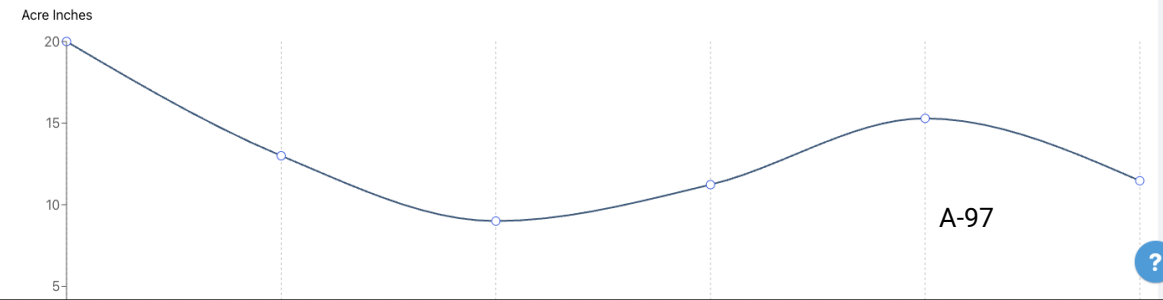
Flowmeter Count

2

Flowmeter Info

FLOWMETER ID	METER LOCATION	SERIAL NO	FACTOR	ALIAS	
5000	Well	16-05568-08	0.01		Add Reading
5001.1	Well	17-0555-09	0.01		Add Reading

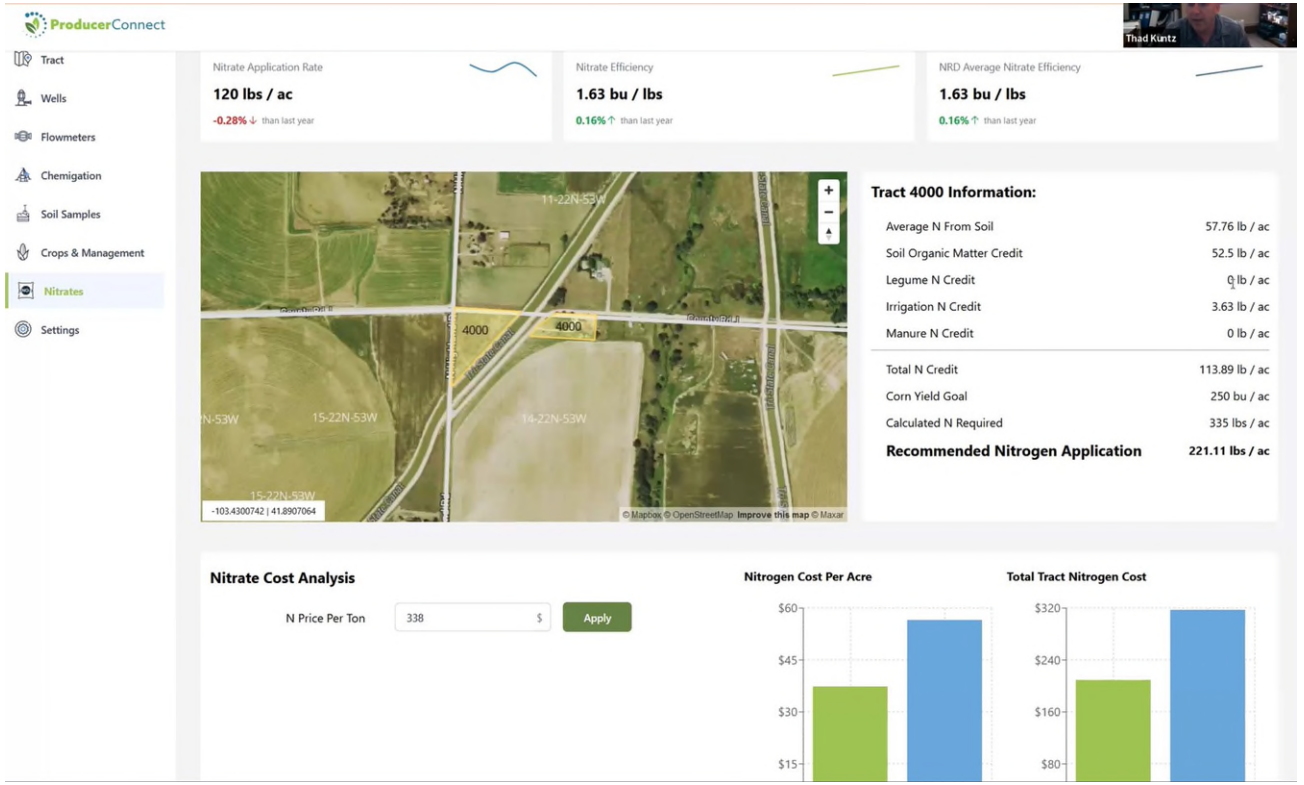
Flowmeter 5000 Usage



Tracking & Feedback

Make Better Decisions Year over Year

- Tracking nitrogen use efficiency (NUE)
- Monitor crop yields and irrigation patterns
- Access historical data for smarter planning



Economic Benefits

- Optimize input costs
- Apply fertilizer at agronomic rates
- Maintain crop yields
- Most profitable ≠ highest yield

Environmental Impact

- Reduce nitrate leaching
- Boost irrigation efficiency
- Promote long-term sustainability of water resources
- Protect Nebraska’s groundwater for future generations

Built for Nebraska, By Nebraska

A Collaborative Effort

- NRD-led, producer-focused
- In partnership with state/federal agencies
- Backed by agriculture organizations
- Design to serve producers & protect our shared resources
- 100% FREE

Nebraska's Natural Resources Districts www.nrdnet.org
Protecting Lives • Protecting Property • Protecting the Future

NRCS Natural Resources Conservation Service

Ultimate Goal

Precision Management for the Future

- Help producers thrive economically
- Protect Nebraska’s groundwater
- Support the next generation of sustainable agriculture

Questions

Jennifer Swanson

Director of Water Quality Initiatives

Nebraska Association of Resources Districts

jswanson@nrdnet.org

O: 402-471-2219

Nebraska's Natural Resources Districts www.nrdnet.org

Protecting Lives • Protecting Property • Protecting the Future

NRD Manager and Task Force Survey Responses		*NRD Managers*	*Task Force*
Practice Category	**Practice**	**Practice Score**	**Practice Score**
	Water Management and Irrigation System	**Score Order**	**Score Order**
Water - Irrigation Management Tools	i. Meters with or without telemetry	**1**	**1**
	ii. Automated irrigation and utilization of weather data	**1**	**2**
	v. Soil Moisture Sensors - pivot mounted, prescription based, others	**2**	**1**
	iii. Conversion from gravity to other forms of irrigation	2	3
	iv. VRI/Retrofit existing pivots with mobile control	2	2
	vi. Re-nozzle Pivots/sprinkler packages.	3	3
	vii. Commingled ground and surface water irrigation connections	5	4
	Precision Agriculture		
Fertilizer - Precision Ag/Split Application Methods	i. Chemigation Equipment	**1**	**1**
	ii. Planter Fertilizer Attachments	**1**	**1**
	iii. Others - Precision Manure Application Equipment	**1**	**1**
	iv. Speed Control for Pivots	2	2
	v. Inhibitors, Slow Release Fertilizer	2	3
	vi. Satellite Guidance Equipment	2	2
	vii. Dry Fertilizer Spinner Equipment	3	3
	viii. Saddle Tanks	3	3
	ix. YDrop Equipment	3	3
Fertilizer - Variable Rate Prescription	i. Soil Sampling/Yield Mapping	**1**	**1**
	ii. Models/Platforms - such as AltN, Sentinel and others	**1**	**1**
	iii. Satellite Imagery	**1**	**1**
	iv. Pivot Mounted Sensors	2	2
	v. Drone Imagery	2	2
Fertilizer - Variable Rate Technology	i. Irrigation system upgrades	**1**	**2**
	ii. Meters	**1**	**1**
	iii. Software	2	3
	Soil Health and Regenerative Agriculture		
Soil Health	i. Development of Soil Health and/or Nutrient Management P	**1**	**1**
	ii. Soil Sampling	**2**	**1**
	iii. No-Till	2	2
	iv. Critical/Vulneralbe Area Seeding	2	5
	vi. Composting	2	5
	v. Cover Crops	3	2
	vi. Summer Annual Forages not tied to fire	4	4
	vii. Third crop in rotation	5	4
	Data Collection and Monitoring Technologies		
Decision Support Systems	*i. Producer Connect (non cost share item)*	**1**	**1**
	ii. Climate Field View	3	2
	iv. CropX	3	2
	iii. Trimble Ag Software	3	2
Livestock Management and Regenerative Grazing Equipment			
Grazing Mangement	i. Cross fencing	2	4
	ii. Pipelines	2	5
	iii. Tanks	2	5
	iv. Solar wells	2	3
	v. Heavy Use Area Protection	3	5
	vi. Range, Pasture, Hay Planting	5	4
Regenerative Practices	ii. High density portable electric fencing	3	5
	iv. Moveable water tankes etc.	4	4
	i. Manure Application Sensors and Flow Control Systems	5	3
	iii. Virtual Fence Collars and Rotaional Grazing Implementati	5	4
	v. Moveable Shelters	5	4
	Other		
Other - Variable Rate Technology	i. Variable Rate Seeding	5	3
	ii. Pest Management	5	4

**Non-Cost Shareable Items but high priority for implementation*

Methods and Resources

Goal 1: Ensure nitrogen fertilizer recommendations are agronomically, economically, and environmentally appropriate for Nebraska producers.

Nitrogen fertilizer recommendations aim to balance crop needs with responsible resource management. Ensuring that those who provide nitrogen recommendations are properly educated is essential for making fertilizer decisions that are agronomically sound, economically efficient, and environmentally appropriate, especially in high NRD phase areas and Wellhead Protection Areas.

Action Item:

- Create a nitrogen management ~~certification~~education program for fertilizer salespersons or advisors who make nitrogen fertilizer recommendations within two years.
- Include nitrogen management training for Nebraska certified crop advisors (CCAs) as continuing education units (CEUs) within two years.
- Incentivize producers applying commercial nitrogen within NRD Phase II, III, or IV areas and Wellhead Protection Areas to submit a nitrogen application plan to the local NRD. The plan must be created with a certified nitrogen advisor. Consider whether nitrogen application plans shall be required.

Metrics for Success:

- Number of certified advisors.
- Number of nitrogen management plans signed off on by a certified advisor.
- All fields using commercial nitrogen in an NRD Phase II, III, or IV, or Wellhead Protection Area have a certified nitrogen management plan submitted to the NRD before nitrogen is applied.

Goal 2: Incentivize producers to increase the percentage of nitrogen that is applied in season versus out of season to improve overall nitrogen use efficiency.

Increasing the percentage of nitrogen applied in-season, rather than out of seasons is critical for improving overall nitrogen use efficiency. This targeted timing not only supports better crop growth and higher yield potential but also lowers input costs by reducing the

need for excess application. Shifting a greater share of nitrogen applications to in-season strengthens both farm profitability and soil and water health.

Action Items:

- Increase the number of pivots outfitted for fertigation by offering cost share dollars to producers in NRD Phase II, III, or IV areas and Wellhead Protection Areas within five years. Cost considerations include pumps, tanks, and controls.
- ~~Limit~~ Promote reduction of fall application of commercial nitrogen considering current UNL nitrogen recommendations (UNL Extension NebGuide G2365, Dec. 2024) and opportunities for reducing overall input cost. Start with NRD Phase II, III, or IV areas and Wellhead Protection Areas. ~~Short term 100% compliance starting January 1, 2028.~~
- Encourage NRD boards to review their current requirements for fall nitrogen recommendations, particularly in phase areas with increasing nitrate levels.

Metrics for Success:

- Ten percent increase in pivots outfitted for fertigation by January 1, 2028.
- Twenty percent increase in pivots outfitted for fertigation by January 1, 2030.
- Percent of producers in NRD Phase II, III, or IV, and Wellhead Protection Areas applying commercial fertilizer in accordance with UNL recommendations.

Goal 3: Increase adoption of sensor- and model-based nitrogen recommendation technology, such as Sentinel Ag, Adapt-N, or similar technologies.

Adopting sensor- and model-based nitrogen recommendation technologies provide real-time or field-specific insights into crop nitrogen status, soil conditions, and expected yield potential, enabling producers to tailor applications more precisely. By improving timing and placement, producers can enhance nitrogen use efficiency and reduce losses to groundwater and surface water.

Action Items:

- Incentivize producers to use these technologies in at least one field in any NRD Phase II, III, or IV area or Wellhead Protection Area.

Metrics for Success:

- Numbers of new adopters.

- Document use of these technologies in NRD Phase II, III, or IV areas and Wellhead Protection Areas and see 25% annual growth.

Goal 4: Increase adoption of soil health practices which will allow producers to increase nutrient cycling and reduce overall nitrogen application rates over time. Improved soil health will also maximize water infiltration and crop utilization while limiting runoff.

Promoting the adoption of soil health practices enables producers to enhance nutrient cycling, reducing the need for high nitrogen application rates. Healthier soils improve water infiltration, optimize nutrient availability for crops, and minimize nutrient runoff and leaching. By investing in healthy soil practices, producers can achieve more efficient and sustainable crop production.

Action Items:

- Create incentives to promote soil health practices. Soil health practices are meant to accomplish one or more of four core principles for improving soil health: (1) minimize soil disturbance, (2) maximize the presence of a living root system, (3) maximize soil cover, (4) maximize biodiversity. For more information see: https://www.farmers.gov/conservation/soil-health.
- https://nebraskastrategicagcoalition.org/ ~~Add soil health website link~~

Metrics for Success:

- Increase in acres with cover crops.
- Decrease in acres with full or conservation tillage.
- Increase in acres with sampled manure or compost applied.
- Number of producer to producer engagement opportunities.

Goal 5: Educate Nebraska producers on nitrogen fertilizer and irrigation best management practices to limit nitrate leaching to groundwater.

Continued education for Nebraska producers on nitrogen fertilizer and irrigation best management practices is important in protecting groundwater quality, specifically in NRD phase areas and Wellhead Protection Areas with increasing nitrate levels. By increasing awareness and understanding of proper nitrogen application rates, timing, and methods,

as well as efficient irrigation strategies, producers can minimize nitrate leaching into groundwater.

Action Items:

- Within three years, provide all producers in NRD Phase II, III, or IV areas and Wellhead Protection Areas with education on nitrogen best management practices including: Use of inhibitors, in season application, reduced rates, technology-based recommendations (models & remote sensing).
- Within three years, provide all producers in NRD Phase II, III, or IV areas and Wellhead Protection Areas with education on irrigation best management practices including: water meters; soil moisture probes (incorporate incentives e.g., incentive paid to the grower for up to 2 soil moisture probes); irrigation modeling, ET monitoring, and other options.

Metrics for Success:

- Number of producers educated.
- Number of irrigation improvements made including number of added water meters, soil moisture probes, modeling or ET monitoring tools.
- Percentage of nitrogen management plan acres including the following: Nitrification inhibitor, in season application, lower application rates than in prior years, advanced technology-based recommendation.

Nitrate Legacy and Drinking Water Access

Goal 6: Develop consistent education, marketing, and outreach materials related to water quality, quantity, and public health for use across the state.

Developing a consistent, statewide education, marketing, and outreach materials will help Nebraskans understand key issues related to water quality, quantity, and public health, including nitrate contamination. Uniform materials and messaging ensure that communities receive clear, accurate information about safe water practices, potential health risks, and strategies to reduce nitrate levels in drinking water. This coordinated approach supports public awareness, encourages responsible water use and nutrient management, and leverages ongoing statewide efforts to protect both water resources and public health for the near and long term.

Action Items:

- Within six months, develop strategy for education materials to ensure consistent messaging is used throughout the state.
- Within 12 months, develop marketing and outreach materials for water quality, quantity, and public health with an emphasis on vulnerable areas and populations including but not limited to rural areas, newborns, children, and older populations. Public awareness activities may include public service announcements, ads, information kits and brochures, and promoted social media campaigns.
- Coordinate efforts with health care providers, schools, banks, home health practitioners, UNMC, UNL, NRDs, DHHS, community water systems, etc.

Metrics for Success:

- Number of materials distributed.
- Review materials, distribution lists, and list of agency partners no less than annually.

Goal 7: Provide support and resources to public and privately owned drinking water wells to ensure safe and reliable drinking water for Nebraskans.

Ensuring safe and reliable drinking water for all Nebraskans requires a coordinated, proactive approach that supports both public and privately owned wells. By integrating

existing water planning efforts, strengthening community engagement, and expanding technical assistance, the state can better identify risks, address contamination concerns, and improve long-term water reliability. Enhanced data use and stronger partnerships with nutrient management staff will help protect vulnerable recharge areas and support informed decision-making. Continued efforts to connect well owners, communities, NRDs, and state agencies with resources will safeguard public health and promote sustainable drinking water management practices across the state.

Action Items:

- Leverage and integrate existing water planning efforts (source water, wellhead protection, integrated management plans, and watershed plans) to create community driven stakeholder groups that inform and educate residents on the connection between drinking water quality and public health.
- Provide resources for ongoing annual sample collection, analysis, and interpretation of lab results for domestic well users.
- Utilize data and tools to proactively support community water systems.
- Build upon existing state and federal resources to establish Source Water Protection and Wellhead Protection Area Coordinator positions (nutrient management) that collaborate with NRDs and DWEE to provide technical assistance and guidance on working agricultural lands that intersect with areas of recharge for public water supply wells.
- Identify NRDs with budgeted and hired nutrient management staff and support continued funding of these positions. Develop a report on NRDs without nutrient management staff, including estimated funding needs and opportunities for shared staffing across adjacent NRDs.
- Provide funding for NRDs nutrient management staff, with targeted support for community Wellhead Protection Areas. Annually report nutrient management practices adopted by producers and the associated acres, and review findings with community leaders and the public.
- Implement nutrient management plans for every producer~~, with~~ and summarize the plans for ~~annual reporting to~~ communities ~~on the locations, acres, and conservation practices being implemented through such plans~~.

Metrics for Success:

- Number of communities engaged in water planning efforts.
- Number of domestic wells sampled annually.
- Number of communities with established Wellhead Protection Areas.
- Number of NRD nutrient management staff.

Goal 8: Expand rural water systems and regionalization of water systems.

Regionalization of water systems is a tool for those communities that do not have enough resources to build and maintain water treatment systems. By combining water systems economy in scale can be realized and management efforts can be focused on maintaining high quality source water for those communities. The development of regional water system will likely be a foundation for the expansion/development of future rural water systems.

Action Items:

- DWEE shall identify potential water system regionalization opportunities and report on findings. Survey all Nebraska communities and NRDs for potential water system regionalization. Include identification of communities needing support and identify potential water systems that could potentially provide potable water.
- Evaluate regionalization opportunities for potential State Revolving Loan Funds and other funding opportunities. Identify loan and loan forgiveness conditions.
- Evaluate opportunities for sustainable funding for drinking water regionalization, including assistance with collecting water quality data and understanding regional water quality trends.

Metrics for Success:

- Complete survey and reporting by DWEE within 24 months.
- Complete annual survey of communities and NRDs identified to have potential water system regionalization to determine status and needs.
- Completion of water system regionalization for those communities requesting financial support.

Water Conservation and Quantity

Goal 9: Expand water measurement across the state for groundwater and surface water.

Expanding water measurement is important for sustainable water management in Nebraska. The Task Force recommends beginning with voluntary participation supported by cost-share incentives, followed by mandatory requirements if desired outcomes are not met. Equally as important is educating water users on how to interpret and apply this measurement data, including benchmarking and informed decision-making to optimize water use. Existing measurement efforts will be leveraged to maximize efficiency, collaboration, and informed decision-making.

Action Items:

- Establish a tiered cost-share program that incentivizes voluntary ~~metering~~ measurement for both groundwater and surface water~~, followed by mandatory requirements if desired behavioral changes are not achieved and defined metrics are not met by 2030~~. The program should offer higher cost-share rates initially, with the share decreasing over time. Address surface water ~~metering~~ measurement separately, considering differences in how surface water is measured.
- Create a recommendation for best management practices for measurement programs. This may include a list of approved devices and may consider installation and maintenance details. Such specifications could be modeled after existing rules and policy documents from NRDs who have metering requirements in place.
- The Task Force recommends integrating measurement data within the benchmarking capability of Producer Connect or similar NRD databases. The water use data should be reported at the NRD level for meaningful local insights, while the State (DWEE) should receive only aggregate information to ensure that individual producer data cannot be identified. When establishing reporting requirements, data privacy concerns must be considered.
- Develop education for producers and agronomists on water measurement data, including how to use the data to better producer production and practices and recognizing that one-on-one interactions often produce more impactful results.
- Explore opportunities to share and leverage existing water-use data collected by pivot manufacturers. This includes identifying what data is already available and evaluating how it could support statewide water-management and reporting efforts for water use.

Metrics for Success:

- Number of new measurement devices implemented.
- Percent of statewide producers with water measurement in place.

Goal 10: Develop strategies to support large water users and continued economic growth in the State.

Water-intensive industries often serve as critical drivers of local and regional economies throughout the state, but demand can place pressure on water supplies. By implementing proactive planning and coordination, policymakers and stakeholders can support economic development while ensuring water availability for generations to come.

Action Items:

- Improve coordination between State Department of Economic Development, Department of Water, Energy, and Environment, Natural Resources Districts, Power and Irrigation Districts, water and energy utilities, ~~local~~ counties and municipalities for siting of new industries.
- Support NRDs in establishing a more consistent messaging regarding "large water users" statewide, while allowing for regional variability as necessary. Facilitate resource sharing and continued dialogue among NRDs and surface water stakeholders – some of which may include statutory requirements and already have existing approaches established that could be used as an example.
- Develop public facing portal for new industries to assess water availability and requirements.
- Convene a group of Nebraska water experts, surface and groundwater managers, to review and reevaluate existing water laws that allow for (or might hinder) continued economic growth.

Metrics for Success:

- Review coordination efforts considering statewide priorities no less than annually.
- Launch public facing portal within 18 months.

Goal 11: Expand water storage opportunities and management of water consumption.

Expanding water storage opportunities and improving the management of water consumption are essential strategies for enhancing water sustainability. By investing in

new and existing reservoirs, aquifer recharge systems, underground storage, and other retention projects, the State can better capture and retain water during periods of surplus for use during droughts or high-demand periods. Education and outreach is also important, helping stakeholders understand the benefits of these water projects.

Action Items:

- Identify and promote existing recharge and storage projects and expand use of excess surface water flows for intentional groundwater recharge and underground storage.
- Invest in existing storage and recharge systems and c~~C~~onstruct new regional storage or recharge facilities where feasible.
- Educate public and stakeholders on water quality and quantity benefits, including, but not limited to topics such as water conservation and community water consumption; the benefits of recharge for not only quantity, but for water quality as related to nitrates in groundwater.

Metrics for Success:

- Launch publicly available resources identifying storage and recharge opportunities across the state.
- Number of public and stakeholder engagements.

Financing and Incentives

Goal 12: Establish a centralized clearinghouse to inventory and prioritize water quality and quantity projects across Nebraska.

Establishing a centralized clearinghouse for water projects in Nebraska would create a coordinated platform to inventory, track, and prioritize initiatives addressing both water quality and quantity. By consolidating information on ongoing and proposed projects, funding opportunities, and regional needs, this would serve as a valuable resource for state agencies, local governments, and other stakeholders and improve decision-making, reduce duplication of efforts, and ensure resources are directed to high priority projects. This approach can enhance Nebraska's ability to manage its water resources sustainably, support local communities, while protecting public health.

Action Items:

- Establish a clearinghouse platform to compile, organize, and maintain information on water project needs across the state.
- Designate a point person within DWEE responsible for maintaining the clearinghouse who shall be responsible for coordinating with the Department of Economic Development to capture public and private investment opportunities.
- Use standardized criteria for prioritizing projects based on factors such as environmental impact, public health, regional needs, cost-benefit, urgency, and alignment with state and local water goals.
- Implement annual review process to update the clearinghouse, reassess priorities, and track project progress.

Metrics for Success:

- Point person assigned: Designation and onboarding completed of Water Project Coordinator or equivalent role within six months.
- Clearinghouse launch: Minimum viable product established within six months and functional clearinghouse established ~~by~~ within 12 months.
- Complete annual review and maintenance of clearinghouse to best serve the State.

Goal 13: Identify and implement sustainable, diversified funding models to support the development, implementation, and maintenance of priority water projects in Nebraska.

The Task Force recommends identifying and implementing diversified funding to ensure that Nebraska's water systems can meet both current and future needs efficiently and sustainably. By leveraging a mix of federal, state, local, and private resources, these funding strategies can provide consistent financial support while reducing reliance on any single source.

Action Items:

- DWEE point person will conduct a funding analysis to identify existing state, federal, local, and private funding sources.
- Work to secure financial resources that will assist with upgrades and improvements to ensure long-term financial stability but most importantly, to ensure that residents of the state have access to safe and reliable drinking water.
- DWEE point person will evaluate gaps, limitations, and overlap within existing funding mechanisms.
- Based on the findings from abovementioned analysis the point person will collaborate with communities, irrigation districts, NRDs, and producers, etc. The point person should also review available funding opportunities to determine when partnerships should be developed to pursue grants and other funding opportunities from the clearinghouse in Goal 12.
- Explore innovative funding models including but not limited to private funds (outside investments like Google, Frito Lay, Amazon, etc.); tax revenue; revolving loan funds; or bonds.

Metrics for Success:

- Funding analysis complete: Funding and gap analysis completed within 12 months.
- Funding alternatives identified: Identify alternatives or innovative funding models and present with pros and cons within 12 months.
- Dollars secured through legislative processes and new funding allocations (private donations and expanded grant opportunities)
- Maintain and update fund analysis and partnership opportunities with no less than annual reviews.

Goal 14: Recommend funding priorities for ONE RED funding and other potential funding sources.

Task Force members were surveyed to identify priorities for ONE RED funding and will continue to serve as a strategic advisory body for a portion of these funds, supporting the

implementation of Task Force recommendations that align with grant requirements. The Task Force has identified as equally important the ongoing identification of funding mechanisms and opportunities to leverage federal, state, local, and private resources for water projects in the long term.

Action Items:

- Develop a tiered incentive program based on ONE RED survey results (see attached results), allowing each NRD flexibility in setting scoring criteria and prioritizing practices. The program should be simple and scalable for producers and crop consultants, outline clear steps to achieve measurable outcomes, and consider alignment with existing regulatory frameworks. This includes offsetting costs or prioritizing eligibility for practices that create strategic partnerships to incentivize compliance with existing NRD regulations or other laws.
- Communicate enhanced market value to producers and crop consultants by demonstrating how operating at an improved carbon intensity ("CI") score can create additional value for their commodities in other markets.
- Identify additional funding and incentive priorities that encourage greater adoption of innovative technologies by producers across the State.

Metrics for Success:

- ONE RED Incentive Program Established: Launch a minimum viable program within one year and provide incentives to producers for the 2027, 2028, and 2029 growing seasons in accordance with grant requirements.
- Continued Feedback: Provide annual feedback on funding utilization and priorities.

Programs Addressing Nitrate Index

1. **Lower Loup NRD Phase II Rules and Regulations**
2. **Groundwater Nutrient Management Plans**
3. **Well Sampling Network**
4. **Chemigation Program**
5. **Nebraska Soil and Water Conservation Program**
6. **Well Decommissioning Program**
7. **Flow Meter and Telemetry Cost-Share Program**
8. **Variable Rate Irrigation Program**
9. **Advanced Soil Sampling Program**
10. **NiRIA Program**
11. **Vadose Zone Study**
12. **Community Water Suppliers**
13. **Broken Bow Drinking Water Protection Plan**
14. **Lower Loup NRCS-EQIP Priority Areas**
15. **Lower Loup Regional Conservation Partnership Program Grant (RCPP)**
16. **Nitrate Information and Education Outreach**
17. **Nitrate Studies**

Programs Addressing Nitrate

1. **Lower Loup NRD Phase II Rules and Regulations** (required) – LLNRD rules and regulations were updated in February 2024. Since 2020, there are three triggered Phase II Water Quality Management areas in the LLNRD. To become a Phase II WQMA requirements, the median nitrate level in that area has tested greater than 6.5 ppm for four consecutive years. In Phase II, a yearly 0-36" soil sample, an irrigation water nitrate sample, and manure analysis are required on all row-cropped fields. Nitrogen fertilizer application is not allowed until after March 1st and split application before and after crop emergence is required unless a labelled N inhibitor is used. Flow meters are required for monitoring water application as well as passing a nitrogen certification class every four years. LLNRD funded. Metrics for success – producer compliance.

2. **Nutrient Management Plans** – The LLNRD has developed a nitrate vulnerability model to identify problematic fields in groundwater quality management areas that exhibit signs of increased vulnerability to nitrate leaching. The LLNRD works with the landowners/operators of the fields to develop a nutrient management plan tailored to each field to alleviate the loss of nitrate to groundwater. LLNRD funded. Metrics for success – producer plan compliance/overall nitrate reduction on fields.

3. **Well Sampling Network** – The LLNRD has been sampling for nitrate in water wells since 1977. LLNRD staff collected a total of 3,036 water samples across the district in 2024 from irrigation, domestic, livestock, monitoring, and commercial wells. Irrigation wells are sampled during chemigation inspections every three years, and domestic and monitoring wells are sampled yearly. A report is delivered to landowners containing both the current and past five-year history of the sampled wells and information pertaining to drinking water with and crediting irrigation water with high nitrates. LLNRD funded.

4. **Chemigation Program** (required) – The LLNRD performs chemigation inspections once every three years on permitted chemigation sites in the district to ensure that the chemigation system is working properly. Technicians carry chemigation injection valves as part of the program to bring a chemigation site quickly into compliance. Metrics for success – producer compliance.

5. **Nebraska Soil and Water Conservation Program** (voluntary) – Practices within NSCWP that pertain to nitrate management include terrace construction, grassed waterway construction, critical area planting, and irrigation water management. All practices within NSWCP area offered at 50% cost-share rate. NARD/LLNRD funded. Metrics for success – producer participation.
6. **Well Decommissioning Program** (voluntary) – In 2024, the LLNRD cost-shared on 50 well decommissioning sites. The cost-share for the decommissioning of all inactive wells in the district is offered at a rate of 70% up to $500 per application. Proper decommissioning of inactive wells prevents groundwater contamination from all pollutants around the well. LLNRD funded. Metrics for success – producer participation.

7. **Flow Meter and Telemetry Cost-Share Program** (voluntary) – The LLNRD began its district-wide flowmeter cost-share program in 2025 to provide a 50% cost-share incentive on district approved flowmeters and telemetry. LLNRD funded. Metrics for success – producer participation.

8. **Variable Rate Irrigation Program** (voluntary) – In 2019, the LLNRD Variable Rate Irrigation (VRI) Program began offering cost-share to landowners to upgrade their center pivot systems to become VRI capable to control the speed of their center pivot to increase water application efficiency. The cost-share rate is based on the linear footage of the pivot system and landowners can perform up to 2 applications per year. LLNRD funded. Metrics for success – producer participation.

9. **Advanced Soil Sampling Program** (voluntary) – In 2023, the LLNRD began offering cost-share for advanced soil sampling practices districtwide. The program allows for one soil health test and one deep nitrate test per 40 acres. Each landowner can perform up to eight sample sets per year. The cost-share rate is up to $55 per soil health test and $15 per deep soil nitrate test. LLNRD funded. Metrics for success – producer participation.

10. **NiRIA Program** (voluntary) – In 2025, the LLNRD participated in the Nitrogen Reduction Incentive Act Program to promote the reduction of commercial nitrogen sources and encourage the adoption of new nitrogen efficiency technologies and practices. The Lower Loup received 69 applications on 7,431 acres. NDWEE funded. Metrics for success – producer participation.

11. **Vadose Zone Study** – Starting in 2024, the LLNRD is conducting a study to track the movement of nitrate through the vadose zone in the eastern part of the district. The study is being performed in conjunction with USGS for three years looking at nitrate movement on anhydrous, manure, and side-dressed fields. The study will give a better understanding of the movement rate of nitrates through the soil profile. LLNRD funded.

12. **Community Water Suppliers** (voluntary) – Since 2019, a working relationship has been developed through the community water reports from public water suppliers in the district. This relationship has yielded several cooperative projects for studies on groundwater quality, public safety, and nitrate management. LLNRD funding partner. Metrics for success – community partnership cooperation.

13. **Broken Bow Drinking Water Protection Plan** (voluntary) – The LLNRD is a project co-sponsor in the creation of the Broken Bow Drinking Water Protection Plan. Adopted in 2022, the plan provides guidance on the source water protection needs of Broken Bow, identifying potential sources of pollution, educating and involving stakeholders, developing a Wellhead Protection zoning ordinance, and lead to the implementation of BMPs within the Protection Plan Area. This plan creates a priority area for BMPs through NRCS-EQIP with adjusted cost-share rates for certain practices. LLNRD funding partner.

14. **Lower Loup NRCS-EQIP Priority Areas** (voluntary) – The LLNRD has eight priority areas established in cooperation with local NRCS offices to place an emphasis on groundwater quality and quantity conservation practices in LLNRD Phase II Water Quality Areas, Water Quantity Areas, and Watershed Management Areas. The LLNRD has developed promotional materials for promoting in-season nutrient management and irrigation water management technology in priority management areas for NRCS-EQIP and IRA funds. NRCS funded. Metrics for success – producer participation.

15. **Lower Loup Regional Conservation Partnership Program Grant (RCPP)** – In 2025, the LLNRD was awarded an RCPP grant for the "Irrigation and Nutrient Management in the Lower Loup Basin" project. The project would provide financial and technical assistance to producers to adopt water quality and quantity conservation practices to improve nutrient management and irrigation efficiency. With the change in federal administration, these RCPP grant funds are currently on-hold. The LLNRD is continuing its pursuit of funds for this grant to implement this program.

16. **Nitrate Information and Education Outreach** – The LLNRD performs outreach throughout the district with the *In the Loup* Newsletter which reaches 37,200 households, and the *Water Matters* and *Water Notes* publications that is mailed to producers within higher management areas in the LLNRD. These publications not only highlight LLNRD water quality programs and projects but act as an additional opportunity for promoting new studies and technologies on water quality including those that focus on nitrate and nitrogen application. These publications are also highlighted on the LLNRD website and social media pages. Producer meetings have been held in areas of high nitrate concern such as in Wheeler County in 2024.

17. **Nitrate Studies**
    a. Area 29 & Area 30 Isotope Studies – The LLNRD conducted isotope with the UNL Water Science Lab to determine the potential sources of nitrate in Phase II Area 29 in 2022 and Area 30 in 2021. The analysis of the samples isotopes can determine whether the source of the nitrate is organic (manure) or inorganic (commercial fertilizer). Both studies showed rapidly increasing nitrate levels from both organic and inorganic nitrogen sources.
    b. Area 30 UNL Vadose Zone Study – In 2022-23, a study was performed in conjunction with UNL to determine the nitrogen transformation and leaching potential of Area 30 Water Quality Management Area. The study indicated that the presence of both new and historical nitrate accumulation, while recommending that the best crop management practices include implementing corn-soybean rotations, split fertilizer applications, and tailoring site-specific fertilizer management to prevent additional nitrate contamination.
    c. Nitrate Legacy Assessment Study – In 2023, the LLNRD partnered with USGS and Lower Platte North NRD in a study to determine the age of nitrates in Platte and Nance counties. The study indicated that the nitrates present in the groundwater were young nitrates. Twelve samples exceeded the EPA maximum of 10 ppm nitrate. All twelve samples were less than 27 years old with three samples less than 5 years old.

d. Area 28 Groundwater Management Study – In 2012, the LLNRD hired a consultant to study in GWQMA 28 to determine the extent of the nitrate contamination and age dating of the nitrate. Sample results indicated that most of the upper aquifer nitrate dated to less than 2 years of age while most of the remaining samples were less than 30 years of age.
e. Irrigation well water concentrations of essential nutrients and other water quality properties study - In 2020, the LLNRD partnered with UNL to collect water samples to create a database of the 17 properties of water applied through irrigation wells to better understand the crediting of nutrients, including nitrate, through groundwater irrigation. 81 samples were collected across 12 counties of the district.
f. Derek Vogt - Agronomist – A split position with LLNRD and UNL. Working with UNL on nitrate modelling (Hydrus-1D) to model nitrate transport rate through the Vadose Zone. Also, part of the USDA/ARS/UNL CLASSIM model team that is a full modelling system that includes nitrate transport rates and crop uptake of nitrogen through a growing season.

LEWIS & CLARK
NATURAL RESOURCES DISTRICT

Protecting Lives, Protecting Property, Protecting the Future

608 N Robinson Ave
PO Box 518
Hartington NE 68739-0518
Phone (402) 254-6758
Fax (402) 254-6759
Email: lcnrd@hartel.net
Website: lcnrd.nebraska.gov

Water Quality Focused Programs

Phase III Rules and Regulations

- Phase III Rules and Regulations require agricultural producers in designated groundwater quality areas to implement crop reporting and best management practices aimed at protecting water resources. These regulations mandate annual crop and fertilizer reports, regular deep soil testing, and biennial irrigation well testing for nitrates, with particular restrictions on fertilizer application timing and recommendations for split applications exceeding 100 lbs per acre. The goal is to reduce nitrate contamination in drinking water and ensure sustainable agricultural practices, with compliance facilitated through tools like *Producer Connect*, which streamlines the reporting process for producers and crop consultants.
- District cost share is provided for deep soil sampling to determine nitrate available to the growing crop is completed in the Phase III Area.

Producer Connect

- *Producer Connect* is a groundbreaking web and mobile application suite designed to empower agricultural producers with the tools they need to meet reporting requirements, optimize inputs, enhance agricultural profitability, improve water quality, and increase irrigation efficiency. Producers in the Groundwater Quality Phase III Area of the LCNRD Bazile GMA are required to report crop and fertilizer activities annually. Producer Connect allows producers and/or crop consultants to submit annual crop reports in an easy-to-use portal.
- Required use for Phase III Areas & Nitrogen Reduction Incentive Act (NiRIA) participants. Voluntary for the rest of the district.
- Metrics of success: Producer/ Crop consultant adoption of the process and successfully completed reports submitted. Producers' understanding of the importance of reporting and getting them in on a timely basis.

Bazile Groundwater Management Area Group

- The Bazile Groundwater Management Area (BGMA) is comprised of four NRDs, including the Lewis & Clark NRD, Lower Elkhorn NRD, Lower Niobrara NRD, and the Upper Elkhorn NRD. Within these four NRDs, the BGMA includes parts of three counties: Antelope, Knox, and Pierce, and the towns of Brunswick, Creighton, Orchard, Osmond, Plainview, Royal, Wausa, and Winnetoon. The BGMA was started by local producers and the NRDs to address rising nitrate levels in area communities and domestic wells. Currently, Creighton, Orchard, and Osmond are under administrative orders for high nitrate concentrations in public drinking water.
- The group meets monthly to address issues, with NRDs and local stakeholders from BGMA, NDWEE, NRCS, UNL, NET, and other agencies working on a master plan for the BGMA. The Bazile Creek watershed is impaired due to high nitrate levels and qualifies for NWQI funding through NRCS, which supports BMPs like cover crops, filter strips, and irrigation updates.

Siphoning Nitrate with Irrigated Pasture (SNIP)

- The purpose of the program is to encourage irrigated alfalfa or pasture establishment and management on previous cropland acres to reduce nitrate-nitrogen concentrations in the soil and water. Groundwater containing nitrates is pumped back onto the grass or alfalfa.
- Available in the Bazile Groundwater Management Area (BGMA) of LCNRD & relaunched to include in Wellhead Protection Areas (WHPAs) for Public Water Supply (PWS) Systems across the district in 2025.Max of 160 acres with a 5-year term, reimbursement of 65% actual costs to establish grass seeding; no cost share for establishment of alfalfa.
- Grass incentive payment of $100/ac for each year of the 5-year term; Alfalfa incentive payment of $100/ac for years one and five.

Bow Creek Watershed Project

- LCNRD updated the Water Quality Assessment Plan and added Bow Creek as a priority area based on Nebraska Department of Environment and Energy Basin Rotation water quality testing. The 2016 Basin Rotation water quality testing showed elevated levels of sediment, phosphorus, nitrates, and *E. coli* in Bow Creek. Models were created to show the potential to decrease nonpoint source pollutants in Bow Creek by increasing education opportunities and the voluntary, incentivized adoption of best management practices (BMPs) in priority Bow Creek sub-watersheds.

Nitrogen Reduction Incentive Act Program

- The Nitrogen Reduction Incentive Act Program is a state program promoted by Natural Resources Districts, designed to encourage agricultural producers to implement management practices that reduce nitrogen contamination in Nebraska's groundwater. The program offers technical guidance and financial incentives to landowners who adopt strategies such as improved fertilizer timing, cover cropping, and other best management practices aimed at minimizing nitrate leaching from agricultural fields. By supporting voluntary participation and collaboration with local, state, and federal partners, the Nitrogen Reduction Incentive Act Program works to protect water quality, enhance soil health, and ensure long-term agricultural sustainability for communities of the district.

Buffer Strip Program

- The Buffer Strip Program is a state program administered by Natural Resources Districts that provides financial incentives to landowners for the establishment of vegetative buffer strips along waterways. These strips help filter sediment, nutrients, and agricultural chemicals before they reach Nebraska's streams and rivers, protecting water quality and supporting healthier ecosystems. By partnering with producers and local stakeholders, the program promotes conservation efforts that reduce nonpoint source pollution and contribute to the long-term sustainability of the region’s natural resources.

Well Abandonment Program

- The Sealed Well Abandonment Program is a state initiative managed by Natural Resources Districts to help landowners properly decommission inactive wells, protecting Nebraska’s groundwater and safety. It offers financial incentives and technical support to ensure wells are sealed per regulations, preventing contamination and maintaining water quality. LCNRD partners with local stakeholders and contractors to help residents eliminate environmental hazards, supporting long-term land and community health.

Observation Well Program

- The Observation Well Program is an essential initiative that tracks trends in groundwater quantity and quality across northeast Nebraska. By maintaining a network of strategically placed wells, LCNRD gathers data on water table levels and nitrate concentrations, providing vital information for resource management and conservation efforts. These monitoring activities help detect changes in aquifer conditions, support decisions on water use and protection strategies, and assist local stakeholders in ensuring the long-term sustainability of Nebraska's water resources. In-Situ's Vulink telemetry and transducer units were deployed to collect and transmit real-time water levels, pressure, and temperature data, and a public website is available for viewing these current district water levels.

Irrigation Well Monitoring Program

- The LCNRD Irrigation Well Monitoring Program plays a crucial role in protecting and managing groundwater resources across northeast Nebraska. By systematically measuring water levels and collecting data from permitted irrigation wells, LCNRD helps assess aquifer health, track water usage trends, and ensure a sustainable water supply for agricultural producers and communities. The program's efforts support informed decision-making regarding water allocations, encourage responsible irrigation practices, and help identify emerging concerns related to groundwater declines or contamination. Through ongoing collaboration with landowners and the use of modern monitoring technology, LCNRD works to safeguard Nebraska's vital water resources for both current and future generations. This program is being expanded to include all irrigation wells in the district and domestic wells of willing landowners.

AEM Survey

- Aerial Electromagnetic (AEM) surveys, conducted by the LCNRD and other districts, use advanced technology to map and assess subsurface geology and groundwater resources with precision. By deploying sensors from aircraft, AEM surveys collect data on soil composition, aquifer boundaries, and potential areas of groundwater recharge or contamination. This valuable information helps guide local water management decisions, supports conservation efforts, and enables the district to better understand and protect Nebraska's vital water resources for future generations.

CKRWP

- The Cedar-Knox Rural Water Project (CKRWP) is a regional water supply initiative dedicated to providing safe, high-quality drinking water to rural residents, communities, and businesses across northeast Nebraska. By sourcing, treating, and distributing groundwater through an extensive network of pipelines and infrastructure, CKRWP supports public health, agricultural development, and economic growth while promoting responsible resource management. Through ongoing system maintenance, water quality monitoring, and collaboration with local partners, the program ensures reliable service and long-term sustainability for its customers, helping safeguard vital water resources for future generations.

Wau-Col Project

- The Wau-Col Project is a collaborative initiative focused on enhancing groundwater management and water quality protection within the district. By partnering with local landowners, government agencies, and technical experts, the project aims to implement innovative conservation practices and monitoring strategies that address regional aquifer challenges. Through education, data collection, and targeted support, the Wau-Col Project advances sustainable water resource stewardship, helping ensure the long-term health and availability of groundwater for both agricultural and community needs in northeast Nebraska.

Partnership with UNL-CSD and UNL

- Partnership with the Conservation and Survey Division (CSD), leads several critical initiatives that protect and manage groundwater resources across northeast Nebraska. Through programs such as the Observation Well Network, Irrigation Well Monitoring, Aerial Electromagnetic (AEM) surveys, the Cedar-Knox Rural Water Project (CKRWP), and the Wau-Col Project, LCNRD and CSD collaborate to monitor water quantity and quality, support responsible resource use, and implement innovative conservation practices. By leveraging advanced technologies, maintaining robust data collection efforts, and working closely with local stakeholders, these efforts ensure reliable water supplies, promote public health, and foster the long-term sustainability of Nebraska's vital natural resources.
- Collaboration with UNL-Extension and other UNL departments to seek guidance, gather information, and receive technical support for various projects.

Water Sustainability Fund Award - 2025

- Funds support a water conservation initiative in northeast Nebraska, focusing on improving irrigation efficiency, groundwater data, and water quality. The project offers cost-share support for BMPs such as soil moisture sensors, flow meters, pivot upgrades, and fertigation systems. It promotes conservation crop rotations and a perennial farm to reduce nitrate leaching. Target areas include the Bazile Groundwater Management Area, Bow Creek Watershed, and 16 Wellhead Protection Areas, where nitrate contamination and aquifer depletion threaten water supplies. LCNRD will use telemetry tools for real-time irrigation data, improving decision-making. NET funding will support BMP programs, outreach, and data infrastructure; LCNRD will cover 40% of costs and seek federal funds through USDA RCPP and WaterSMART. The initiative aligns with statewide water sustainability, health, and habitat goals.

Well-Head Protection Area Specialist

- This position assists landowners and farm operators within wellhead protection areas (WHPA) of NDEE, providing information and engaging stakeholders like Certified Water Operators, officials, agronomy firms, and community leaders to improve drinking water quality. Supported through a partnership between LCNRD, LENRD, and NRCS, the Source Water Protection Specialist can maintain a dedicated office in Pierce and/or Stanton, NE, and will spend much time in the field working with stakeholders and at offsite locations within the districts. There are 60 WHPAs covering about 116,454 acres of cropland, with groundwater nitrate levels varying; 37 areas have 0-5 ppm, 18 have 5-8 ppm, and 5 have 8+ ppm.

LOWER ELKHORN
Natural Resources District

1508 Square Turn Blvd.
Norfolk, NE 68701

402.371.7313
FAX 402.371.0653
www.lenrd.org

Lower Elkhorn Natural Resources District – Groundwater Quality Management Program

The Lower Elkhorn Natural Resources District has utilized numerous mechanisms to address the ever-growing challenges associated with groundwater nitrate. This summary provides a broad overview of the timeline associated with the implementation of specific measures, along with additional information that could be useful to the Water Task Force for implementation statewide.

LENRD Water Quality Monitoring and Vadose Coring Projects
Program Implementation – 1985 – current
Financial Support – LENRD, UNMC, UNL, Nebraska Environmental Trust
Metric for Evaluation – assessment of trendlines for water quality parameters

In the late 1980's the district ramped up efforts to collect water samples to be analyzed for nitrate content and utilized privately owned irrigation wells as a primary sample location given their prevalence throughout the district. As more data became available, specific geographic locations were identified as areas of higher priority for additional sampling if nitrate levels were present at levels of concern. Through successive years of sampling and analysis of water quality data, the LENRD identified a location in Pierce County that warranted additional monitoring and management, and this laid the groundwork for the delineation of the first Phase 2 Groundwater Management Area in December of 1996, designated to protect and improve groundwater quality, and the construction of the first set of LENRD Monitoring Wells in June of 1998 at a location east of Pierce, NE.

Through the years, the annual monitoring of groundwater nitrate has expanded to other parts of the District, and the LENRD will focus sampling efforts on geographic sections to allow for the collection of comprehensive data sets to evaluate groundwater nitrate levels across the district. In the Management Areas, producers are required to sample wells annually and we provide free test kits and lab analysis to support this requirement. Each year, we provide approximately 900 kits which are primarily used in our Pierce County Management Area. This is in addition to the many samples collected by certified sampling technicians from irrigation, monitoring, and domestic wells each year. The LENRD has also expanded the Monitoring Well Network which is now comprised of approximately 85 individual wells located at 53 locations across the NRD. These wells are sampled at a frequency dictated by water chemistry and/or specific monitoring protocol for each site.

Domestic Well Testing Assistance and Reverse Osmosis Cost Share
In 2021, the district also established a Domestic Well Testing Assistance program which provides a no cost alternative for private well owners to utilize. Wells are analyzed for nitrate, bacteria, and a host of agricultural pesticides and their degradants. This program dovetailed with the financial assistance provided by the State of Nebraska and the LENRD to help private well owners with the cost of installing a reverse osmosis treatment system on their well.

LOWER ELKHORN
Natural Resources District

1508 Square Turn Blvd.
Norfolk, NE 68701

402.371.7313
FAX 402.371.0653
www.lenrd.org

Vadose Coring

The Lower Elkhorn NRD has also been devoting resources to expand the collection of vadose cores throughout the LENRD, with the assistance and cooperation of UNL Conservation and Survey Division. Priority areas include recharge areas for public water supply wells, current and proposed groundwater management areas, and other areas as necessary. These cores are valuable in allowing the District to assess the timing, and amounts, of nitrate contamination by depth in the soil profile. Additional information regarding current and previous land use is also helpful, along with the collection of groundwater quality data and irrigation activity. Isotope analysis is also utilized in an attempt to fingerprint the origin (organic or inorganic) of the contaminant.

Regulatory - LENRD Groundwater Management Areas for Water Quality Protection
Program Implementation – 1994 – current
Financial Support – LENRD
Metric for Evaluation – compliance with requirements, and assessment of water quality trendlines

In 1996, the LENRD delineated its first management area due to levels of nitrate in groundwater wells in portions of the District. Annual groundwater quality monitoring provided sufficient data to recommend the delineation of a Phase 2 Area in a portion of Pierce County, located generally between Pierce and Osmond, NE. Controls were enacted which required annual testing of soil and water for residual nitrate, along with completion of annual field reports to verify annual amounts of nitrogen application, crop yield, and irrigation water applications. The collection of additional water quality data caused the District to expand the Phase 2 Area in 2006 to include all but one township in Pierce County, implementing the same controls as had been enacted in the original Phase 2 Area. In 2019, the District again modified the boundaries of the Phase 2 Area, adding the northern portion of Madison County and a portion of one township in Pierce County which had not before been included. In addition, a portion of the original Phase 2 Area was moved to a Phase 3 Area, as groundwater nitrate concentrations continued to increase in sufficient locations to trigger the change. In addition, the controls for the Phase 2 and 3 Areas were modified to require split applications of nitrogen, allowing no fall application of commercial nitrogen from October 15 to March 15, limiting the amount of nitrogen to no more than 80 pounds per application, and requiring annual testing of soil and water for residual nitrate.

In March of 2021, the LENRD initiated the process of establishing an additional groundwater quality management area in portions of Cuming, Colfax, and Dodge Counties using data provided by the annual nitrate monitoring program. No action has been taken on this matter as additional soil and water testing has been occurring to better define the magnitude of the problem and to define effective controls to provide positive benefits.

LOWER ELKHORN
Natural Resources District

1508 Square Turn Blvd.
Norfolk, NE 68701

402.371.7313
FAX 402.371.0653
www.lenrd.org

Incentive Based Programs
Program Implementation – 1988 – present
Financial Support – LENRD, NET, EPA, State of Nebraska, Practical Farmers of Iowa, and others
Metric for Evaluation – acres of working lands enrolled in conservation programs aimed at improvements to groundwater quality

To have an impact on groundwater quality, it is necessary to use every tool in the toolbox. The LENRD has long utilized incentive-based programs as a means of addressing the water quality problem. Beginning in the late 1980's with the involvement in the Bazile Triangle, the LENRD has worked to provide resources to incentivize the adoption of conservation practices on working lands and has been successful in achieving some success, though there is still much work to be done. Matching local dollars with funding from State and Federal programs, along with other nongovernmental organization dollars has been instrumental in establishing thousands of acres of cover crops, heightened management under nutrient management plans, or created efficiencies in water use by the adoption of irrigation scheduling tools and techniques, which lend themselves to both water quality and quantity.

The most recent program that was offered by the LENRD was the Nitrogen Reduction Incentive Act program, which will require producers to document reductions in nitrogen application amounts in order to receive program payments.

The use of chemigation as a valuable management practice is another example of the use of a tool that the LENRD had promoted using a cost share program to establish the equipment at a location where the owner/operator had never before used the practice. If established, it allows the grower to apply small amounts of nitrogen in multiple applications – feeding the crop when it needs it and, in the meantime, lessening the risk of environmental contamination.

North Platte Natural Resources District (NPNRD)

Rules and Regulations (required)

Date Launched: December 2024

Description: The NPNRD incorporated new rules for nutrient management beginning in the 2026 water year (Oct 1- Sept30). All producers who irrigate, surface or ground water, are required to take at least one soil sample per 80 acres. Additionally, all groundwater users are required to obtain a water sample at the well or point of distribution.

Funding Source: NPNRD

Metrics/Measurement of Success: compliance

Monitoring Well Sampling

Date Launched: First recorded monitoring well sample was in 1988, an established monitoring well network began in 1998.

Description: The North Platte Natural Resources District has an extensive sampling protocol for our nutrient management plan. We sample approximately 625 wells for nitrates twice a year. Our first sampling event starts in the spring on April 1st. Our second sampling event is in the fall, starting on August 15th. Spring sampling is considered our base line results that we can compare to the fall results after the canal water has started and after the producers have irrigated. We pump water from the wells for 15 minutes before taking the sample to ensure we are getting the water directly from the aquifer. The samples are then put on ice and shipped overnight to an accredited laboratory to analyze.

Funding Source: NPNRD

Metrics/Measurement of Success: Spring sample comparisons

Soil Sample Cost-Share (voluntary)

Date Launched: October 1, 2025

Description: Soil samples must be submitted to the NPNRD. Samples must be georeferenced, collected on a maximum 80 acres, paired, and minimum depth of 24". Cost for acceptable soil samples will be reimbursed at a maximum of $25.00.

Funding Source: NPNRD

Metrics/Measurement of Success: Participation

Water Sample Cost-Share (voluntary)

Date Launched: October 1, 2025

Description: The NPNRD will take ground water samples from producers at the NPNRD office. The NPNRD will charge a $10 fee to take the sample and cover the remaining cost to ship the sample and have the sample analyzed. This should result in an approximate 50% reduction in cost to the producer.

Funding Source: NPNRD

Metrics/Measurement of Success: Participation

Flow Meter Cost-Share (Voluntary)

Date Launched: Approximately 2007

Description: The NPNRD has a cost-share for new and replacement flow meters for meters on the approved list. New meters are cost-shared at 50%.

Funding Source: NPNRD

Metrics/Measurement of Success: Participation

Chemigation Valve Cost Share Program (Voluntary)

Description: The NPNRD has a cost-share for new and replacement chemigation valves. This is a 50% cost-share and covers the valve plus labor up to $400.00.

Funding Source: NPNRD Water Quality Funds

Metrics/Measurement of Success: Participation

Flow Meter Parts & Service (Voluntary)

Date Launched: Approximately 2010

Description: Every serviceable meter is greased, inspected, and gasket replaced every 5 years at a discounted rate.

Funding Source: NPNRD

Metrics/Measurement of Success: Participation

Chemigation Parts (Voluntary)

Description: Chemigation parts are sold through the NRD at a reduced rate. Parts are on hand during inspections to provide in case of need. Additionally, Mister Mister injector and low pressure drain valves are replaced at no cost during inspections if required and are provided in instances of new permits

Funding Source: NPNRD, Water Quality Funds

Metrics/Measurement of Success: Participation

Chemigation Permits (Required)

Description: State statute provides authority to NRDs to issue chemigation permits. A portion of the permit fees are provided to DWEE.

Funding Source: NPNRD

Metrics/Measurement of Success: Compliance

NiRIA (Voluntary)

Date Launched: October 1, 2024

Description: The NPNRD assists in the administration of DWEE NiRIA program. A one time payment is available for reduction of 40lbs/acre or 15% of baseline nitrogen application rate.

Funding Source: DWEE

Metrics/Measurement of Success: Participation

Domestic Well Testing (Voluntary)

Date Launched:

Description: The NPNRD will test domestic wells upon request at no charge.

Funding Source: NPNRD Water Quality Funds

Metrics/Measurement of Success: Participation

Well Decommissioning Cost-Share Program (Voluntary)

Date Launched:

Description: The NPNRD provides cost-share to individuals wishing to decommission a well at a rate of 75%.

Funding Source: NPNRD

Metrics/Measurement of Success: Participation

Appendix B: Methods and Resources Subcommittee Meeting Materials

Attachment 1

Members List

METHODS AND RESOURCES
Joe Anderjaska
Brittany Bartak
Don Batie
Jesse Bradley
Russ Callan
Brian Kissinger
Scott Knobbe
Tim Mundorf
Annette Sudbeck

Attachment 2

Meeting Schedule

DATE	*LOCATION*
July 16, 2025	Kearney
August 21, 2025	Kearney
September 24, 2025	Kearney
October 22, 2025	Virtual
November 13, 2025	Kearney
December 16, 2025	Norfolk

Attachment 3

Presentation Materials

Presented by Hillside Solutions & Soil Dynamics

On Farm Organics Management in Nebraska

B-4

Who are we and why are we here today?

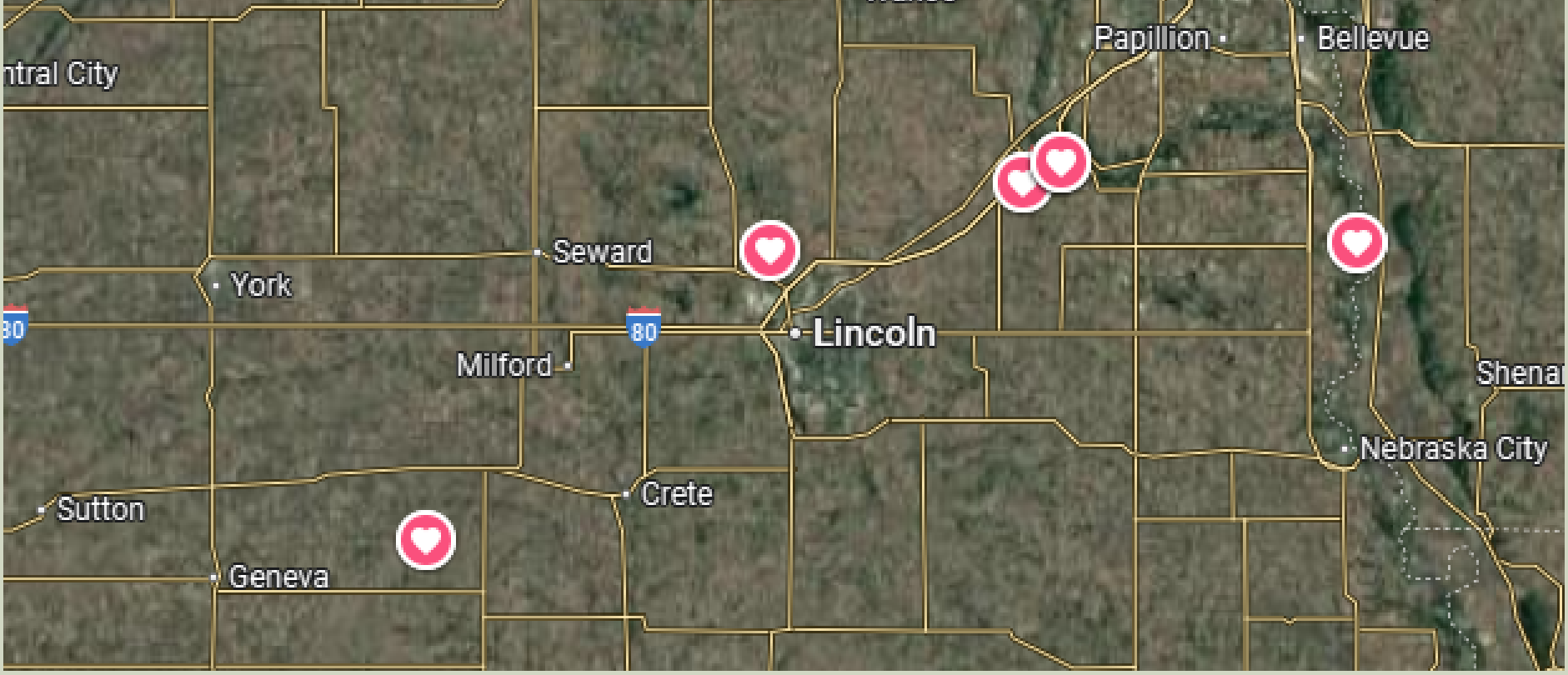
Hillside Solutions-Gretna Sanitation-Soil

Overview of the Waste Business

Where does all the trash go?

So what did we do?

Got back into farming!



Farm Locations

We're doing this!

REPORT NUMBER
20-316-1158
COMPLETED DATE
Nov 16, 2020
RECEIVED DATE
Nov 10, 2020
ACCOUNT
27403

Midwest Laboratories®
13611 B Street · Omaha, Nebraska 68144-3693 · (402) 334-7770
www.midwestlabs.com

PAGE 1/2
TODAY'S DATE
Nov 16, 2020

SOIL DYNAMICS

PO BOX 810
GRETNA NE 68028

IDENTIFICATION
FRIEND NE FARM

SOIL ANALYSIS REPORT

LAB NUMBER *370*	SAMPLE IDENTIFICATION	ORGANIC MATTER	PHOSPHORUS			POTASSIUM	MAGNESIUM	CALCIUM	SODIUM	pH	BUFFER INDEX	CATION EXCHANGE CAPACITY C.E.C.	PERCENT BASE SATURATION (COMPUTED)				
						K	Mg	Ca	Na	SOIL pH			% K	% Mg	% Ca	% H	% Na
		ppm NATE	ppm	ppm NATE		ppm NATE	ppm NATE	ppm NATE	ppm NATE			meq/100g					
75765	1	1.9 L	6 VL	15 L		211 H	382 VH	1871 L	13	5.2	6.2	20.0	2.7	15.9	46.8	34.3	0.3

LAB NUMBER *370*	NITRATE-N (FIA) SURFACE ppm	SURFACE lbs/A	SURFACE depth (in)	SUBSOIL 1 ppm	SUBSOIL 1 lbs/A	SUBSOIL 1 depth (in)	SUBSOIL 2 ppm	SUBSOIL 2 lbs/A	SUBSOIL 2 depth (in)	Total lbs/A	SULFUR S ppm NATE	ZINC Zn ppm NATE	MANGANESE Mn ppm NATE	IRON Fe ppm NATE	COPPER Cu ppm NATE	BORON B ppm NATE	HIGH SMP	SOLUBLE SALTS mmho/cm NATE
75765	7	13	0-6							13	4 VL	0.4 VL	14 H	43 VH	0.8 L	0.1 VL	L	0.1 L

The above analytical results apply only to the sample(s) submitted. Samples are retained a maximum of 30 days.
Our reports and letters are for the exclusive and confidential use of our clients and may not be reproduced in whole or in part, nor may any reference be made to the work, the results, or the company in any advertising, news release, or other public announcements without obtaining our prior written authorization.

WARD Laboratories, Inc.

Ag Testing - Consulting

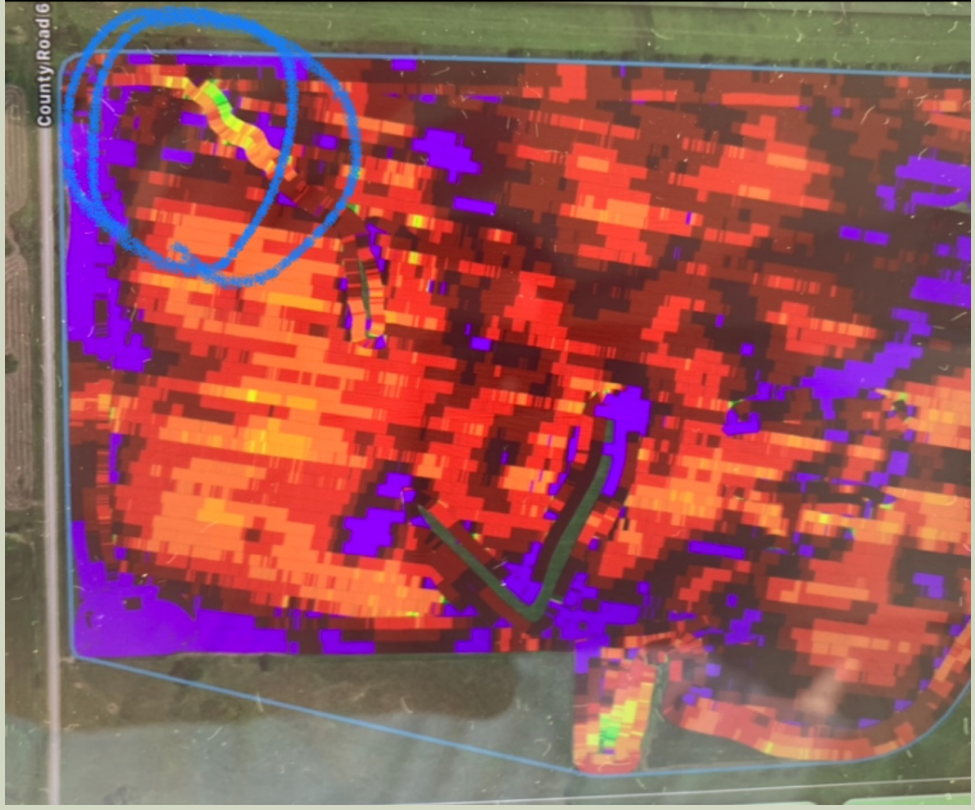
Account No. : 96647

HARPENAU, ANDY
19580 W H 31
SPRINGFIELD NE 68059

Results For : ANDY HARPENAU
Location : FRIEND FARM

Lab No. :	292752	**Depth :**	0 - 8
ID :	FRIEND-SOUTH		
Organic Matter LOI, %			3.7
Organic Carbon, % C			1.827
Ace Protein, g/Kg			3.29
POX-C, ppm C			322
Aggregate Stability 1-2mm, %			56

OMG look at that OM! 2024 on the right.



2021 Yield Map

WHY??

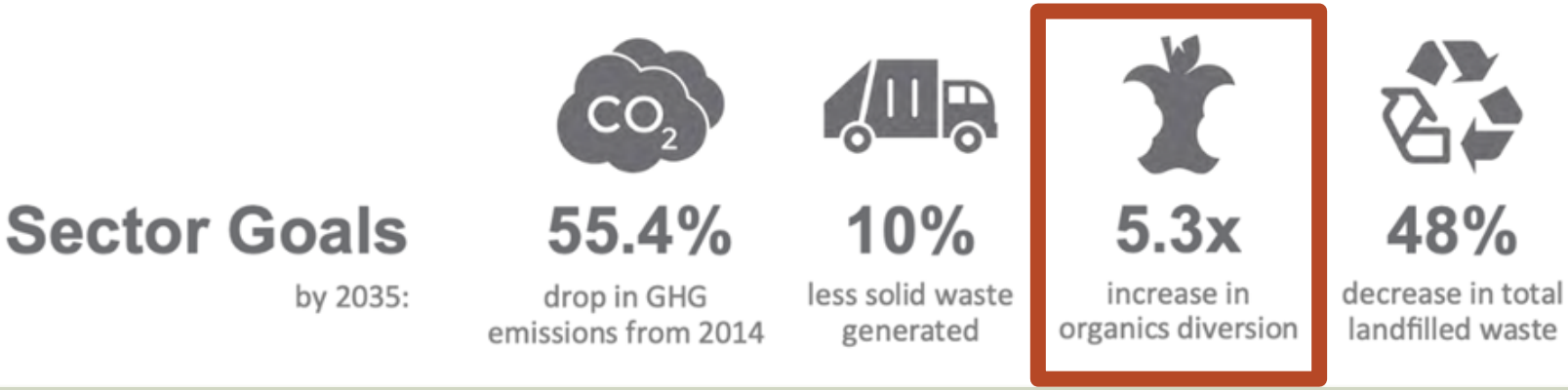
No soil moving

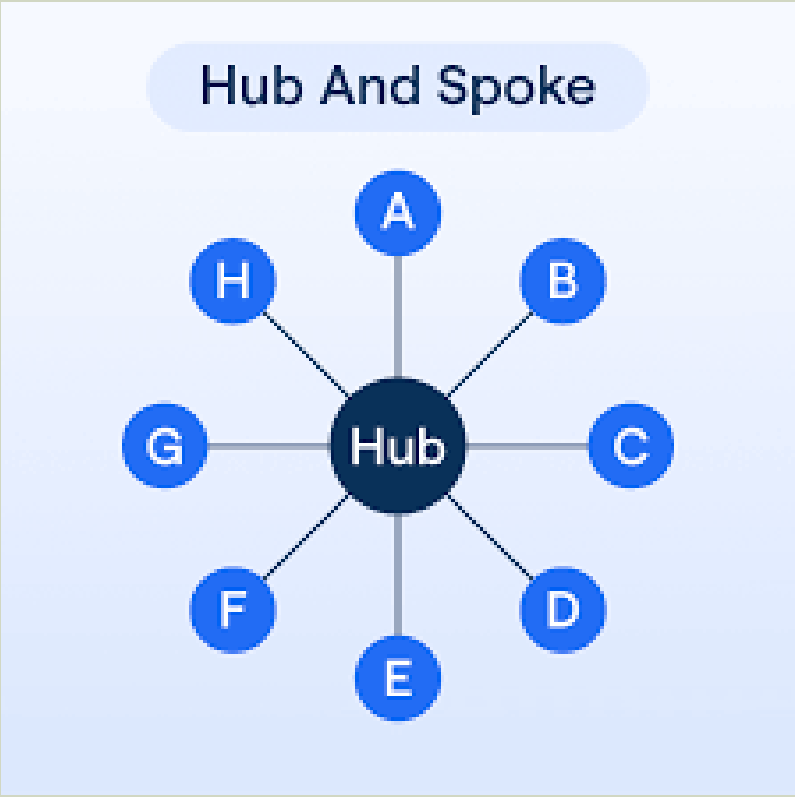
Mr Rooster better be quick!

Bringing it all together, together.

Feedback from the **Omaha Climate Action Plan**.

Goals of the Omaha Action Climate Plan by 2035





Hub and Spoke-How does this work?

Win-Win for everyone!

- Reduces reliance on synthetic fertilizers → less groundwater pollution.
- Diverts organics from landfills → lowers methane emissions.
- Supports regenerative/organic agriculture.
- Improves soil health-water retention
  - → less need for irrigation
  - → reduces flooding risks.
- Increases farm profitability → Farmers start managing input costs
- Aligns with Governor Pillen's water quality/quantity agenda
- Creates no taxpayer cost, extends landfill life.

Economic Benefits to Farmer (3,000 yds Incoming Organics)

Revenue & Value

- $5/yd incoming material → **$15,000**
- Replaces $125/ac anhydrous (200 bu corn @ 220 lbs) → **$20,000**
  - No credit for beans/cover crops; excludes other nutrients
- **Gross: $35,000 (160 ac = $218.75/ac)**
  - Based on $0 off-farm nutrient cost

Labor & Trucking (20 mi haul, 3,000 yds/yr)

- Compost: 2% N = 20 lbs/yd (½ available Yr 1; 1,600 yds remain)
- Delivery & row building: 43 loads @ $4/mi + loader $100/hr → **$4,440**
  - Includes double-ground mulch for odor control
- Screening: $450/hr (includes haul-away) → **$6,750**
- Spreading: 10 yds/ac → $8/yd (if done during screening) → **$12,800**
- **Total cost: $23,990**

Net Income: $11,010 total or **$68.81/ac**

Pad prep-1 time cost $10-15k

The Challenges

- Odors
- Regulatory-NDWEE
- Contamination
- BMPs and NMPs
- Rented ground

- No silver bullet
- Not for everyone

Andy Harpenau
President
andy@hillside.solutions

Two little weeds that keep growing.

Questions?

Examining the effect of fertilizer application practices on soil nitrate and water quality

Presented by:

Chris Hobza, Lead Hydrologist, P.G. and

Jason Moudry, LLNRD Water Programs Specialist

With contributions from:

Derek Vogt, Harold Benton, Mikaela Cherry, Ben Dietsch, Brent Hall, Tylr Naprstek, and Russ Callan

August 21, 2025

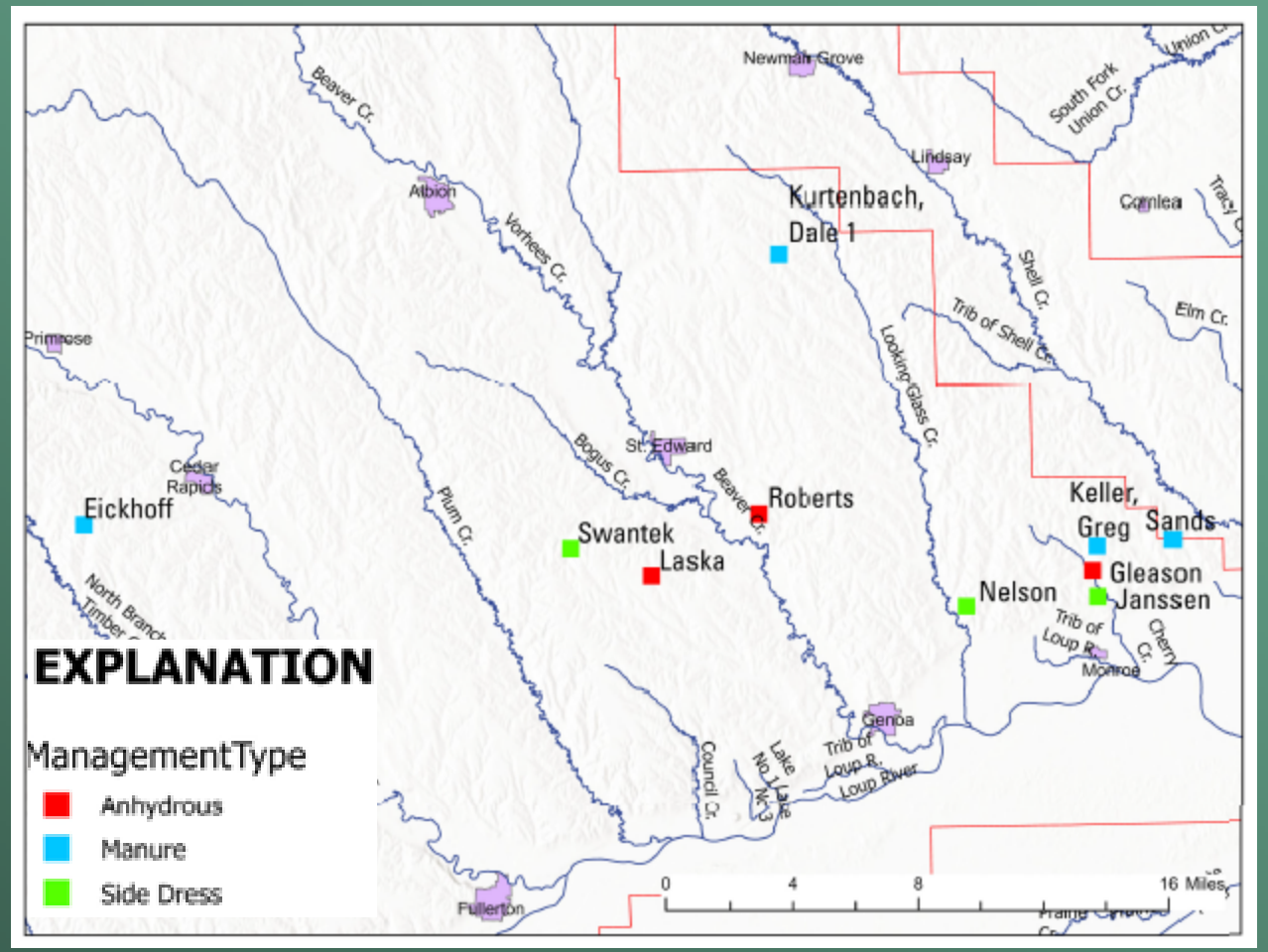
U.S. Department of the Interior
U.S. Geological Survey

Project timeline

- Starting in fall of 2022 the LLNRD began discussions on banning fall application of commercial fertilizer across the District
- Proposed rule changes received a lot of push back during public meetings in January 2023
- February Board adopted all proposed rule changes EXCEPT the fall fertilizer ban with the idea it would be revisited in one year
- Shortly thereafter LLNRD staff began conversation with USGS on how to assess the influence of fertilizer application practices on nitrate movement
- In spring 2023, the LLNRD and the USGS began developing a study plan to sample soil N (ammonia and nitrate) through the 2024 growing season

Site selection and initial work plan

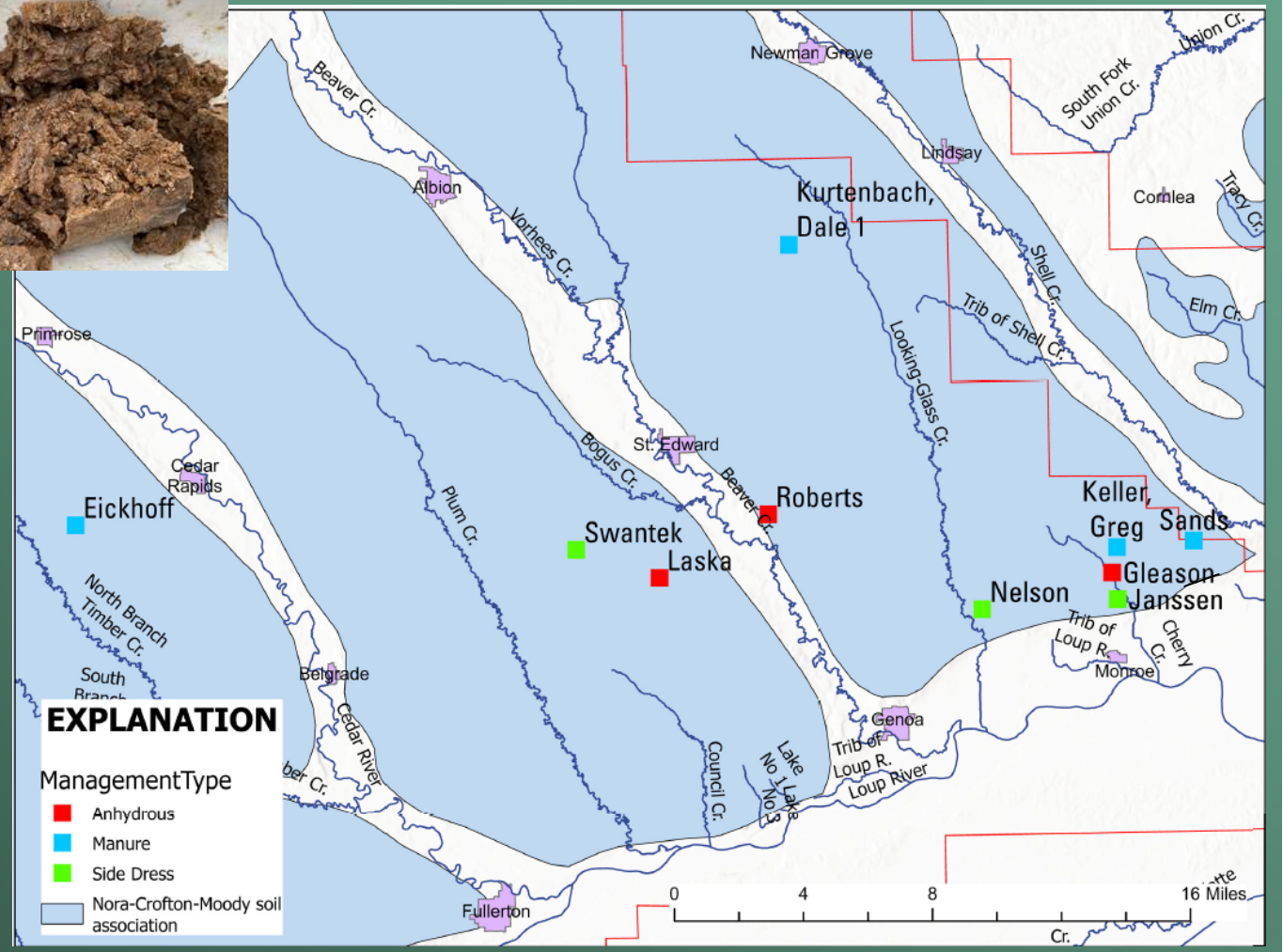
- Board encouraged affected producers to participate in study with NRD
- 10 groundwater irrigated fields were selected that used different fertilizer application practices: fall anhydrous, manure, and side dress
- Thank you to all study participants!



USGS

Area soils and site characteristics

- All sites are in areas mapped as Nora-Crofton-Moody soil association
- These soils are deep, well-drained, and located in upland areas
- Texture is generally silt loam or silty clay loam
- Moderately high to high infiltration rate (0.2 to 2.0 in/hr)
- Typically, irrigated corn and soybeans (where there is sufficient groundwater available)



Soil parent material and hydrologic characteristics

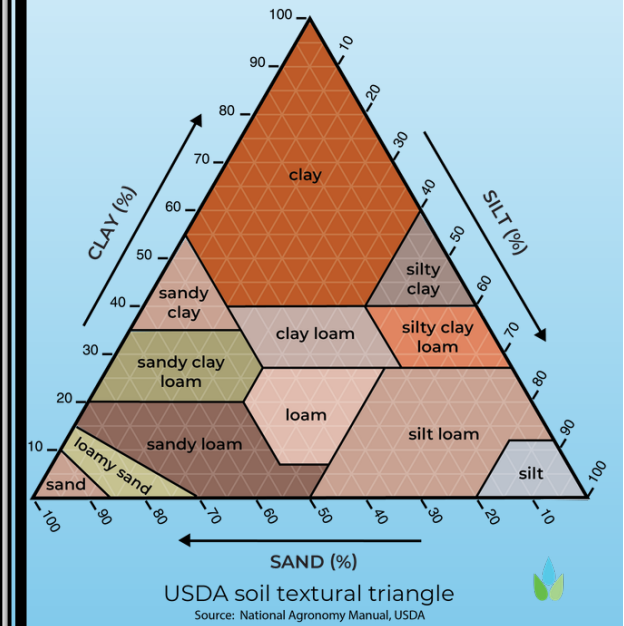
- Nora Crofton soils are derived from Peoria Loess parent material
- Loess is wind blown silt deposited during last glacial period
- Soil structure and development of macropores (voids, cracks, etc) can lead to higher infiltration rates

USGS

Field Textures

Depth	Laska 1	Roberts 2	Gleason 1	Eickhoff 2	Sands 2	Keller 2	Kurtenbach 2	Janssen 3	Nelson 1	Swantek 2	Choat #3
0-1	Silty Clay	Silty Clay	Silty Clay Loam	Silty Clay	Silty Clay	Silty Clay	Silty Clay	Silty Clay	Silty Clay	Silty Clay	Clay Loam
1-2	Silty Clay	Silty Clay Loam	Silty Clay Loam	Silty Clay	Silty Clay	Silty Clay	Silty Clay	Silty Clay	Silty Clay	Silty Clay	Clay Loam
2-3	Silty Clay	Silty Clay	Silty Clay Loam	Silty Clay Loam	Silty Clay	Silty Clay	Silty Clay	Silty Clay	Silty Clay	Silty Clay	Clay Loam
3-4	Silty Clay	Silty Clay Loam	Silty Clay Loam	Silty Clay Loam	Silty Clay	Silty Clay	Silty Clay	Silty Clay	Silty Clay Loam	Silty Clay Loam	Silt Loam
4-5	Silty Clay Loam	Silty Clay Loam	Silty Clay Loam	Silty Clay Loam	Silty Clay	Silty Clay	Silty Clay Loam	Silty Clay Loam	Silty Clay Loam	Silty Clay Loam	Silt Loam
5-6	Silty Clay Loam	Silty Clay Loam	Silty Clay Loam	Silty Clay Loam	Silty Clay Loam	Silty Clay Loam	Silty Clay Loam	Silty Clay Loam	Silty Clay Loam	Silty Clay Loam	Silt Loam
6-7	Silty Clay Loam	Silty Clay Loam	Silty Clay Loam	Silty Clay Loam	Silty Clay Loam	Silty Clay	Silty Clay Loam	Silty Clay Loam	Silty Clay Loam	Silty Clay Loam	Silt Loam
7-8	Silty Clay Loam	Silty Clay Loam	Silty Clay Loam	Silty Clay Loam	Silty Clay Loam	Silty Clay	Silty Clay Loam	Silty Clay Loam	Silty Clay Loam	Silty Clay Loam	Silt Loam
8-10	Silty Clay Loam	Silty Clay Loam	Clay Loam	Silty Clay Loam	Silty Clay Loam	Silty Clay Loam	Silty Clay Loam	Silty Clay Loam	Silty Clay Loam	Silty Clay Loam	Silt Loam
10-12	Silty Clay Loam	Silty Clay Loam	Silty Clay Loam	Silty Clay Loam	Silty Clay Loam	Silty Clay Loam	Silty Clay Loam	Silty Clay Loam	Silty Clay Loam	Silty Clay Loam	Silt Loam
12-14	Silty Clay Loam	Silty Clay Loam	Silty Clay Loam	Silty Clay Loam	Silty Clay Loam	Silty Clay Loam	Silty Clay Loam	Silty Clay Loam	Silty Clay Loam	Silty Clay Loam	Silt Loam
14-16	Silty Clay Loam	Silty Clay Loam	Silty Clay Loam	Silty Clay Loam	Silty Clay Loam	Silty Clay Loam	Silty Clay Loam	Silty Clay Loam	Silty Clay Loam	Silty Clay Loam	Silt Loam
16-18	Silty Clay Loam	Silty Clay Loam	Silty Clay Loam	Silty Clay Loam	Silty Clay Loam	Silty Clay Loam	Silty Clay Loam	Silty Clay Loam	Silty Clay Loam	Silty Clay Loam	Silt Loam
18-20	Silty Clay Loam	Silty Clay Loam	Silty Clay Loam	Silty Clay Loam	Silty Clay Loam	Silty Clay Loam	Silty Clay Loam	Silty Clay Loam	Silty Clay Loam	Silty Clay Loam	Silt Loam
20-22	Silty Clay Loam	Silty Clay Loam	Silty Clay Loam	Silty Clay Loam	Silty Clay Loam	Silty Clay Loam	Silty Clay Loam	Silty Clay	Silty Clay Loam	Silty Clay Loam	Silt Loam
22-24	Silty Clay Loam	Silty Clay Loam	Silty Clay Loam	Silty Clay Loam	Silty Clay Loam		Silty Clay Loam	Silty Clay	Silty Clay Loam	Clay Loam	Silt Loam
24-26	Silty Clay Loam	Silty Clay Loam	Silty Clay Loam	Silty Clay Loam	Silty Clay Loam		Silty Clay	Silty Clay	Silty Clay Loam		Silt Loam
26-28	Silty Clay	Clay Loam	Silty Clay Loam	Silty Clay Loam	Silty Clay Loam		Silty Clay Loam	Silty Clay Loam	Silty Clay Loam		Clay Loam
28-30	Silty Clay	Silty Clay Loam	Silty Clay Loam	Silty Clay Loam	Silty Clay Loam		Silty Clay Loam	Silty Clay Loam	Silty Clay Loam		Clay Loam

Silty Clay Loam	Silty Clay	Silt Loam	Clay Loam



USDA soil textural triangle

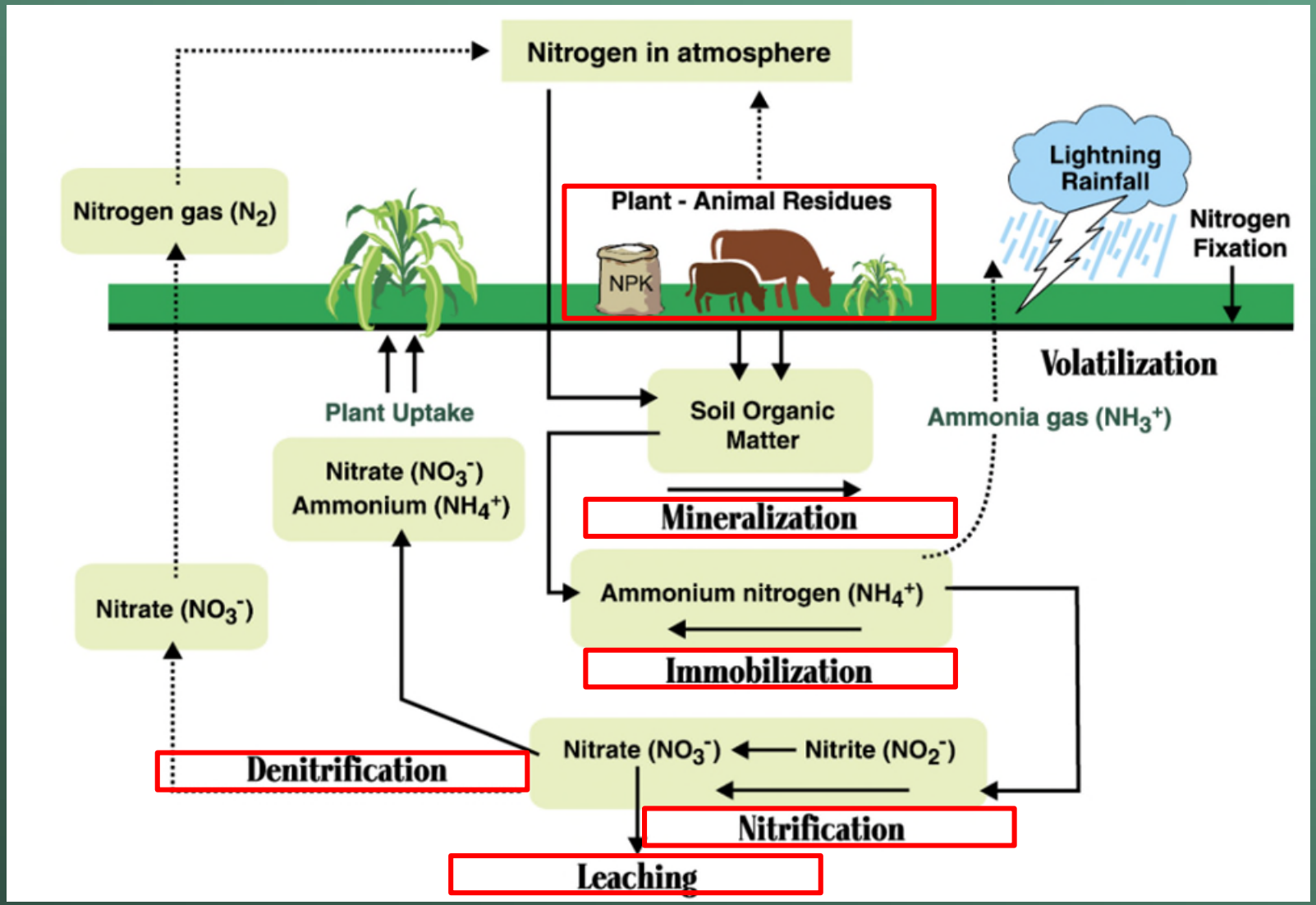
Source: National Agronomy Manual, USDA

Study approach – soil-N sampling

- Soil cores collected at 10 fields through growing season at specific crop stages
  - 30-ft samples when fields were accessible
  - 8-ft samples collected during growing season
- For each field, cores were collected at three locations
- Each core was subdivided into 1-ft increments to 8-ft, then 2-ft increments to 30-ft and sent to Ward Labs for analyses

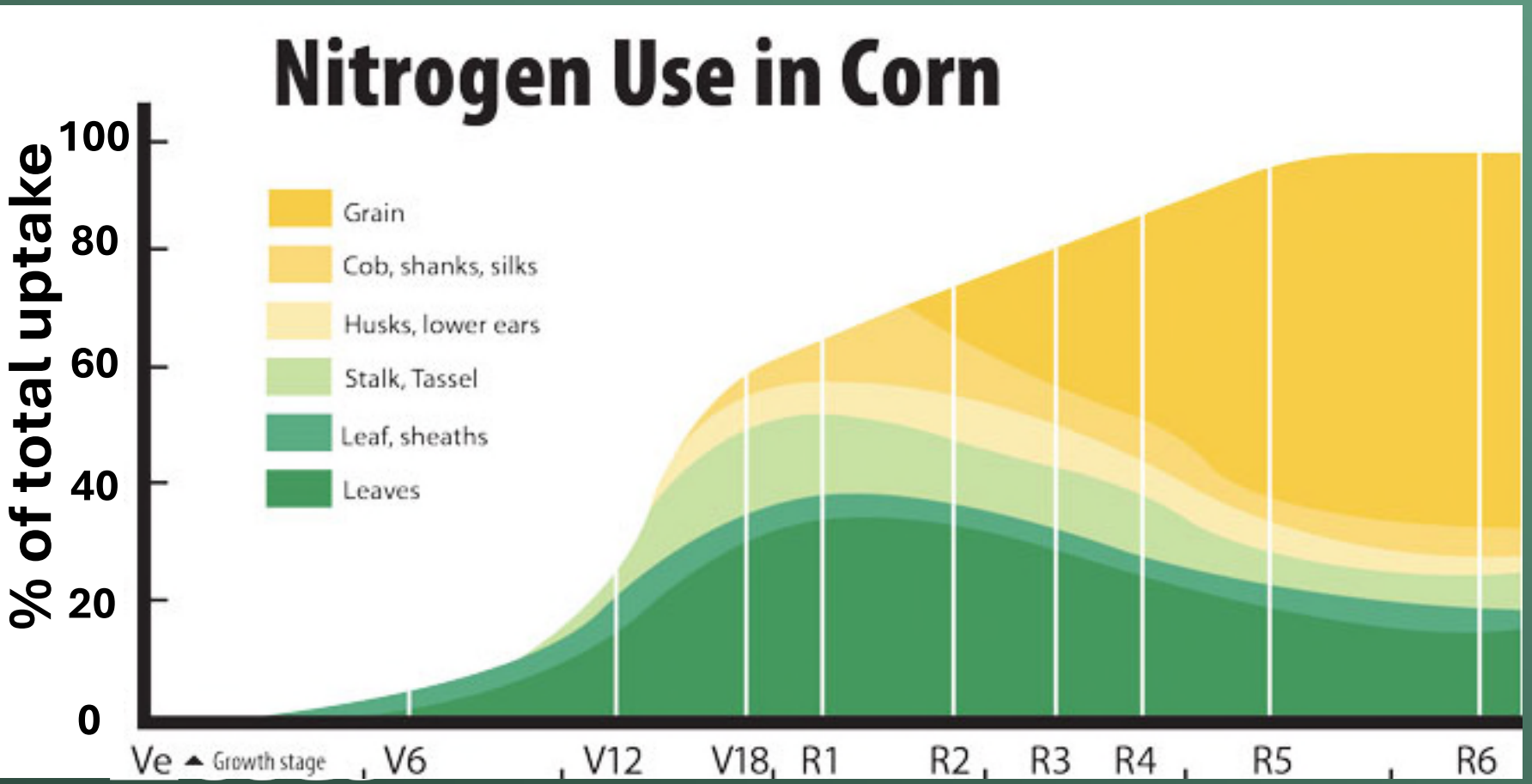
USGS

The nitrogen cycle in agricultural landscapes



From Keena and others, 2022

When is nitrogen needed?



- Much of N use is between V6 to V18 (typically mid-June to mid-July
- For context commercial fertilizer application mid-November to early December

Study approach – Bromide tracer test

- Bromide was applied at land surface to estimate the infiltration rates of solutes through the soil
- Bromide (negatively charged ion) is an ideal conservative tracer (will not bind to soil particles or lost by plant uptake)
- Repeated soil coring can track solute movement and can be used to determine the maximum rate of percolation

USGS

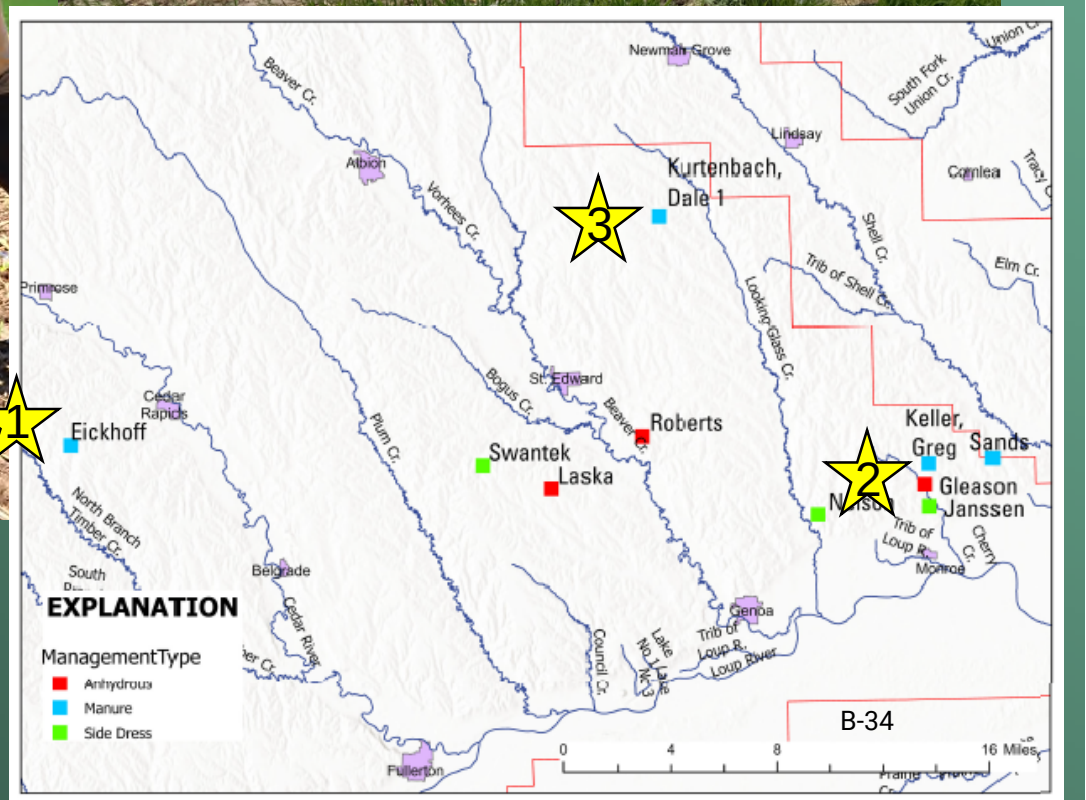
Study approach – Bromide tracer test

- Potassium bromide, was applied to all 10 fields in June in a 10 ft by 10 ft area
- Soil cores were collected ~9 weeks later to determine how much bromide moved
- The time elapsed from application to sampling, total precipitation, and irrigation water applied affect the depth that bromide had reached

USGS

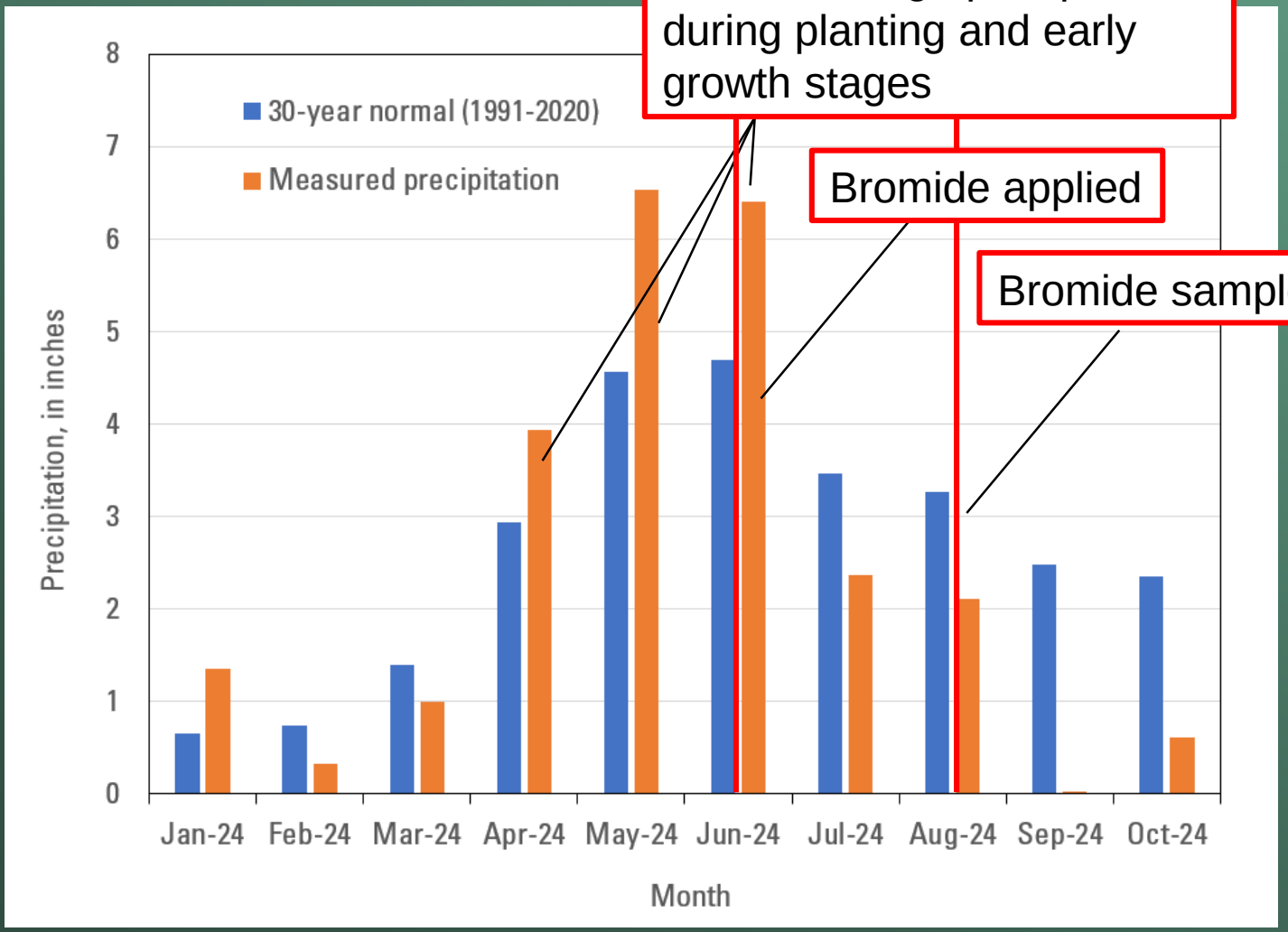
Soil moisture monitoring

- Soil moisture was collected continuously at 3 sites
  - Capture extreme precipitation events
  - Identify irrigation events
  - Track the development and extent of the root zone through the growing season
- Continuous water content data at 9 depths down to 3.3 ft



USGS

Measured precipitation vs. 30-year normal

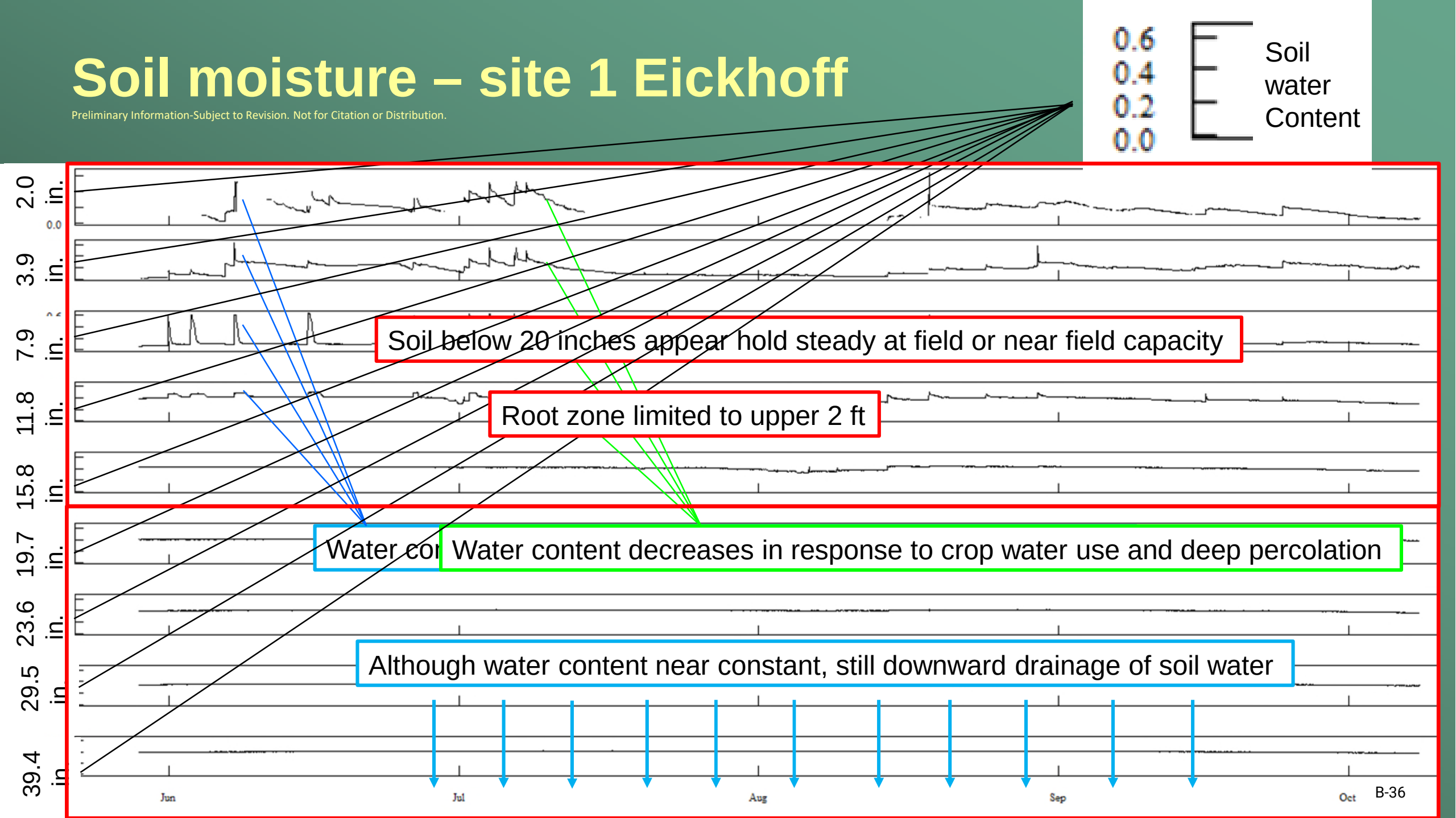


- Above normal precipitation totals April through June
- Increased precipitation affected planting and soil sampling schedules
- Later summer to early fall extremely dry
- Bromide movement expected following precipitation and/or irrigation

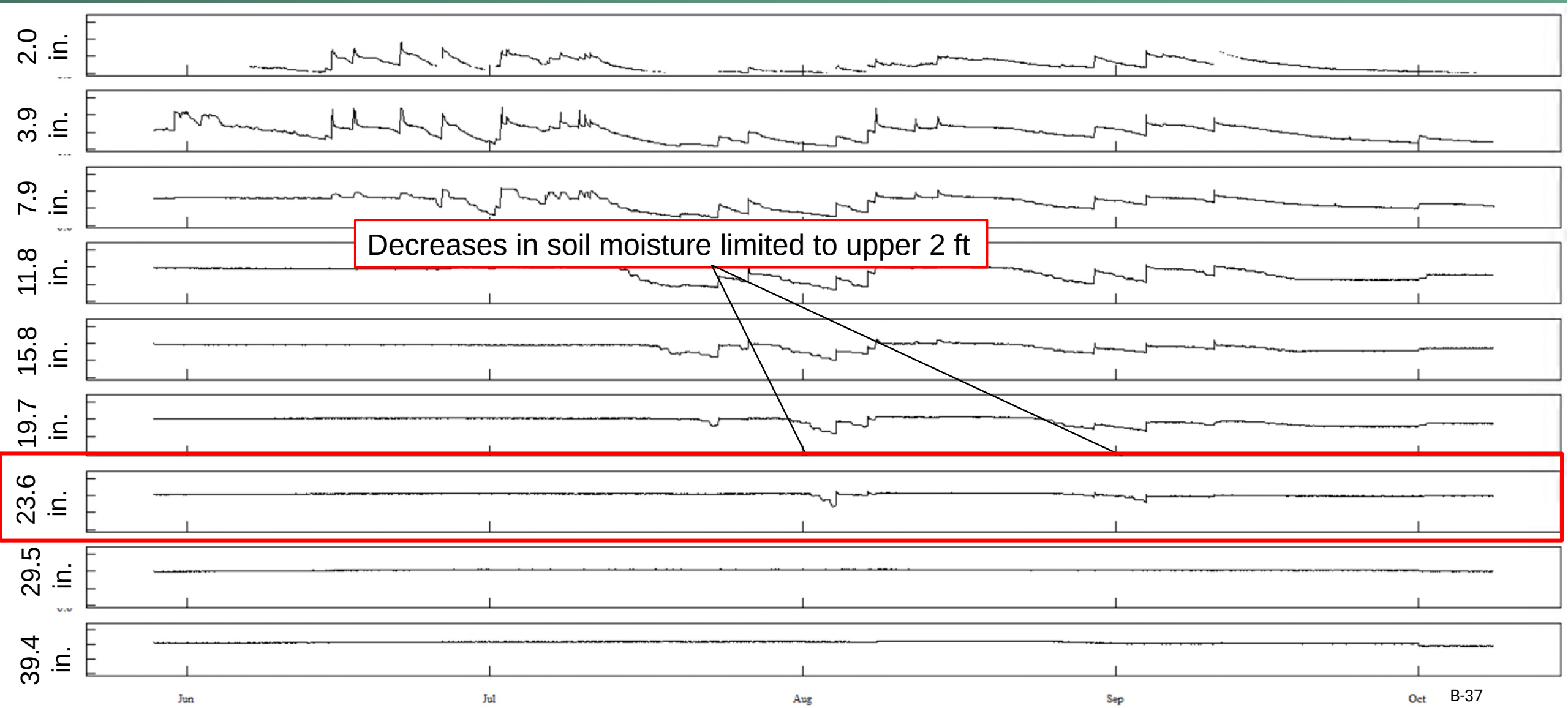
Data from National Center for Environmental Information, 2024

Soil moisture – site 1 Eickhoff

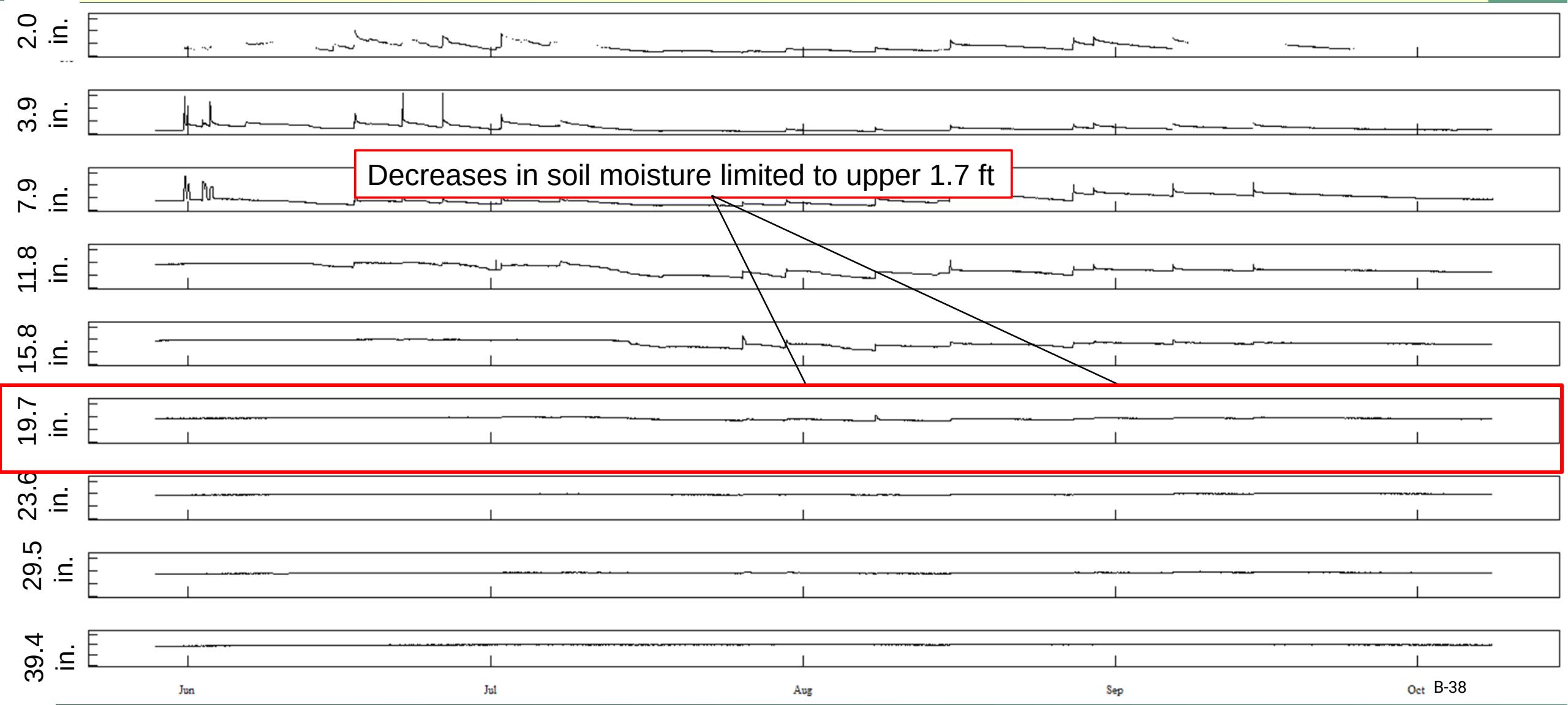
Preliminary Information-Subject to Revision. Not for Citation or Distribution.



Soil moisture – site 2 Keller



Soil moisture – site 3 Kurtenbach

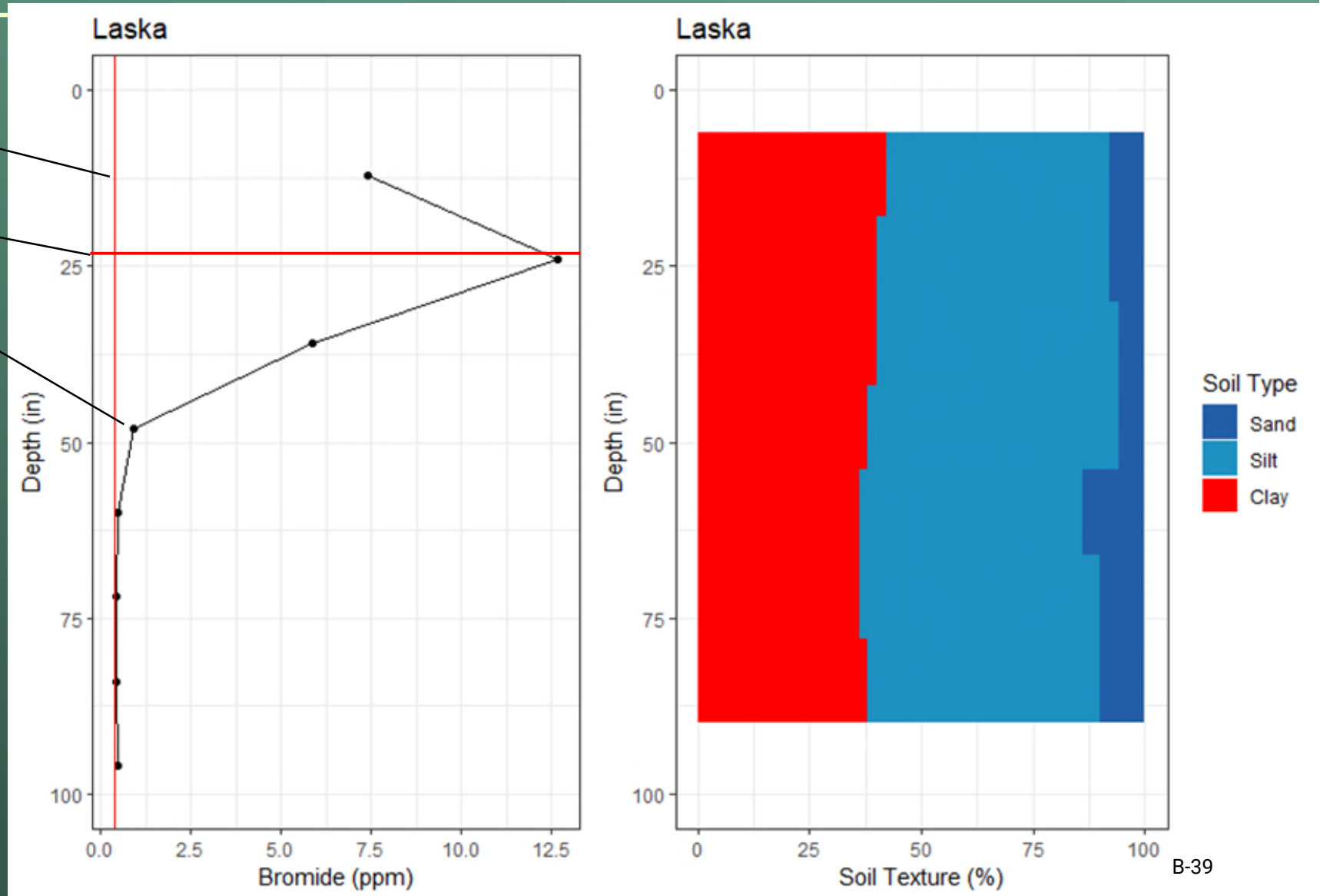


Example bromide tracer and soil texture data

Natural background concentration of bromide (0.5 ppm)

Maximum depth of root zone

Leading edge, or maximum depth

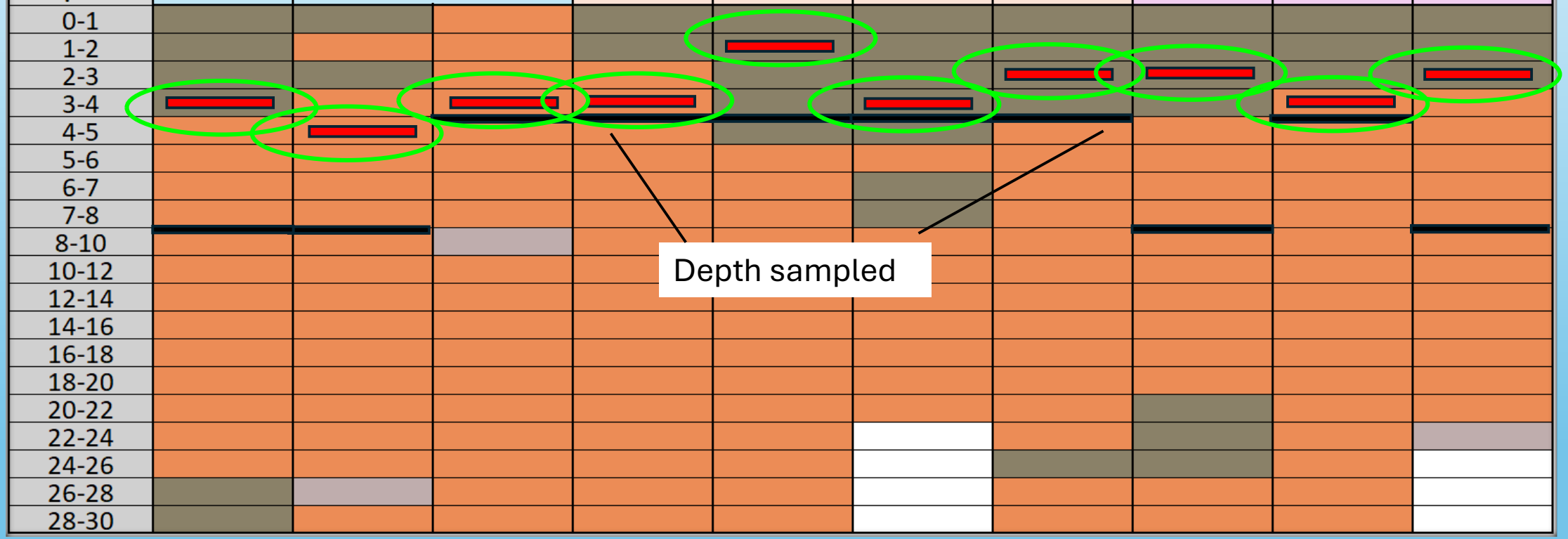


Bromide Tracer Movement

Fe

Da Measured rainfall between Br-
ap application and sampling

Practice	Anhydrous			Manure				Sidedressed		
Days Applied	79	73	48	56	48	52	56	52	55	58
Rainfall - In.	11.6	11.5	6.8	7.5	8.6	8.3	7.5	8.3	9.8	9.8

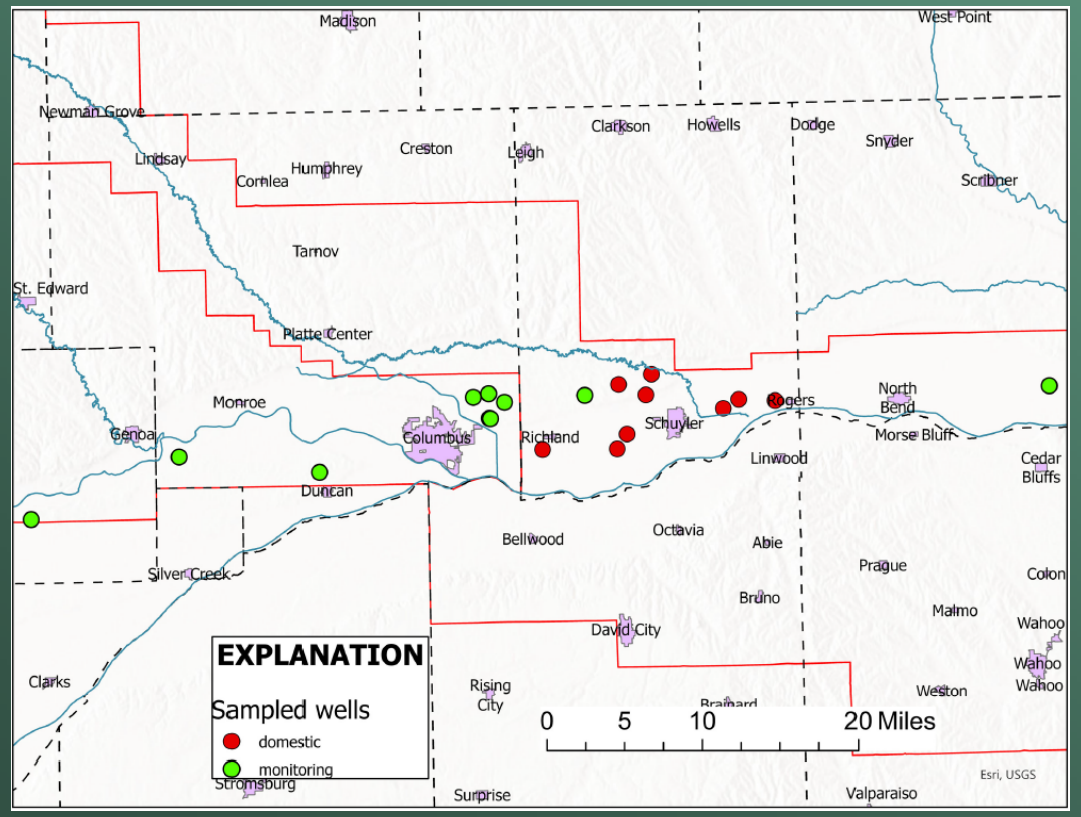


Silty Clay Loam | Silty Clay | Silt Loam | Clay Loam

Bromide Leading Edge

Depth sampled

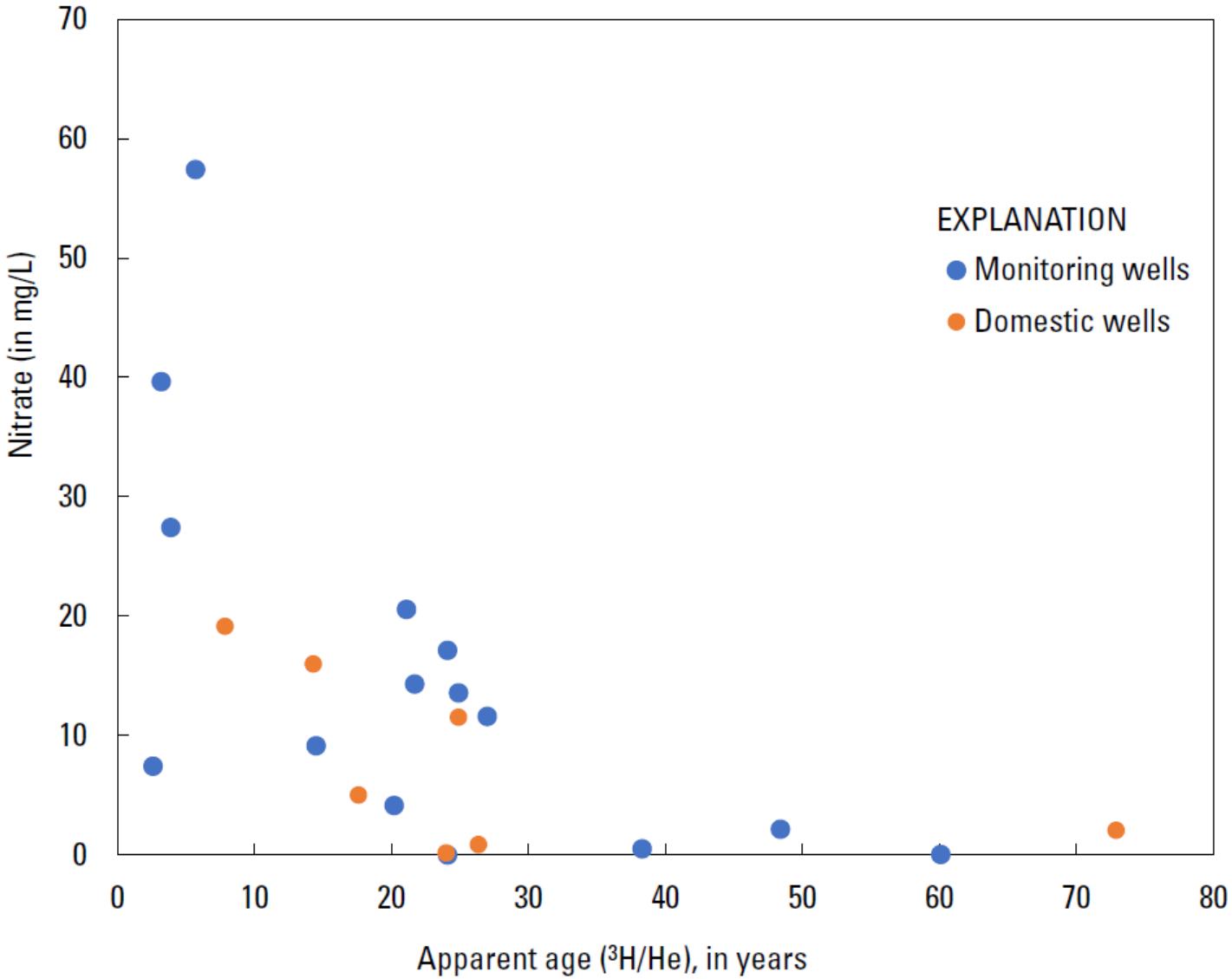
Legacy nitrate groundwater sampling project



- Complimentary study with Lower Platte North NRD assess role of legacy nitrate in current groundwater conditions
- Assess effectiveness of current water management strategies to reduce nitrate concentrations
- Sampled 24 wells to determine the age and nitrate concentration in groundwater

USGS

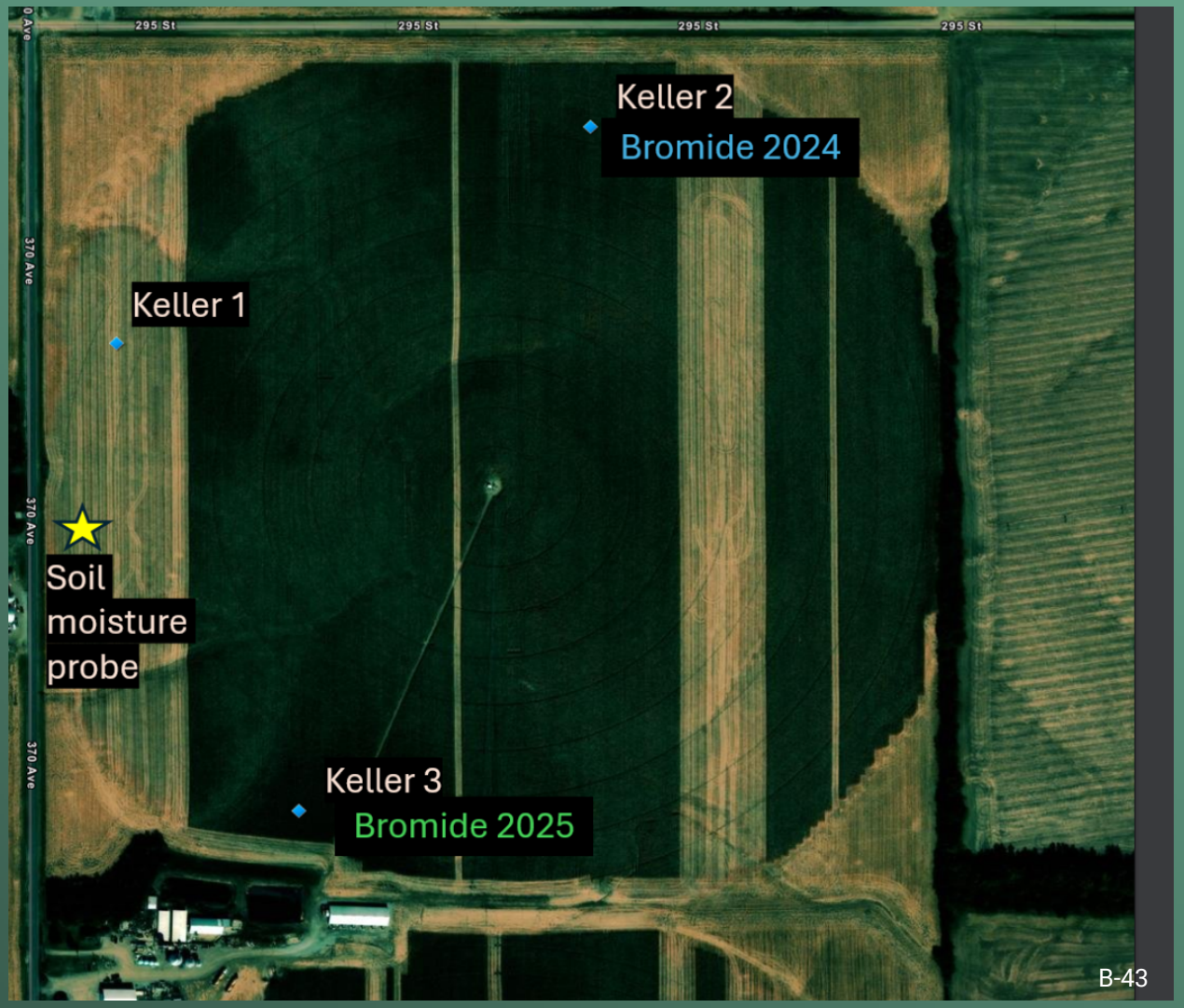
Groundwater age and nitrate concentration



- Apparent age and nitrate inversely related
- All samples that exceed EPA MCL of 10 mg/L are less than 27 years old
- Samples with the 3 highest concentrations of nitrate are less than 5 years old

Bromide tracer tests for 2025 growing season

- Bromide tracer tests repeated in new part of same fields
- Primary purpose was to determine how reproducible the results were
- Examine influence of different climatic conditions on results



USGS

Bromide Tracer Movement

Summer 2025

Practice	Anhydrous			Manure				Sidedressed		
Days Applied	25	35	28	37	43	35	35	44	36	25
Rainfall - In.	10.4	12.9	13.8	11.7	10.9	9.1	11.7	10.9	12.9	10.4
Depth-Ft	Laska 3	Roberts 1	Connelly 3	Eickhoff 1	Sands 1	Keller 3	Kurtenbach 1	Janssen 2	Nelson 2	Swantek 1
0-1										
1-2										
2-3										
3-4										
4-5										
5-6										
6-7										
7-8										
8-10										
10-12										
12-14										
14-16										
16-18										
18-20										
20-22										
22-24										
24-26										
26-28										
28-30										

Did not detect

Silty Clay Loam	Silty Clay	Silt Loam	Clay Loam

Bromide Leading Edge

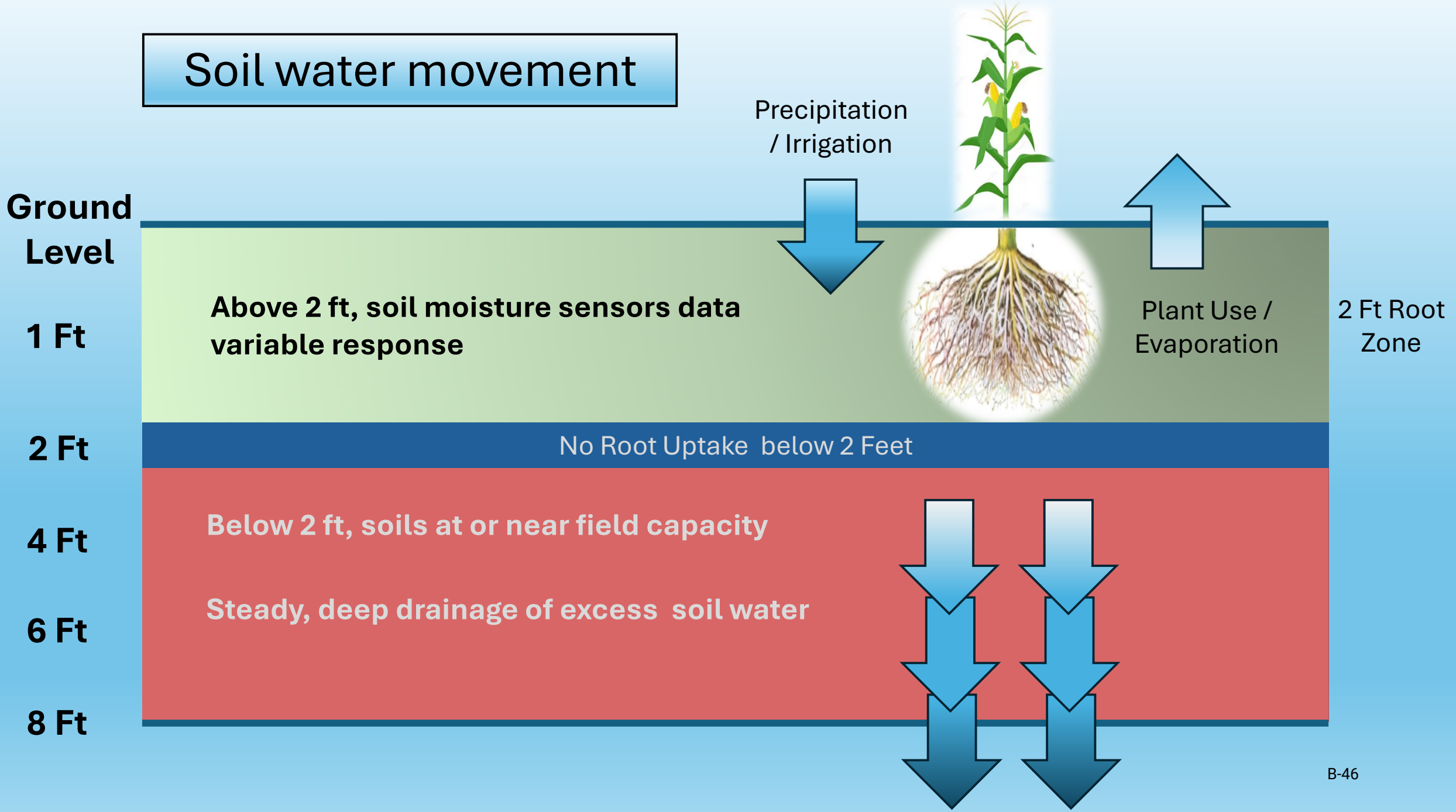
Testing Depth

Leaching rates: Bromide vs nitrate

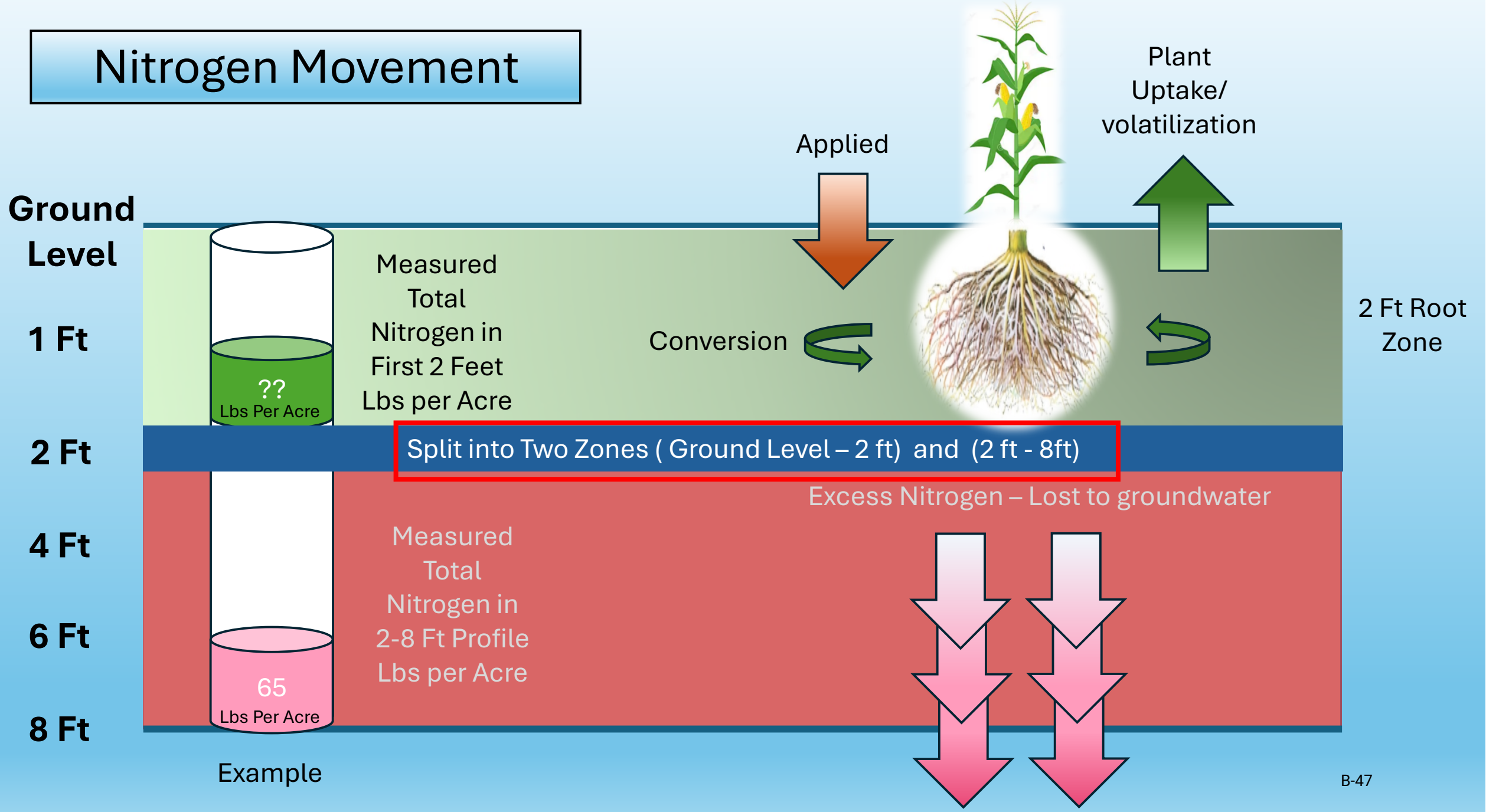
- Bromide tracer tests are a standard approach to estimating nitrate movement in the unsaturated zone
- Bromide and nitrate are both anions and are expected to move through soils at similar rates
- Published literature suggests that if bromide is used to estimate loss of nitrate to leaching, it could lead to a 25% overestimate (Clay and others, 2004)
- Actual transport rates (i.e. maximum rate of movement) for nitrate and bromide were nearly identical (Jiang and others, 1997)

USGS

Soil water movement

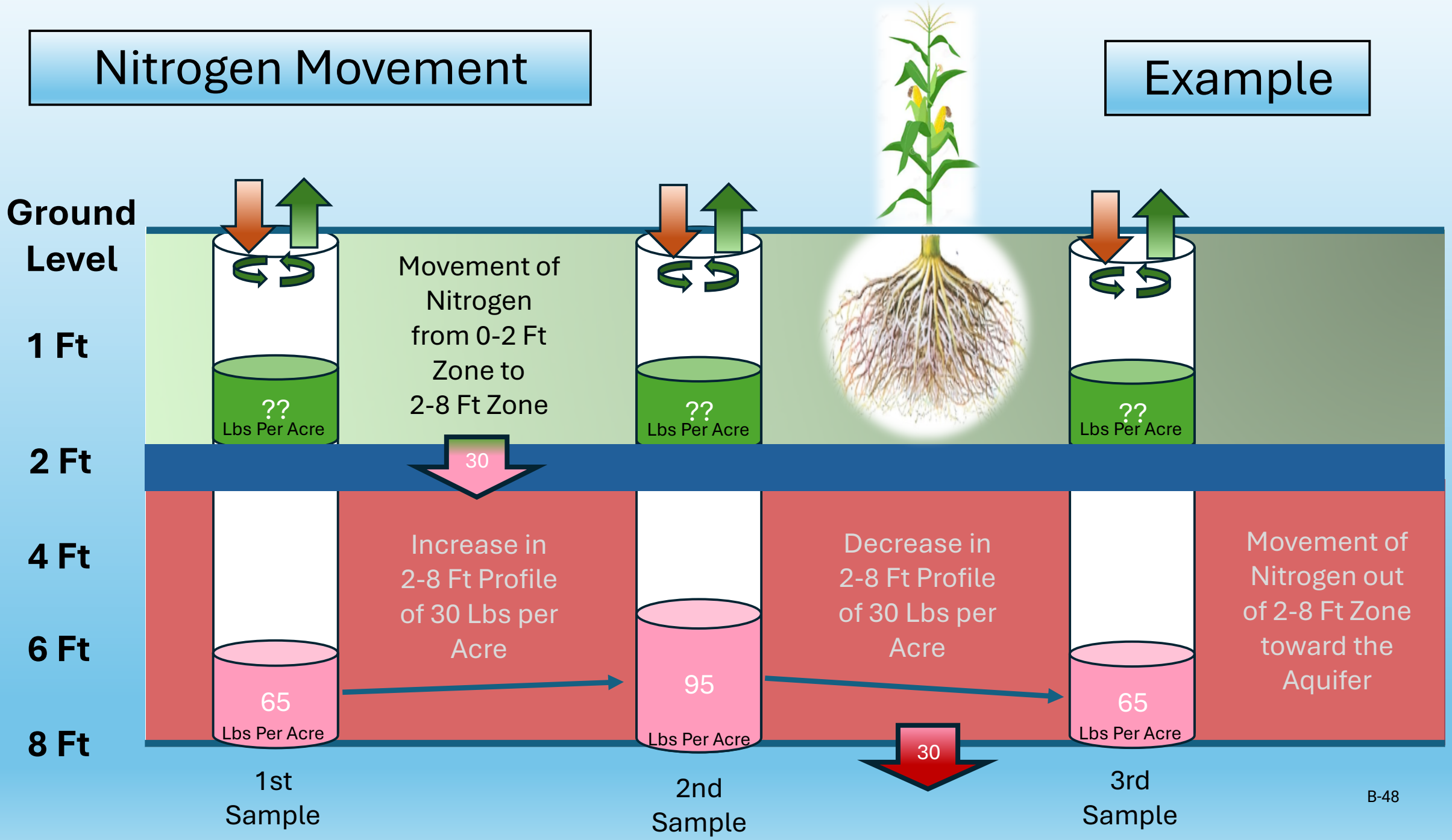


Nitrogen Movement



Nitrogen Movement

Example



NO_3^- Movement Through 8 Foot Profile

Anhydrous
Laska #1
3 Miles SE of St Edward

Ground Level

	Oct 23	Dec 23	Mar 24	Apr 24	Jun 24	Aug 24	Nov 24	Dec 24
2 Ft NO_3^- Lbs per Acre	33	52	86	173	203	22	18	21
		55		82	12		22	
8 Ft NO_3^- Lbs per Acre	29	23	78	47	129	141	55	77
	6		31			86		

Cumulative NO_3^- Passing Below 8 Ft

123

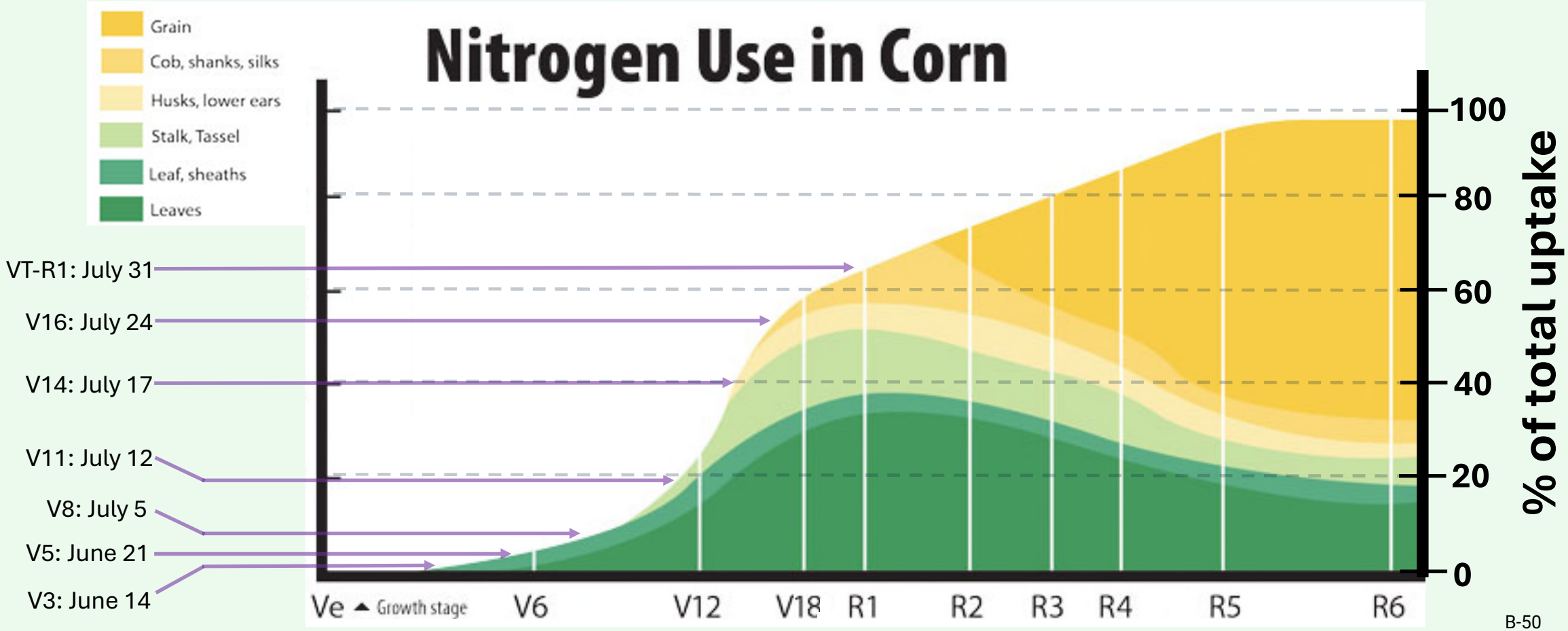
Corn Growth Stages 2024

Field Two

- Planted: May 17
- Emerged: May 27

Anhydrous Application: 12/07/2023

Our wet spring caused delayed planting for this field. A corn plant has only taken up 10% of it's total required N for the season at growth stage V6, which for this field was around 06/25/2024



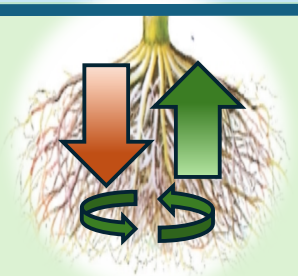
NO_3^- Movement Through 8 Foot Profile

Manure

Producer: Mike Sands #1
3 Miles W of Platte Center

Ground Level

Oct 23 | Dec 23 | Mar 24 | Apr 24 | Jun 24 | Aug 24 | Nov 24 | Dec 24



2 Ft NO_3^- Lbs per Acre

14 | 188 | 103 | 111 | 34 | 10 | 42 | 36

11 | 22 | 69 | 13

8 Ft NO_3^- Lbs per Acre

30 | 41 | 63 | 29 | 98 | 62 | 41 | 54

34 | 36 | 21

Cumulative NO_3^- Passing Below 8 Ft

91

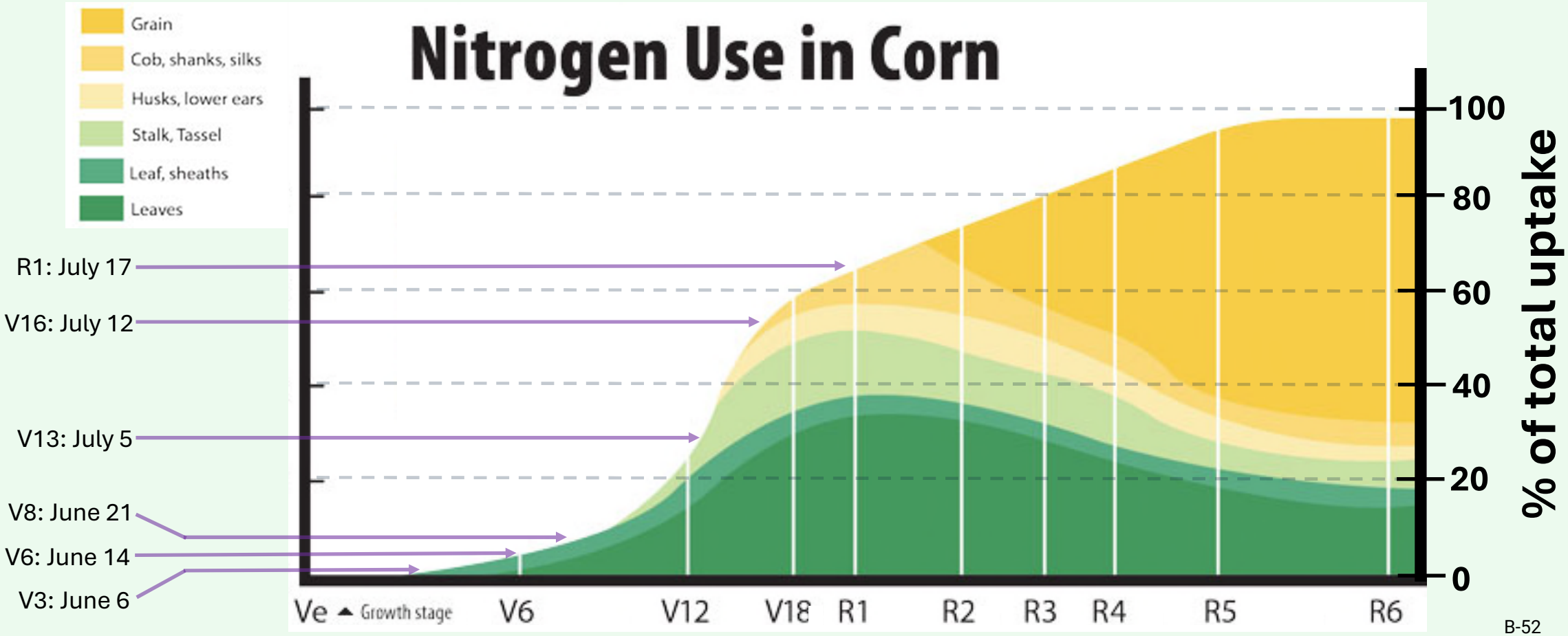
Corn Growth Stages 2024

Field One

- Planted: April 24
- Emerged: May 10

Fall Applied Hog Slurry

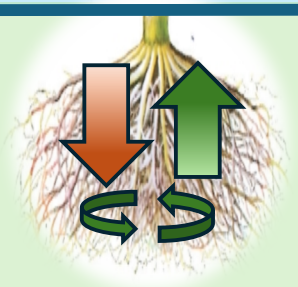
A corn plant has only taken up 10% of it's total required N for the season at growth stage V6, which for this field was around 06/14/2024



NO_3^- Movement Through 8 Foot Profile

Sidedressed
Swantek #2
2 Miles N of Monroe

Ground Level

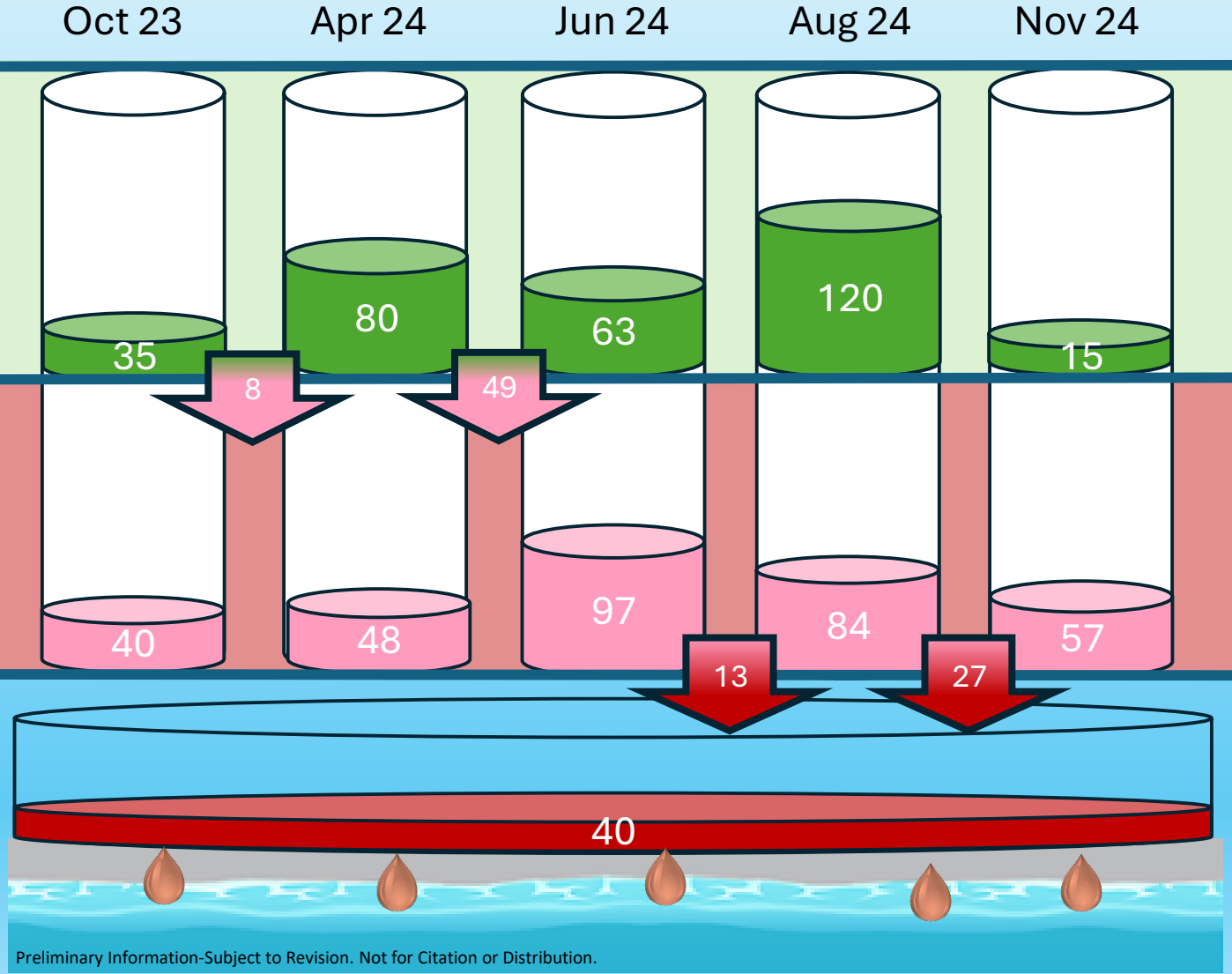


2 Ft

NO_3^- Lbs per Acre

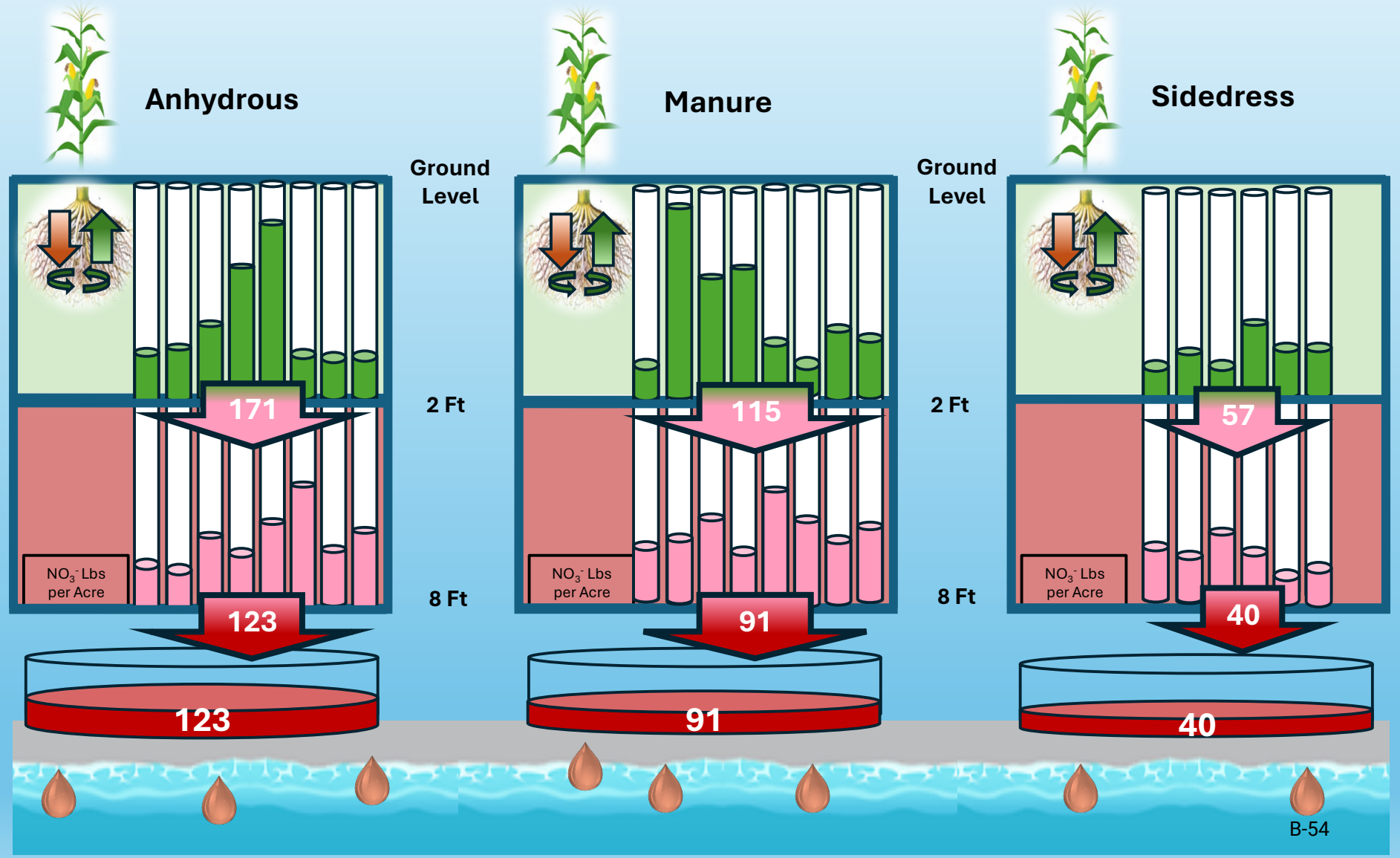
8 Ft

NO_3^- Lbs per Acre



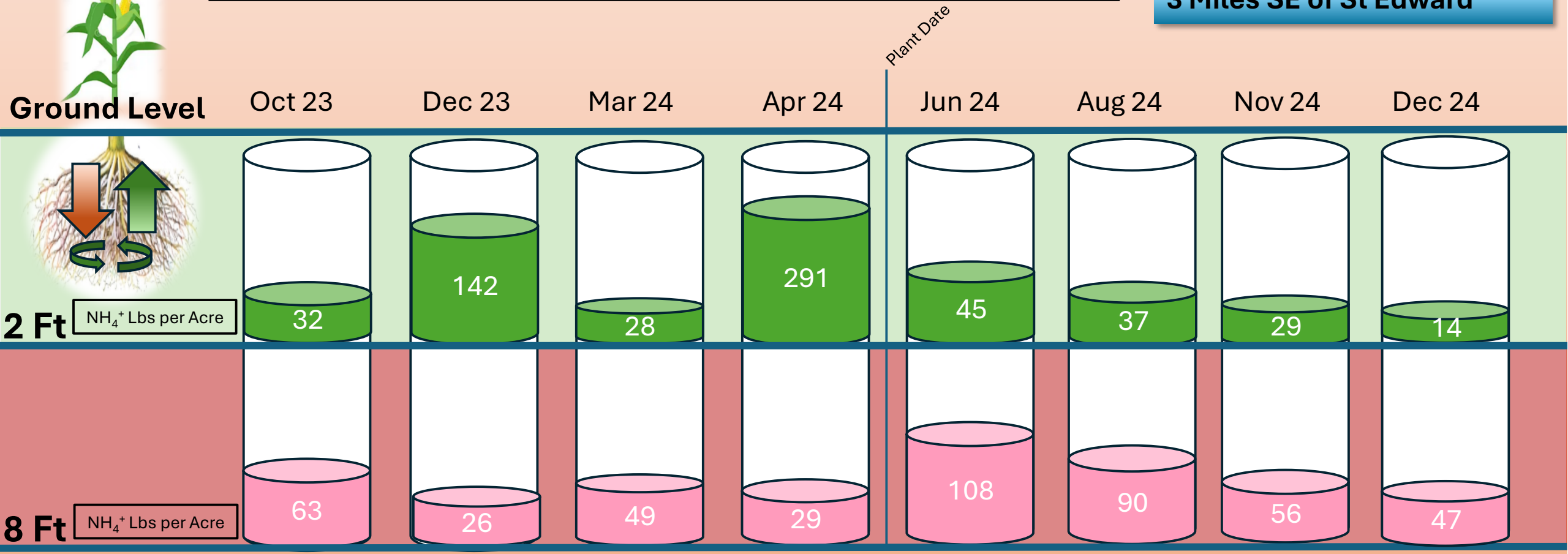
Cumulative NO_3^- Passing Below 8 Ft

October 2023 to December 2024 NO_3^- Losses



NH_4^+ concentrations in 8-foot profile

Anhydrous
Laska #1
3 Miles SE of St Edward



Questions remain:

Is NH_4^+ moving through the profile?
Why is NH_4^+ so variable?
Why are NH_4^+ +concentrations so high at depth?

Preliminary observations and lessons

- Deep, loess-derived soils lack restrictive layer that would limit N movement
- Early spring/summer precipitation may have limited root zone development to 2 ft
- Maximum movement of bromide was near 1 inch per day; comparable to maximum rate of nitrate
- Rapid water movement and shallow root zone increases the likelihood some N is not being used by the crop and lost to groundwater

USGS

Preliminary observations

- N movement influenced by application of groundwater - water application and nitrogen management go hand in hand
- Questions remain about ammonium concentrations and movement

USGS

Next steps

- Continued soil coring and analysis
  - 2025 growing season soil core collection and analysis is ongoing
  - Continue to track migration of bromide
- Examine and interpret soil moisture data from 2025 growing season
  - Temperature Sensors added to sites
  - Estimate root zone depth and capture potential extreme rain events
  - Different precipitation patterns could produce different results
- Water Sustainability Fund grant: expanding pilot project into new areas of the LLNRD and include focus areas within Central Platte and Upper Big Blue NRDs

USGS

Questions

Chris Hobza, P.G.
Lead Hydrologist
(402) 326-0113
cmhobza@usgs.gov

Jason Moudry
Water Programs Specialist
(308) 728-3221
jasonm@llnrd.org

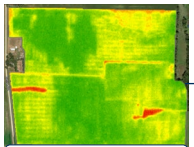
USGS

B-60

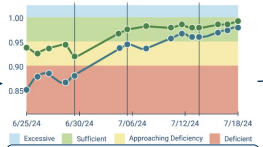
End the guesswork – Sentinel uses your crop to guide your nutrient and water management in-season.

SENTINEL

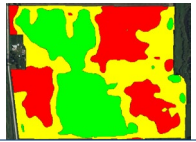
- + $22/ac profit (243 bu/ac average)
- + 23% NUE (0.59 average)



Data



Insights



Recommendations

Key Advantages: No yield goals, soil samples, N credits, or labor; hybrid/variety specific; pre-visible demand detection.

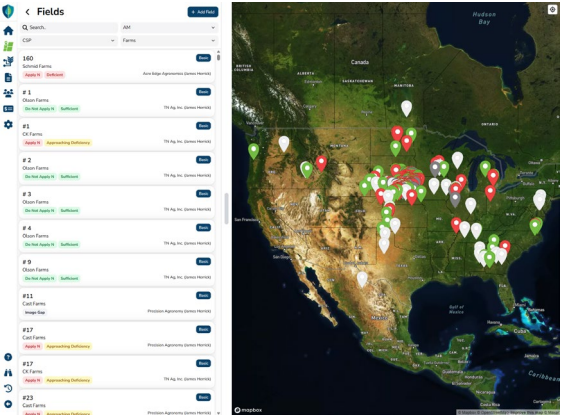
Crops Served: Corn, Sorghum, Cereals, Potatoes, Beets, Cotton, and more.

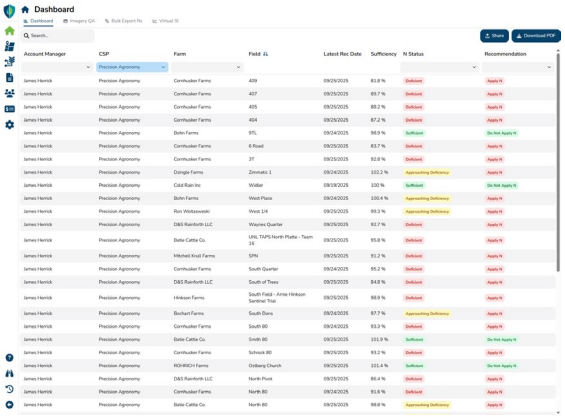
Tiers: Irrigation, Standard, Advanced, Complete

How it Works

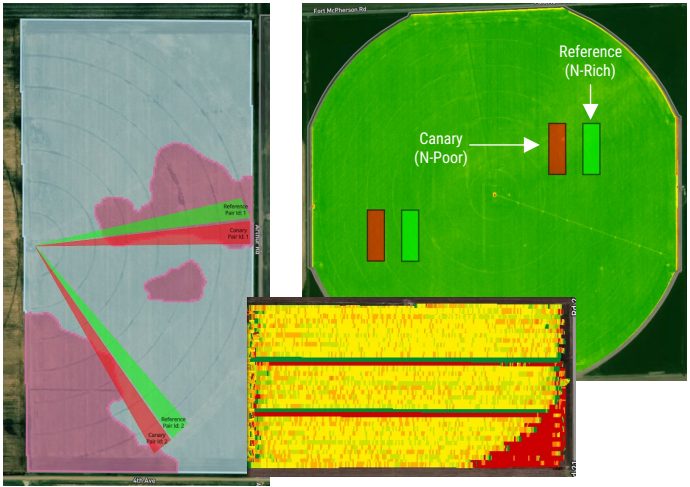
Implementing the Sentinel platform to make better in-season decisions.

Sentinel's Field List and Home Dashboard help users quickly digest the nitrogen status of their fields.





We isolate the impact of Nitrogen on crop yield potential and calibrate every image using paired N-rich (reference) and N-poor (canary) plots in the field.



Sentinel plots help you see:

1. The crop's potential with extra N
2. N demand before it occurs

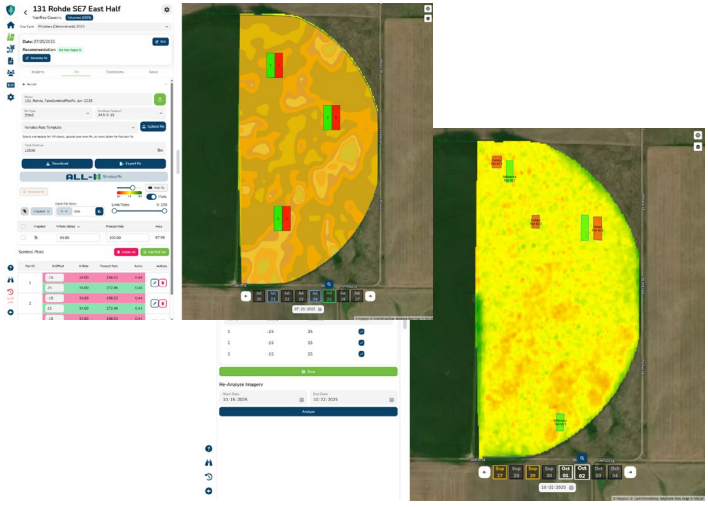
Sentinel plots can be established in any operation using:

- Plots
- Slices
- Field-length Strips

Sentinel plots should be established prior to mid-vegetative growth:

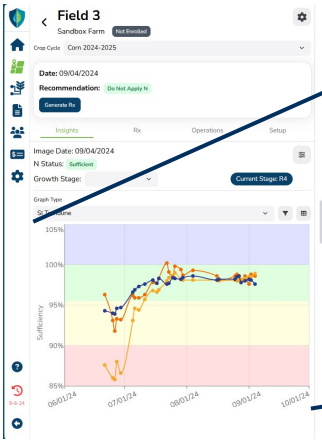
- Lighter soils – at or after planting
- Heavier soils – any application

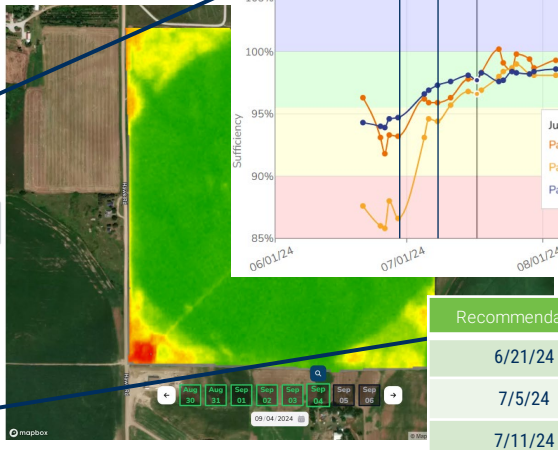
Sentinel creates prescriptions for ground or fertigation applied plots. It can also use plots created with an application executed without a Sentinel-originated Rx.

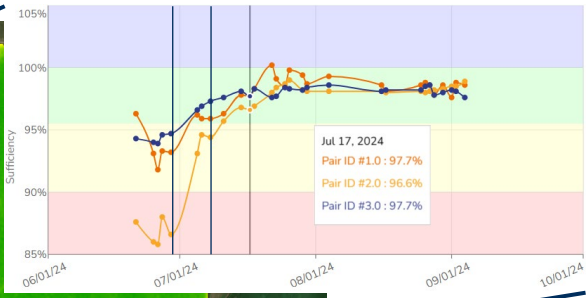


- Placed using best available zones.
  - Autoplace feature
  - Image-based zones
- Sentinel plots can be activated for insights with confirmation or upload.
- Sentinel offers multiple ways to validate plot locations if desired.
  - User editing of plots
  - Automated as-applied processing
  - Validation against virtual SI

Sentinel uses crop data and imagery to continuously monitor crop nitrogen status and detect when there is demand for additional nitrogen using the Sufficiency Index (SI).

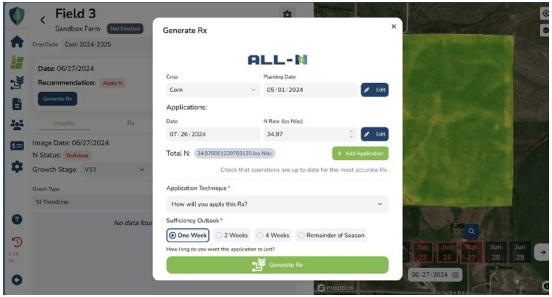


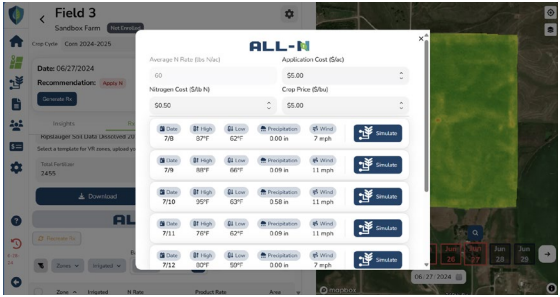




Recommendation	Application
6/21/24	6/29/24
7/5/24	7/5/24
7/11/24	7/14/24

B-66





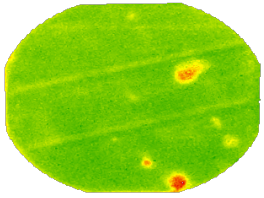
Generate prescriptions to satisfy crop demand.

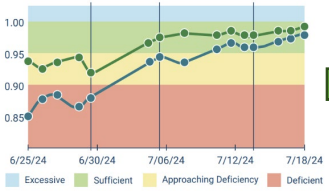
- Image-based dynamic zones
- Rates based on imagery and modeling

Compare the impact of timing on uptake and ROI.

- See how precipitation impacts uptake.
- Assess potential ROI from the application.

Detailed product, timing, and rate comparisons coming soon.





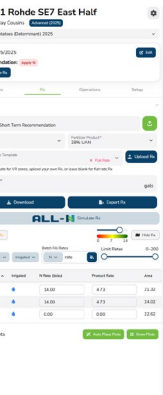
Capture → Calibrate → Detect

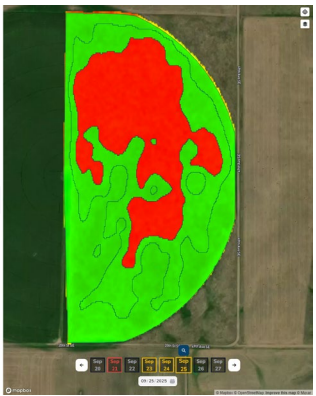
Algorithm → Measured N Demand

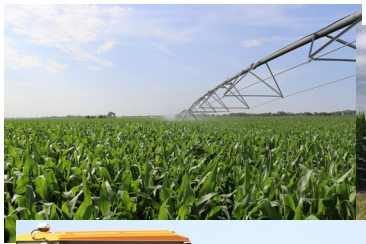
SI Values
Weather
Crop & Soil
Applications
Preferences

Model → Forecasted N Demand

N Recommendation







Source: *Farm Equipment*

Source: University of Nebraska - Lincoln

Source: *Successful Farming*

B-69

Uses and Benefits

How Sentinel empowers agile nitrogen stewardship.

	2022	2023	2024
Yield (bu/ac)	241	246	242
NUE (lb-N/bu)	0.81	0.70	0.75
N Savings	+ $40/ac	+ $34/ac	+ $27/ac
NUE Change	+ 23%	+ 26%	+ 20%
N Change	- 42 lb/ac	- 50 lb/ac	- 45 lb/ac
Sample Size	42	56	108

NATIONAL CORN GROWERS ASSOCIATION

THE 60TH ANNUAL YIELD CONTEST

- Yield Contest Low N Champion in 2023 with 313 bu/ac on 178 lb-N/ac
- Five Top-6 finishes in two years

We benchmark! Check out our on-farm trial results.

Category	% of Fields
20+ lb-N/ac Reduction	82%
30+ lb-N/ac Reduction	73%
40+ lb-N/ac Reduction	59%
Increase N	4%

Largest Reduction: 124 lb-N/ac
Largest Increase: 81 lb-N/ac

Change Range: 205 lb-N/ac

Benchmarking Results – 2021 to 2024 (36 sites)

Treatment	Yield (bu/ac)	N Applied (lb-N/ac)	NUE (lb-N/bu)	Profit* ($/ac)
Sentinel	243	139	0.59	$1,271.68
Grower	245	189	0.78	$1,249.73
Difference	-2	-50	-0.19	$21.95
Change	-1%	-24%	+23%	+2%

Academic literature and our private dataset is developing around optimal nitrogen management benefits for crop and soil health, both of which may lead to better attribute marketability for ag products.

Crop Health

Numerous crop health benefits are being associated with optimal nitrogen management.

- Reduced disease pressure
- Reduced insect pressure
- Improved standability*
- Enhanced root development
- Plant growth control

Soil Health

Soil health benefits of optimizing nitrogen applications are also being identified through groups like the Soil Health Institute and NE Soil Health Coalition.

- Microbe activity
- Soil pH consistency
- Leveraging mineralization

Attribute Marketability

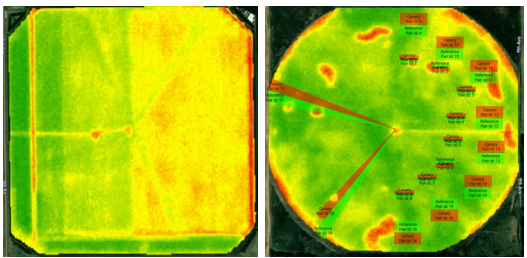
As international agriculture continues to evolve, American products will increasingly need to gain value through better attributes.

- Crop quality
- Processability
- Digestability
- Carbon Intensity
- Water Intensity

Sentinel is working with partners to gather data on disease incidence, stalk quality, soil health attributes, and grain quality under changes in N management.

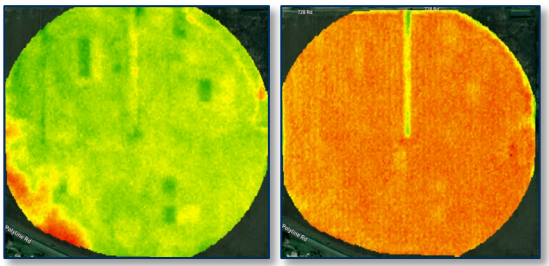
Biologicals, Stimulants, Alternatives

- Measure product impact on N uptake and N sufficiency
- Control risk with the information you need to intervene in-season



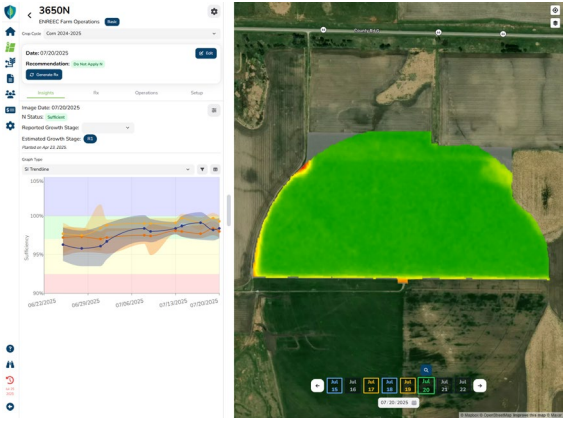
Regenerative Practices & Practice Changes

- Determine previous/cover crop residue N tie up and ensuing breakdown
- Tillage changes, interseeding, overwinter grazing impacts can be detected



B-74

- Detect and track N availability from base manure application
- Quantify impact of in-season manure applications
- Identify when synthetic/commercial N needs to be used
- Determine field(s) with most capacity when lagoon water must be pumped
- Opportunity for implementation with only manure N

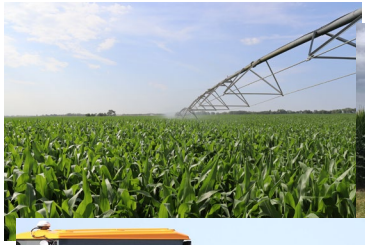


- **Opportunities with Sentinel**
  - Detect overapplication with up-front N
  - Guide transition to in-season N
  - Detect need for in-season N (rescue)
  - Lowest tier built in-part to serve these situations
- **In-season application ancillary value**
  - Reduce hail and wind risk exposure
  - Adjust for pest and disease pressure
  - Justify applications with SI value
- **Challenges with in-season N**
  - Labor/timing
  - Fertilizer procurement

Amplifying our Impact

Adding capabilities that are critical to our customers maximizing their N benefit.

- Application strategies used
  - Sidedress
  - Fertigation
  - Aerial/Drone
  - Rescue
- Product types
  - Commercial fertilizer
  - Alternative fertilizers
  - Manure
- Systems served
  - Fertigated
  - Irrigated
  - Rainfed

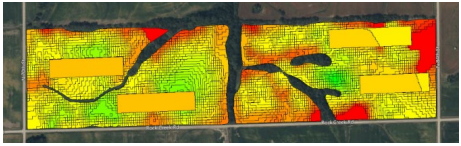


Source: *Farm Equipment*

Source: University of Nebraska - Lincoln

Source: *Successful Farming*

- N optimization leading to whole farm commitments
  - 3 first-year farms (so far) transitioning to 100% acres in year 2
  - Two new farms already going 100% in based on other results
- Trial results in non-fertigated management very encouraging
  - +5 bu/ac on 30 lb-N/ac reduction
  - +5 bu/ac on 10 lb-N/ac increase
  - "Before the application, I thought Sentinel's rates would be too high. Making the application, I'm confident Sentinel's are more accurate. We over accounted for our credits."
  - "Zones are spot on."
  - More data will be processed and put into Codex
- 100% of previous on-farm trial users used Sentinel commercially in 2025

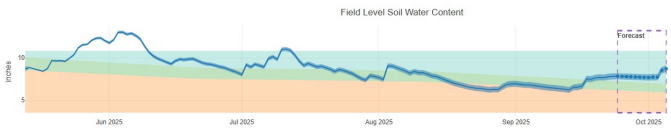


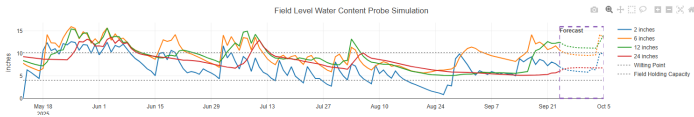
Coming in 2026 – Sentinel Irrigation and Sentinel Complete will provide soil moisture and crop water use insights.

- Completely remote soil moisture and crop water use insights
- Captures spatial variability in crop and soil water metrics
- Guaranteed daily insights
- 93% alignment with soil moisture probes

SENTINEL IRRIGATION

SENTINEL COMPLETE

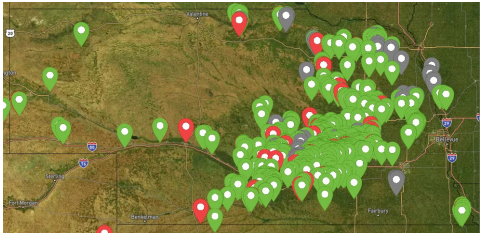


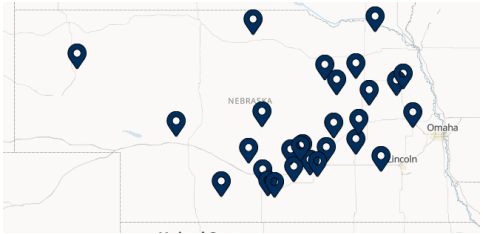


powered by NAVE

B-80

Customers throughout Nebraska are benefitting from Sentinel and being served by our Sentry Network.





- Sentry Network of Certified Service Providers (CSPs)
  - 28/39 (72%) are in Nebraska
  - CSPs are trained in our platform
  - CSPs backed up by Sentinel RAM

- CSPs meet the following criteria:
  - Serve agronomy needs in-season
  - Leverage data for agronomic decisions
  - Focus on farm profitability
  - Align with natural resource stewardship

SENTINELAG
Stay in Touch

Sign up for our Newsletter

Find us on Social Media

Keep us on your Calendar

Contact Us

info@sentinelag.tech
(531) 324-0634
1071 County Road G
Ithaca, NE 68033

Coming Soon

SENTRY NETWORK SUMMIT

January 22nd & 23rd 2026

Scott Conference Center
6450 Pine St,
Omaha, NE 68106

Appendix C: Nitrate Legacy and Drinking Water Access Subcommittee Meeting Materials

Attachment 1

Members List

NITRATE LEGACY AND DRINKING WATER ACCESS
Brian Bruckner
Tom Downey
Matt Manning
Dean Settje
Marty Stange
Annette Sudbeck

Attachment 2

Meeting Schedule

DATE	***LOCATION***
July 14, 2025	Kearney
August 20, 2025	Kearney
September 24, 2025	Kearney
October 23, 2025	Virtual
November 21, 2025	Kearney
December 16, 2025	Norfolk

Attachment 3

Presentation Materials

Beneath the Plains:
Nitrate in Groundwater and Our Health

Jesse E. Bell, PhD.

Claire M. Hubbard Professor of Water, Climate and Health
Director, Water, Climate and Health Program at UNMC
Director, Water, Climate and Health at Daugherty Water for Food Global Institute
UNMC College of Public Health
UNL School of Natural Resources

THE DAUGHERTY WATER for FOOD GLOBAL INSTITUTE at the University of Nebraska

University of Nebraska System

COLLEGE OF AGRICULTURAL SCIENCES AND NATURAL RESOURCES

University of Nebraska Medical Center

Public Health is the science of protecting and improving the health of people and their communities


Water Quality & Health

Water Quality & Health in Nebraska

WATER QUALITY

Nebraska's nitrate problem is growing worse and it's likely harming our kids

Yanqi Xu Flatwater Free Press Oct 28, 2022 Updated Dec 5, 2022 8

Nebraska's nitrate problem is serious, experts say. Can we solve it?

Matthew Hansen and Yanqi Xu Flatwater Free Press Dec 31, 2022 Updated Jun 5, 2023 1

EDITOR'S PICK TOPICAL TOP STORY

FIGHTING NITRATES

Clean water doesn't come cheap: Nebraska towns are shelling out millions to treat nitrate-laced drinking water

YANQI XU Flatwater Free Press Dec 15, 2022 Updated Jan 20, 2023 3

Omaha World-Herald Search Omaha World-Herald

E-edition News Obituaries Opinion Huskers Entertainment Lifestyles Jobs 64° Sunny

Researchers detect insecticides in water, home near troubled Nebraska ethanol plant

Nancy Gaarder Jun 16, 2022 Updated Aug 24, 2022 3

Nitrates A Costly, Persistent Problem For Small Towns

by Grant Gerlock, NET News/Harvest Public Media

Cover crops like this rye grass growing in a harvested field of corn can allow farmers to use less fertilizer. (Photo by Grant Gerlock, NET News/Harvest Public Media)

Listen to this story: 03:25 / 04:36

October 23, 2015 - 6:45am

Nitrogen fertilizer on farm fields helps crops grow. But if there's too much left over in the soil, it can pollute water supplies as nitrates. A big city lawsuit in Iowa over nitrates has grabbed headlines, but many small towns have the same problem.

Earlier this year, Des Moines, Iowa, made news when the city announced it would sue farmers in a legal battle over fertilizer. The city's water supply from the Des Moines and Raccoon Rivers often surpasses the legal limit for nitrates (10 mg/L), which commonly appear in water contaminated by runoff from farm fields.

Too many nitrates are a health hazard, particularly for infants whose blood can lose its ability to absorb oxygen. So nitrates must be reduced or removed, but cleaning nitrates from the city's water is a huge expense. When nitrate levels rise above the safe drinking water limit, Des Moines fires up a filtering system that costs thousands of dollars to operate each day.

Des Moines is unusual, though. In most cases, nitrate pollution is not a big city problem. It's most often a small town problem, says Bruce Dvorak, professor of environmental engineering at the University of Nebraska-Lincoln.

Creighton, Nebraska water operator, Kevin Sonnichsen, stands before the $1.3

"Nitrates in drinking water is the most common source water problem in the region," Dvorak said. "And for many small towns this is a very major cost issue. It may mean water rates, if they're lucky, only *double*. And some cases it may go up by eight to ten times."

That's the case in Creighton, a small town in northeast Nebraska. Creighton installed a $1.3 million water filtering system in 1993 to reduce nitrate levels in town's drinking water. It has been running ever since, pulling nitrates out of about 300,000 gallons of water per day.

Omaha World-Herald

MIDLANDS

SUNDAY, MAY 3, 2009

SECTION B

Water from this spring-fed spigot runs constantly in downtown Steele City, according to Margo D'Angelo, who owns a bar across the street. She says residents fill up water jugs from the spigot every day. Steele City, with a population of 58, has been under a state order to find a clean water source since 2007.

Nebraska towns pay more for water

Communities are collectively paying millions of dollars to fight nitrate contamination as they watch their bills increase

By Jessica Fargen Walsh
SPECIAL TO THE WORLD-HERALD

Residents in Nebraska towns as big as Hastings and as small as Glenvil have one thing in common these days: higher water bills.

That's because a growing number of communities, most of them small, are spending collectively millions of dollars to build water pipelines to other towns or drill test wells or permanent wells because nitrate contamination has made their water unsafe to drink under federal standards.

In one of many examples, Edgar, with a population of about 600, is building a water line to Fairfield, about 12 miles away, at a cost of $2.99 million. While federal grant and loan money is covering the costs, residents face higher water bills.

Nearly 33,000 Nebraskans are affected by nitrates in their drinking water. Nitrates are seen as a public health danger because excessive amounts can cause blue-baby syndrome, which reduces the amount of oxygen in the blood. Some researchers believe nitrates in the groundwater also have a link to some types of cancer. Nebraska's age-adjusted pediatric cancer rate is the highest in the Midwest and seventh-highest in the country.

See Nitrates: Page 2

NITRATE-N CONCENTRATIONS IN NEBRASKA

Most recent recorded concentrations of 18,299 wells from 1999-2018

Nitrate Levels

0.01 to 7.45 mg/L 7.5- 9.99 mg/L 10 - 20 mg/L More than 20 mg/L

NOTE: Empty areas indicate no data reported, not the absence of nitrate in groundwater.

SOURCE: Quality Assurance Agricultural Database for Nebraska Groundwater, 2018 THE WORLD-HERALD

Nitrate & Drinking Water

85% get their home water from groundwater

Over 360,000 residents get their water from private wells

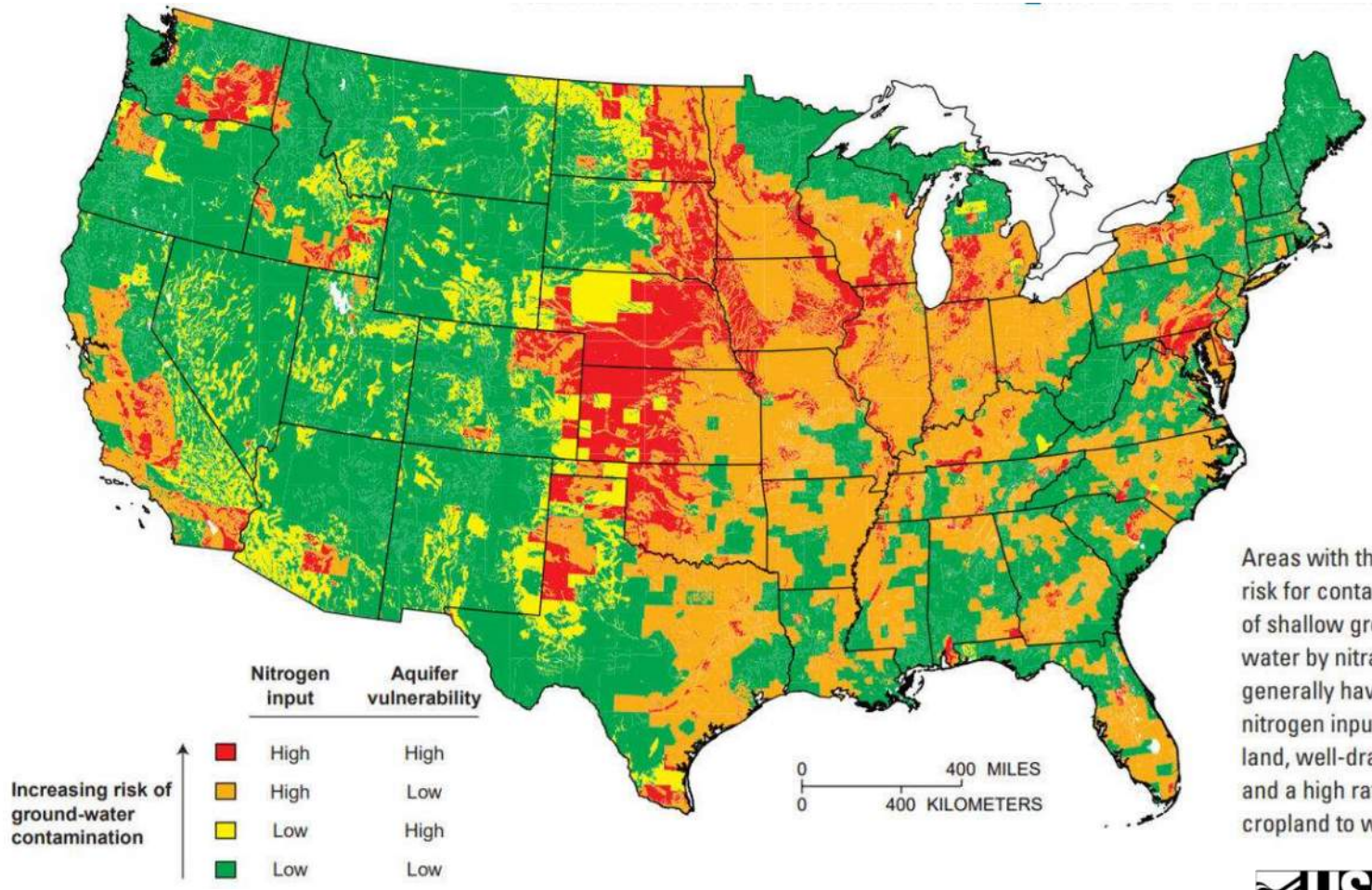
Sources: Nitrogen fertilizers, animal and human waste

Regulatory limit: 10 mg/L as NO_2-N (USA)

Greatest exposure

- Agricultural areas
- Private wells
  - Not regulated
  - Sparse measurements

Areas of Highest Risk of Nitrate Contamination

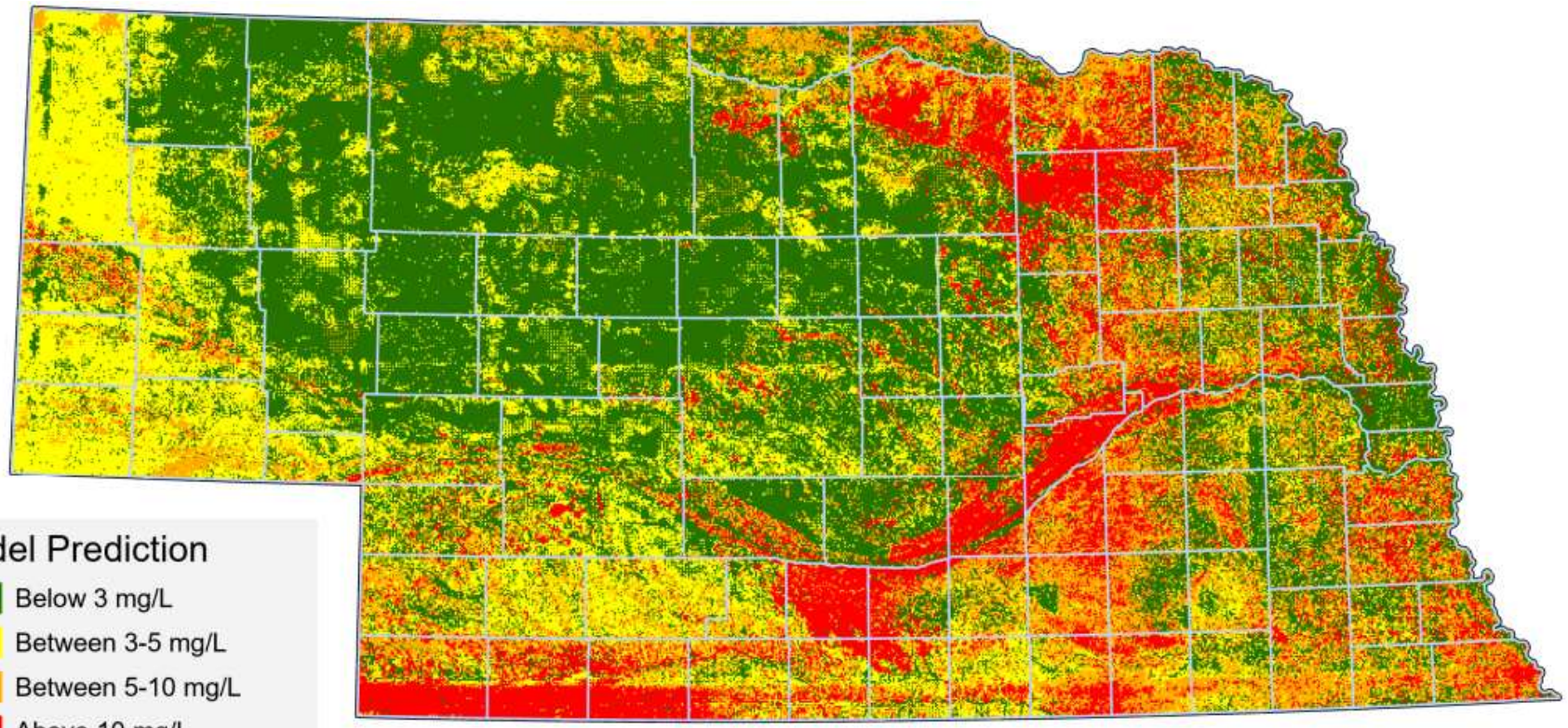


Areas with the highest risk for contamination of shallow ground water by nitrate generally have high nitrogen inputs to the land, well-drained soils, and a high ratio of cropland to woodland.

USGS science for a changing world

N 2025

Nitrate impacts most of Nebraska



Model Prediction
- Below 3 mg/L
- Between 3-5 mg/L
- Between 5-10 mg/L
- Above 10 mg/L

Credits: NDEE Drinking Water and Groundwater Division
Spatial Reference: NAD 1983 State Plane Nebraska FIPS 2,600 Feet
Projection: Lambert Conformal Conic

NEBRASKA
DEPT. OF ENVIRONMENT AND ENERGY

2025

Nitrate & Human Health

Regulatory limits of nitrate in drinking water are set for infant development of methemoglobinemia, not for other health outcomes

Numerous scientific studies have looked at the relationship of nitrate in drinking water on human health

High concentration of nitrate in drinking water has been linked to adverse health outcomes

Strongest links:

- Minor health ailments
- Methemoglobinemia
- Preterm birth issues
- Birth defects
- Pediatric cancers
- Adult cancers

N-nitroso compound (NOC) formation from ingested nitrate (drinking water & diet)

Oral bacteria: **Nitrate -> nitrite**

Nitrite + stomach acid

↓

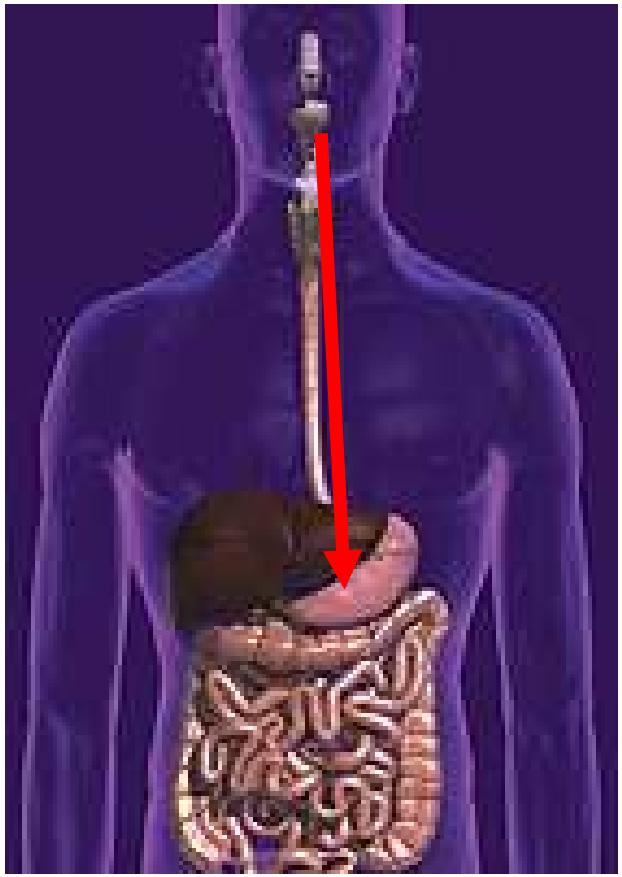
N_2O_3 **+**
amines/amides

↓

NOC

↑ Heme iron (red meat) Thiocyanate (smoking)

↓ Antioxidants (vitamin C)



Adult Health Issues

Increased heart rate, nausea, headaches, and abdominal cramps

Cancers

Colorectal cancer (5 studies; 4 positive)

Thyroid disease (3 positive studies)

- Increase risk of thyroid cancer (5 mg/L)

Kidney cancer (2 studies; 2 positive)

Bladder cancer (4 studies; 2 positive)

Non-Hodgkin lymphoma (3 studies; 1 positive)

Alzheimer's, Diabetes And Parkinson's Disease

Ward et al. 2018

Research in Iowa

- Long-term ingestion of elevated nitrate in drinking water was associated with an increased risk of bladder cancer among postmenopausal women. *Jones et al. 2016*

- High nitrate levels in public drinking water and private well use may increase ovarian cancer risk among postmenopausal women. *Inoue-Choi et al. 2015*

- Exposure to total trihalomethanes in drinking water is associated with the risk of rectal cancer. Nitrate in drinking water was not associated with risk of colon or rectal cancers. *Jones et al. 2019*

- Positive association between a relatively low dietary intake of nitrite from processed meats and stomach cancer risk in postmenopausal women. No association between long-term exposure to nitrate or TTHM levels in public water supplies and the risk of these digestive system cancers. *Buller et al. 2021*

Health Issues in Children

Multiple health issues have been identified in children

- Methemoglobinemia (Infants less than 6 months)
- Pediatric brain cancers (2 studies; 2 positive)
- Non-Hodgkin Lymphoma (3 studies; 1 positive)
- Non-Hodgkin Lymphoma had a three-fold increase in risk with nitrates and atrazine in Nebraska study (Rhoades et al 2013)

Ward et al. 2018

Maternal & Fetal Health Issues

CDC report 1996 showed a cluster of spontaneous abortions (miscarriages) in rural Indiana

- Private wells 19-26 mg/L

California study found an increase in spontaneous preterm births with drinking water nitrate of 5 to 10 mg/L (Sherris et al. 2021)

Fetal growth restriction with exposure of high nitrate in drinking water (Coffman et al. 2021)

Fetal hemoglobin is particularly susceptible to oxidation

- Study shows elevated methemoglobin cord blood with exposure to nitrate during pregnancy (Tabacova et al. 1998)

Central Nervous System (CNS) Malformations

- 5 of 6 studies found a positive association with nitrate
- 4 of the studies had concentrations less than 10mg/L

Which groups are susceptible to negative health impacts of nitrate?

Populations of Concern

Pregnant people and their fetus

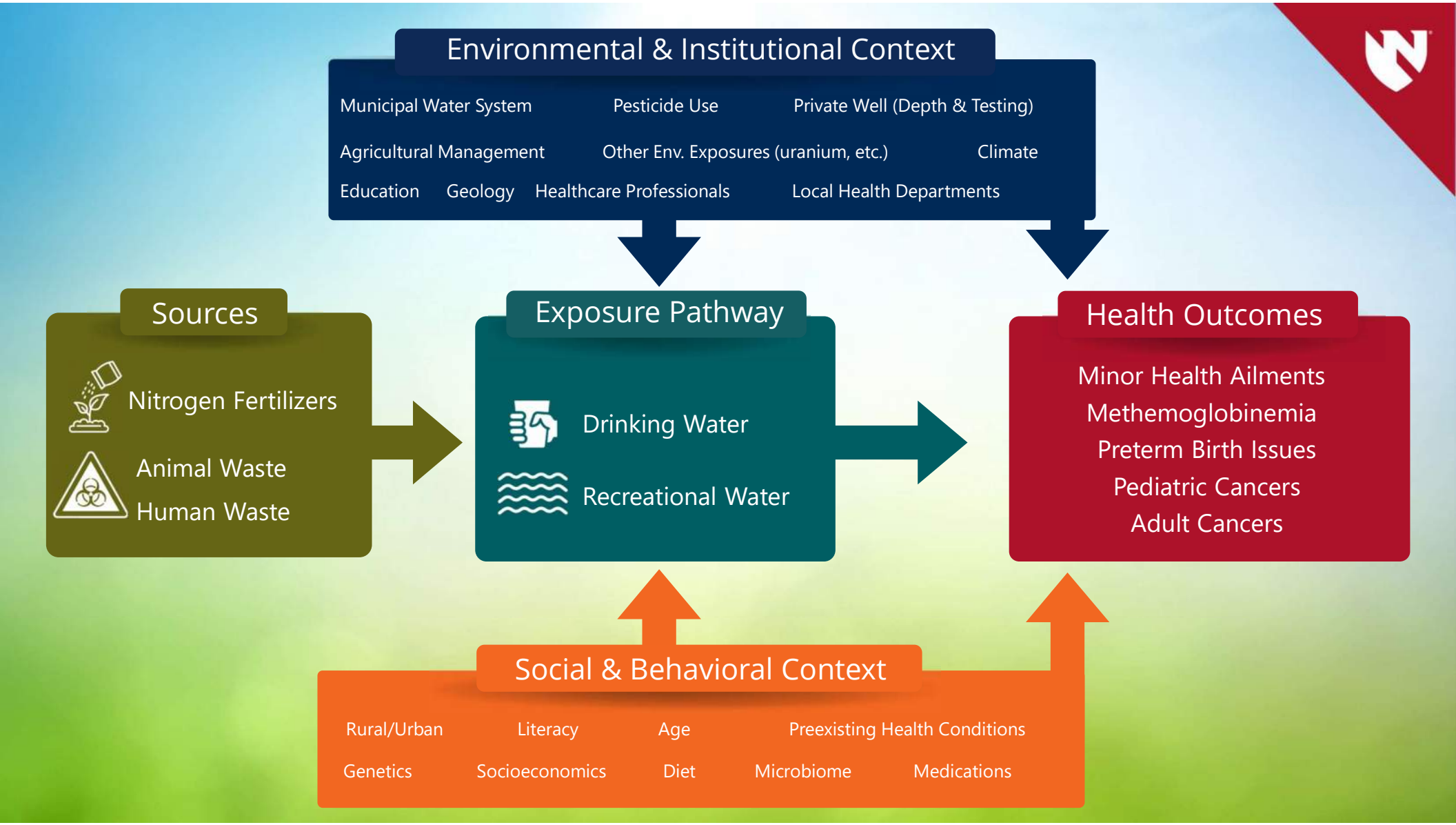
Young infants (< 6 months of age)

Children

People with oxygen transport or delivery conditions like anemia, cardiovascular disease, lung disease, sepsis and presence of other structural hemoglobin variants

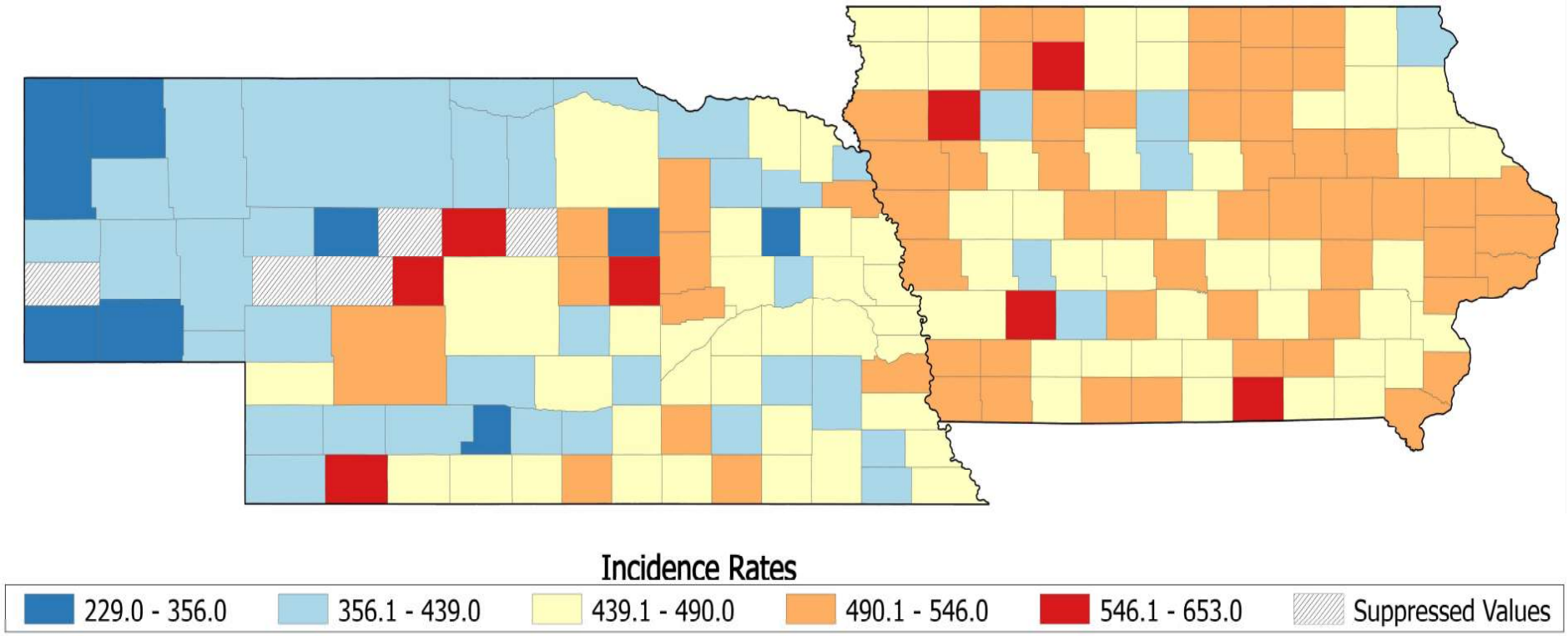
People with high nitrate in their well water

- Diet also plays a role


Environmental & Institutional Context
Municipal Water System
Pesticide Use
Private Well (Depth & Testing)
Agricultural Management
Other Env. Exposures (uranium, etc.)
Climate
Education
Geology
Healthcare Professionals
Local Health Departments
Sources
Nitrogen Fertilizers
Animal Waste
Human Waste
Exposure Pathway
Drinking Water
Recreational Water
Health Outcomes
Minor Health Ailments
Methemoglobinemia
Preterm Birth Issues
Pediatric Cancers
Adult Cancers
Social & Behavioral Context
Rural/Urban
Literacy
Age
Preexisting Health Conditions
Genetics
Socioeconomics
Diet
Microbiome
Medications

Health Concerns in Nebraska

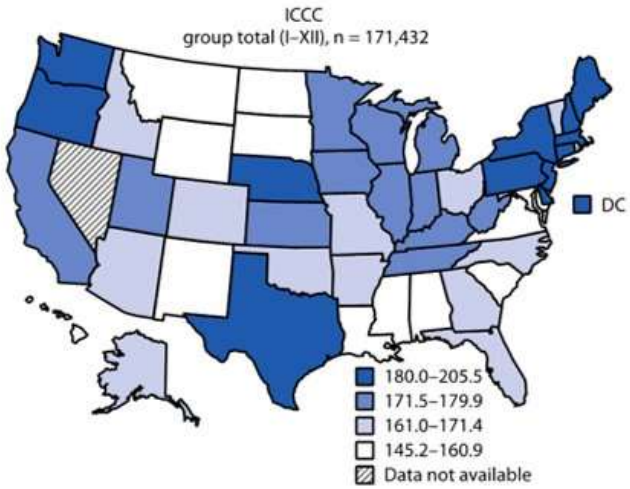
Iowa & Nebraska have 5 of the Top 25



3 in the Top 10

Centers for Disease Control & Prevention

Data from 2003 – 2014 and reported as age-adjusted incidence rates of childhood cancer per 1 million:



ICCC: International Classification of Childhood Cancer

United States	173.7
New Hampshire	205.5
New Jersey	192.3
Maine	190.5
New York	190
Pennsylvania	186.6
Connecticut	185.8
Nebraska	183.2
Texas	183.2
Oregon	182.6
Massachusetts	181.5

Siegel et al. Geographic Variation in Pediatric Cancer Incidence - US, 2003–2014. *MMWR*, 2018

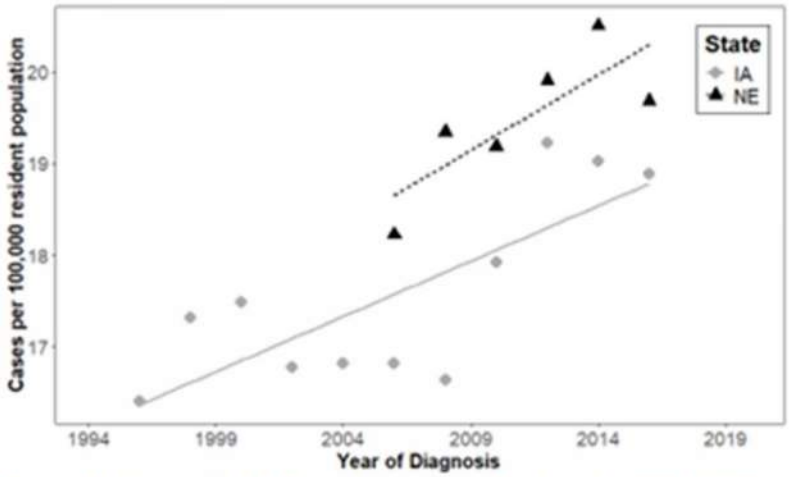
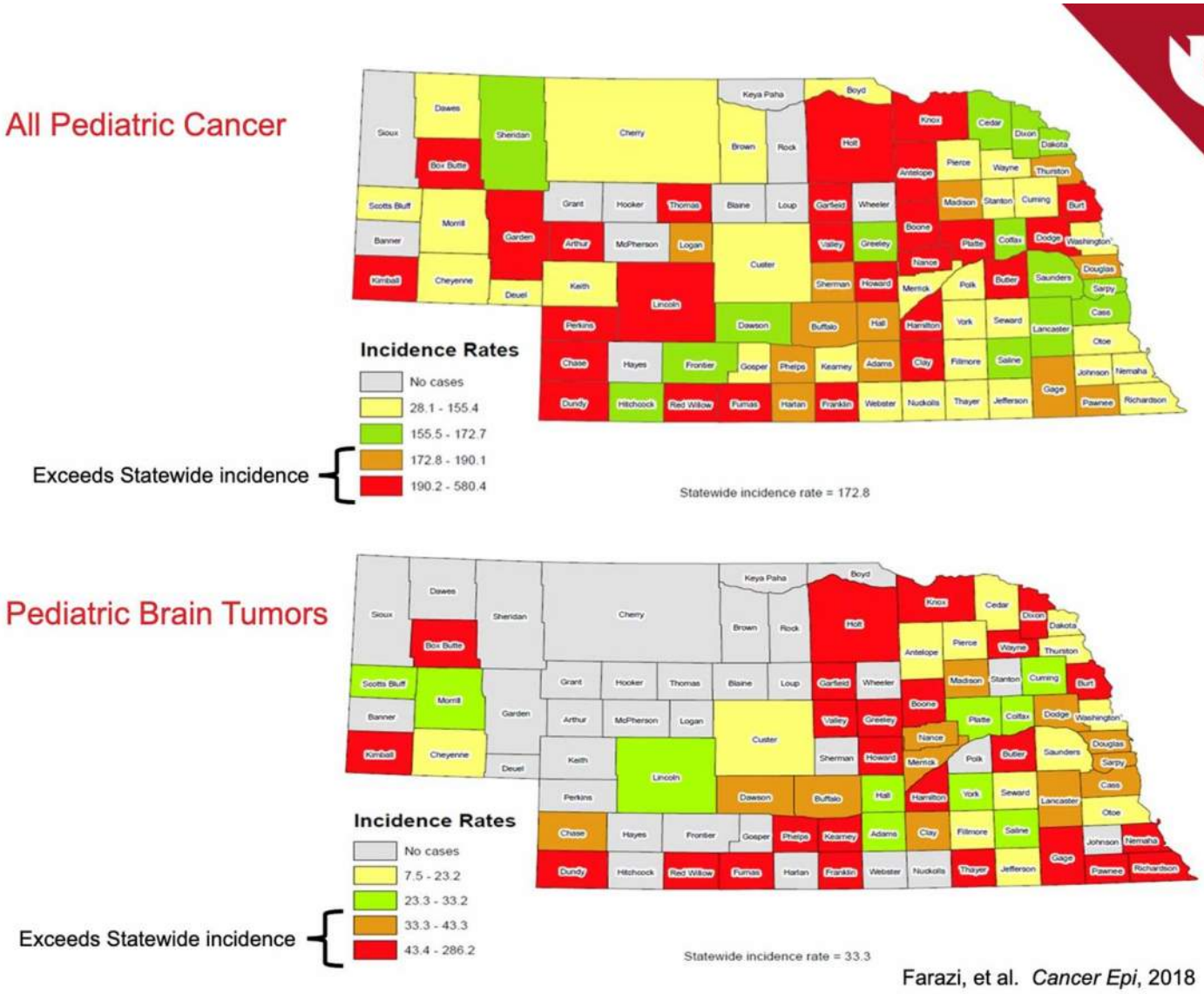


Figure 2. Change in PC Rates in Iowa and Nebraska (1994-2019)

Courtesy of Don Coulter, MD

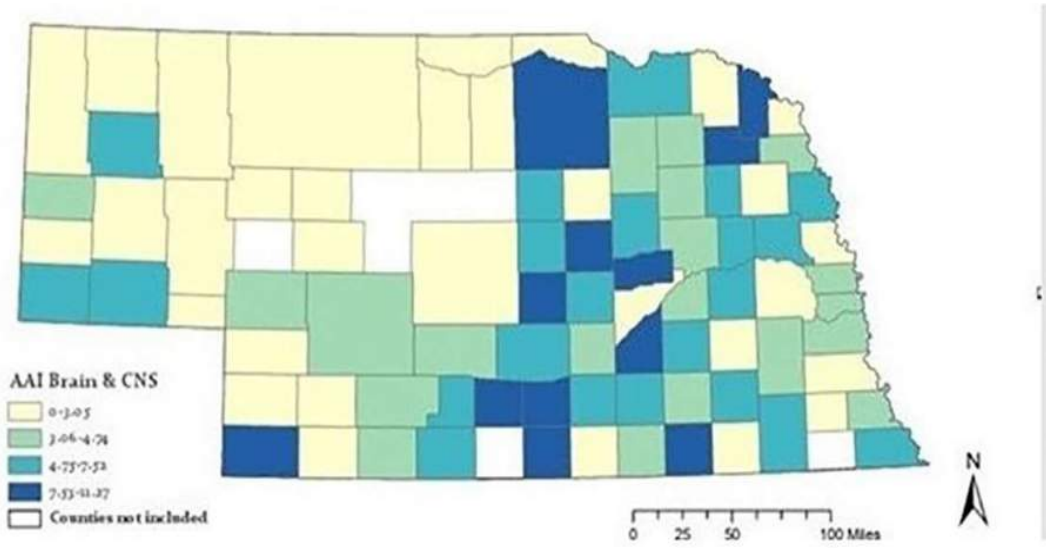
Incidence of pediatric cancers in Nebraska is among the **five highest** in the United States (Farazi et al., 2018).



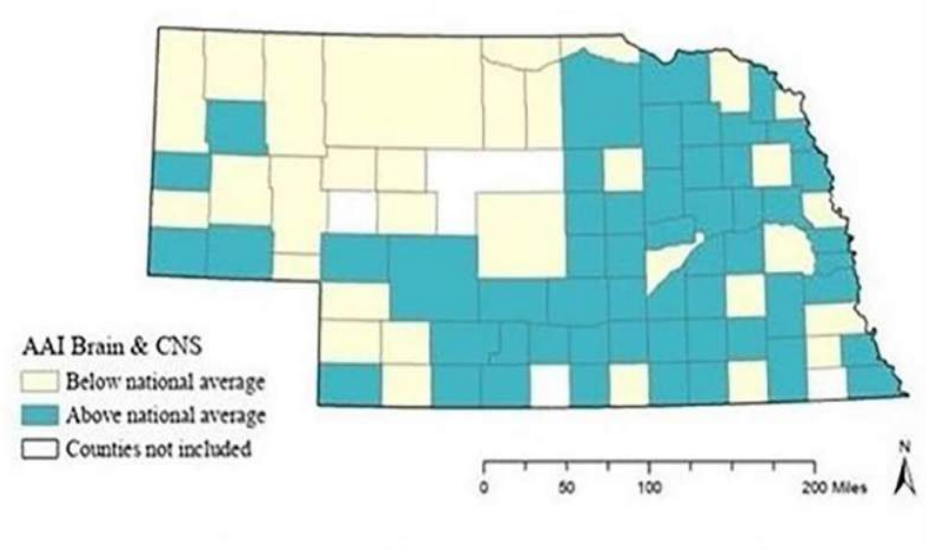
Courtesy of Don Coulter, MD

Pediatric Brain & other CNS Cancers 1987- 2016

Nebraska counties with elevated atrazine or nitrate levels reported more childhood cancers than counties with lower levels of these chemicals.



A



B

Relative to the national average, the age-adjusted incidence of pediatric brain and other CNS cancers is higher in 63% (54/86) of the Nebraska counties.

Ouattara et al., 2022 GeoHealth

Unexpected Costs

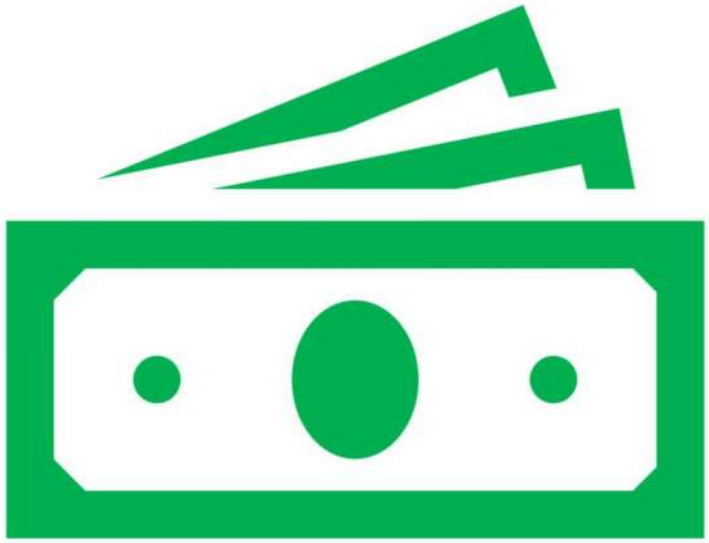
Moving

Financial burden

Higher rates of bankruptcy

Wisconsin study:

- $250,000-$1.5 billion in medical expenditures
- $1.3-$6.5 billion lost in productivity



Goals for Addressing Water Quality

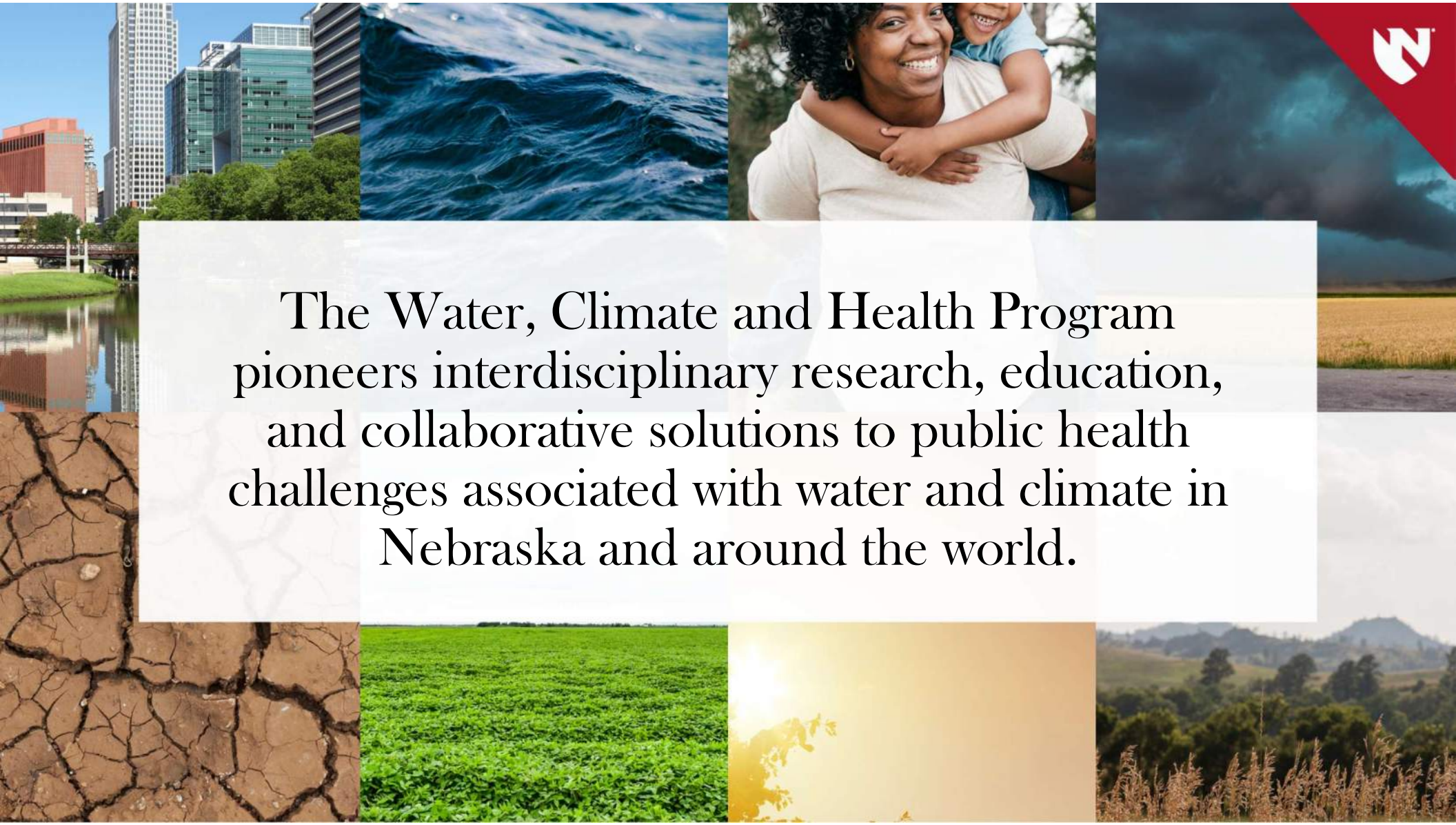
Identify at-risk areas and people

Encourage water testing

Find low-cost to no-cost solutions

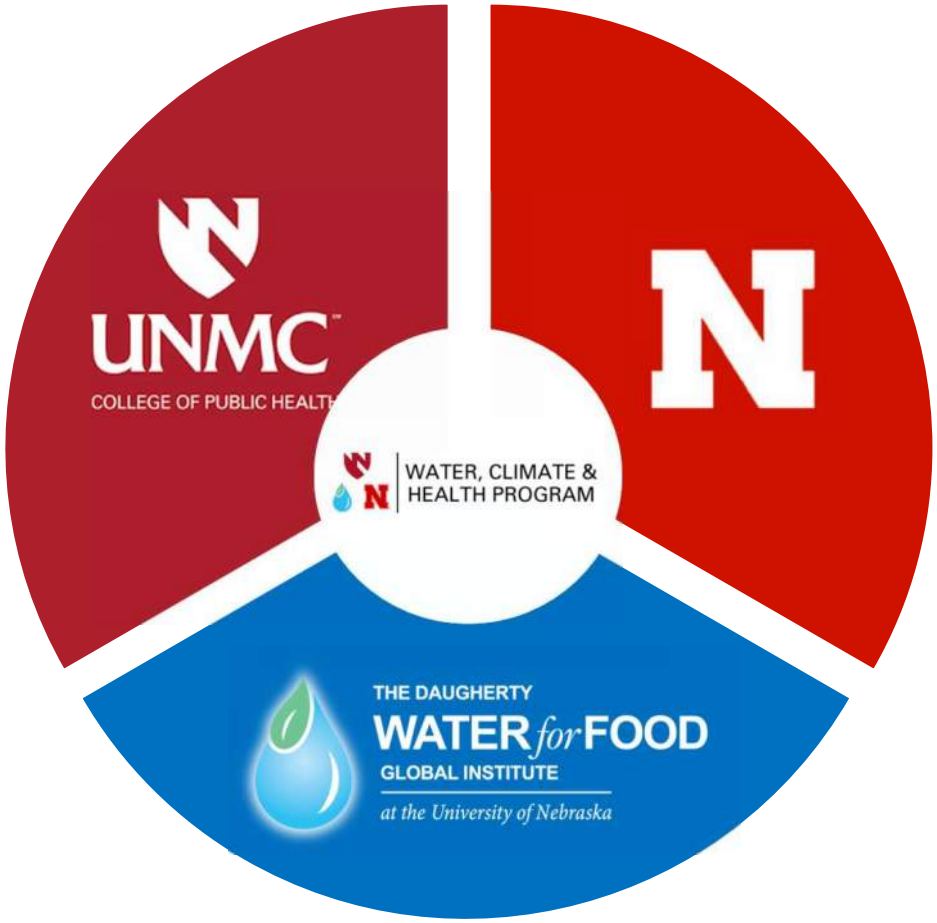
Maintain these water systems

Engagement and Outreach



The Water, Climate and Health Program pioneers interdisciplinary research, education, and collaborative solutions to public health challenges associated with water and climate in Nebraska and around the world.

A Multi-Institution Initiative



Our Foundational Commitments

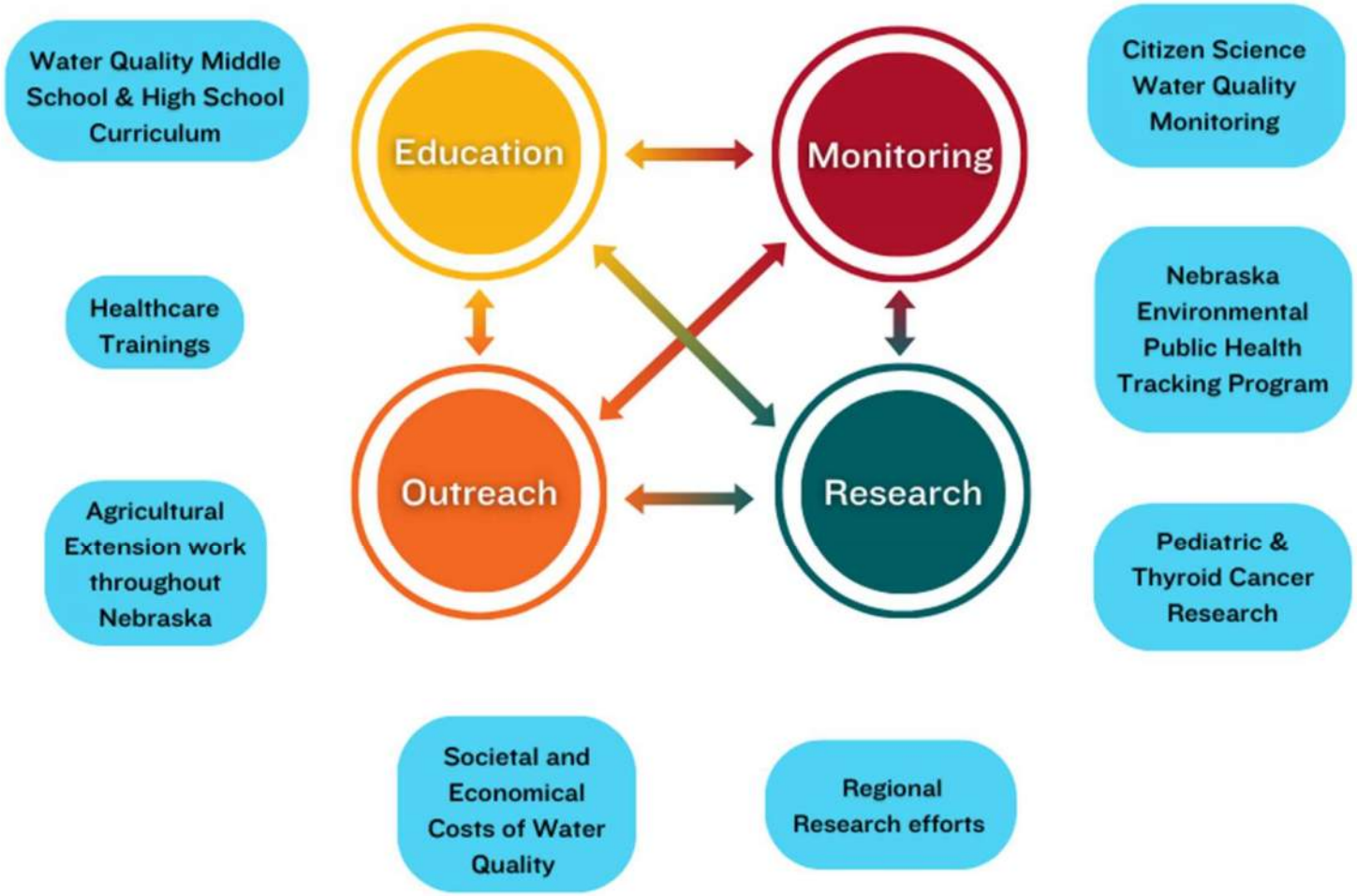
Research

Education

Engagement

Policy Development

Water Quality at the WCHP

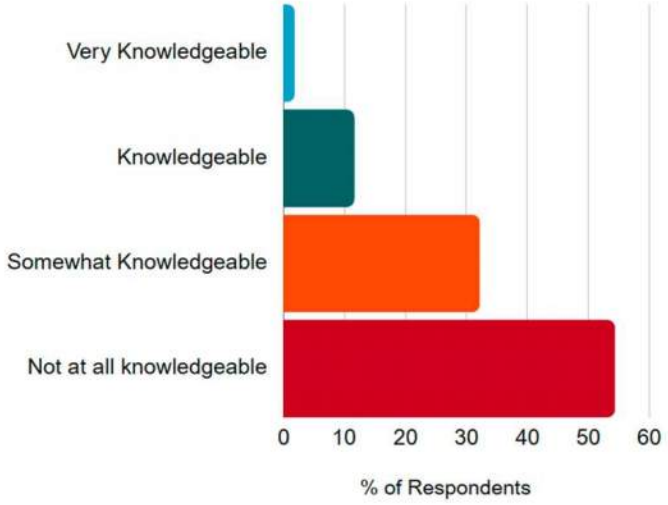


Communication: Diverse Opportunities

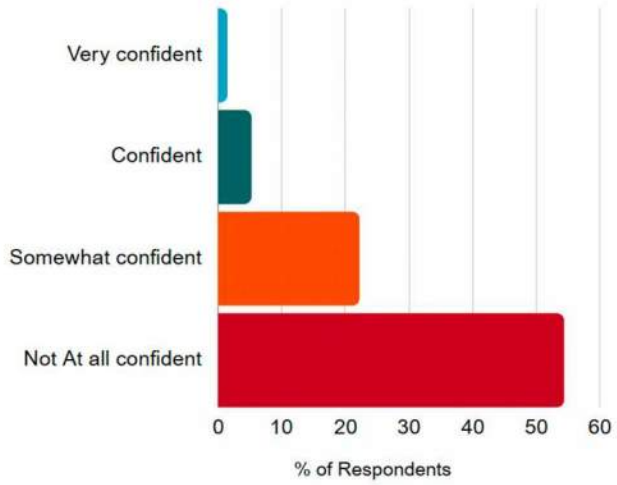
***689**
Healthcare providers (HCPs) surveyed

22
Natural Resource District employees (NRDs) surveyed

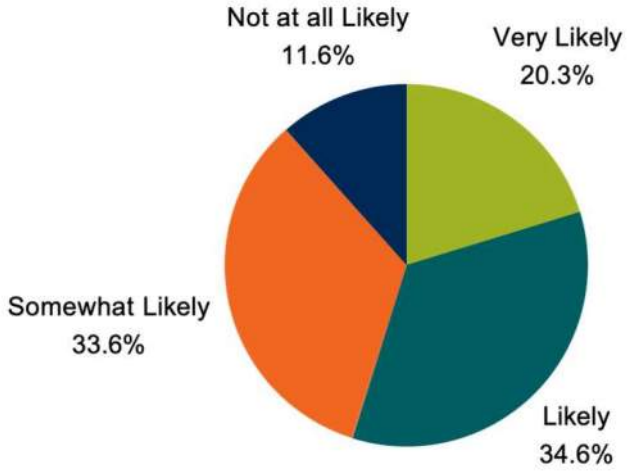
HCPs Self-Rated Knowledge of the Health Impacts of Nitrate Contaminated Drinking Water (n=655)



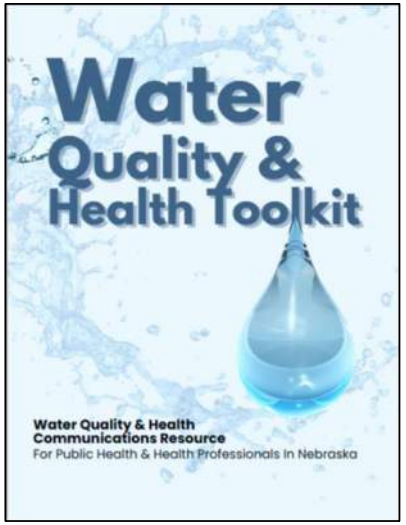
HCPs Self-Rated Confidence that They Can Advise Patients About the Health Impacts of Nitrate Contaminated Drinking Water (n=655)



HCPs Self-Rated Likeliness to Distribute Educational Products to Patients if they were Available (n=596)

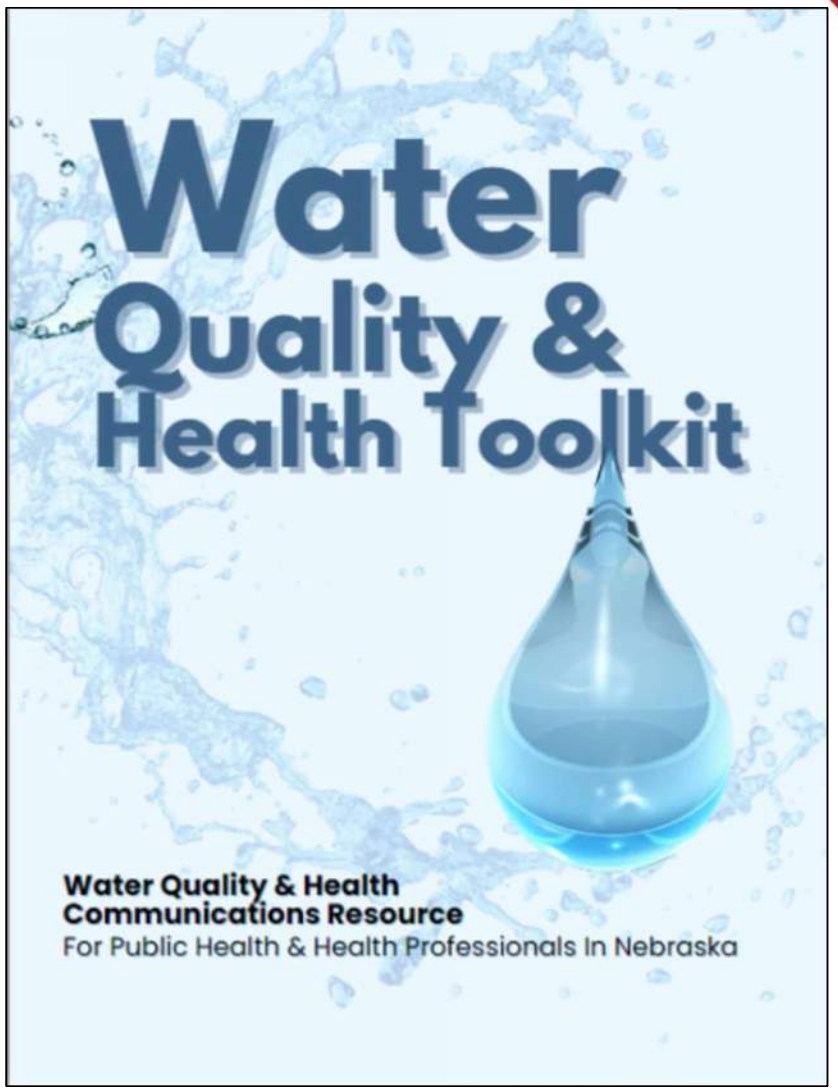


Water Quality Education & Engagement



Water Quality Communications for Public Health

1. The Basics of Water Quality
2. Water Quality and Health
3. Testing and Treating Your Water
4. Stakeholder Checklist
5. Water Quality Communication
6. Appendix/Resources



Protecting Nebraska's Waters Curriculum

Taylor Hamblin, PhD at the WCHP's *Research Seminar Series* in Spring 2023

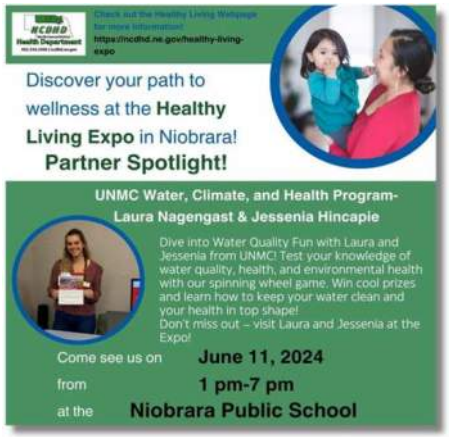
Middle and High School Curriculum that engages students with water quality issues.

Developed by WCHP's Taylor Hamblin, PhD

Connections and engagement throughout the state

WCHP In the Community & Beyond

Drs. Gold and Bell discussing private well testing on UNMC's *Rural Health Matters,* 2023



"Flatwater Free Press Forum on Nitrates in Nebraska's Water" in Norfolk, NE in March 2023.

Opportunities for Moving Forward

- Partnerships to educate and do outreach
- Improve testing of private wells
- Continue to research these issues – ***it would be great to expand our studies to include Kansas***
- Create education materials for stakeholders

The Water, Climate and Health Program is made possible through generous support provided by:

The Claire M. Hubbard Foundation

Our Key Partners:

Kristina Kintziger, PhD
Yeongjin Gwon, PhD
Elli Rogan, PhD
Mounika Kudary, MPH
Thomas Barnett, MPH
Jabeen Taiba, PhD
Kelli Gribben, PhD

Summer Woolsey, MPH
Krista Brown, PhD, MBA, MPH
Siddhi Munde, MS
Arianna Li, MS
Julie Petersen, PhD, MPH
Renata Rimšaitė, PhD
Kaycie Lane, PhD

Taylor Hamblin, PhD
Harshanee Jayasekera, PhD
Babak Fard, PhD
Lisa Willard

Special Thanks

Don Coulter, MD
Ann Anderson-Berry, MD, PhD

Get Involved

Learn More

Sign Up for Our Newsletter

Donate

go.unmc.edu/waterclimatehealth

jesse.bell@unmc.edu

@UNMC_WCHP

wchp@unmc.edu

Appendix D: Water Conservation and Quantity Subcommittee Meeting Materials

Attachment 1

Members List

WATER CONSERVATION AND QUANTITY
Joe Anderjaska
Don Batie
Brian Bruckner
Devin Brundage
Russ Callan
Steve Kyes
Matt Manning
John Shadle
Scott Schaneman

Attachment 2

Meeting Schedule

DATE	***LOCATION***
July 16, 2025	Kearney
August 21, 2025	Kearney
September 24, 2025	Kearney
October 21, 2025	Virtual
November 19, 2025	Kearney
December 16, 2025	Norfolk

Attachment 3

Presentation Materials

Appendix E: Financing and Incentives Subcommittee Meeting Materials

Attachment 1

Members List

FINANCING AND INCENTIVES
Brittany Bartak
Jesse Bradley
Devin Brundage
Jessica Groskopf
Brandon Hunnicutt
Scott Schaneman

Attachment 2

Meeting Schedule

DATE	***LOCATION***
July 21, 2025	Kearney
August 22, 2025	Gothenburg
September 24, 2025	Kearney
October 23, 2025	Virtual
November 13, 2025	Kearney
December 16, 2025	Norfolk

Attachment 3

Presentation Materials

*The mission of the Center for Agricultural Profitability is to **support informed decision-making in agriculture** through applied research and education.*

CENTER FOR AGRICULTURAL PROFITABILITY

Institute of Agriculture and Natural Resources

cap.unl.edu

CENTER FOR AGRICULTURAL PROFITABILITY

Institute of Agriculture and Natural Resources

Based in the Department of Agricultural Economics, CAP supports informed decision-making in agriculture through research, extension outreach, and education.

TRUSTED RESOURCES

- Land values + cash rents
- Custom rates
- Livestock budgets
- Crop budgets
- Land Link program

AG BUDGET CALCULATOR

Web-based enterprise budgeting and decision tool.

cap.unl.edu

Join our email list

WEEKLY WEBINARS

Topics related to farm and ranch management, profitability, economics and farm survival for producers and ag industry professionals.

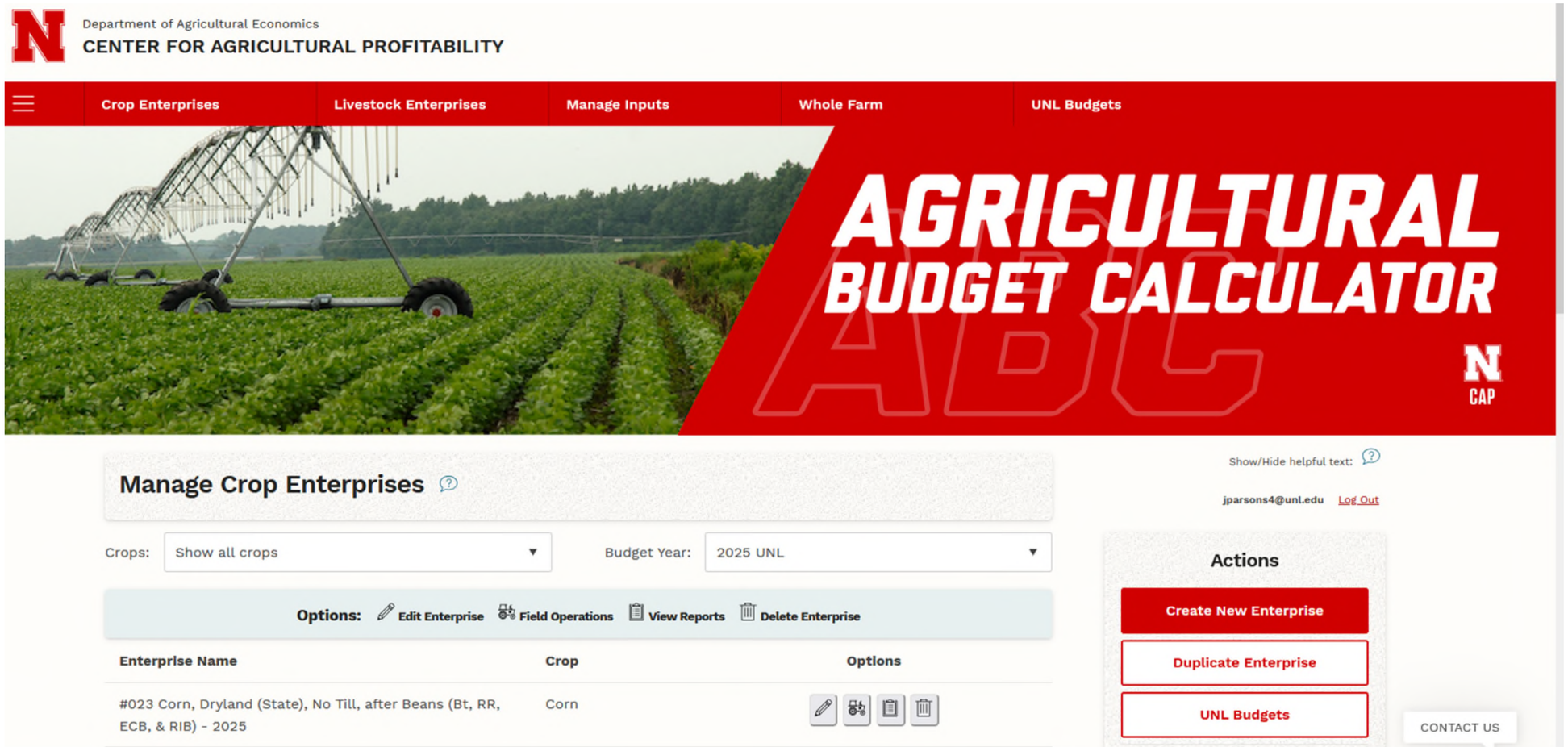
ARTICLES & PODCASTS

Fresh analysis and news to support informed decisions, published 2-3 times per week in articles and podcasts.

Phase I:
Exploring Incentive Program Participation with the Ag Budget Calculator (ABC)

- **Provide a proof-of-concept result on the feasibility of using the existing ABC online budgeting tool to provide decision-making support to Nebraska corn producers considering enrollment in one or more environmental incentive programs**

https://agbudget.unl.edu



re:generations™

Built to support farm legacies and consumer demand.

Nebraska Incentives

1. *Understand your program choices and the deadlines for each step.*

   Farmers enrolled in any other privately funded carbon or sustainability incentive program are **ineligible** for participation.

Enroll Now

First Come First Served

COVER CROP

Enroll the maximum amount you are considering planting.

Compensation	Requirements
$20/acre (new in 2023-2025)	Must provide FSA 578 and FSA subsidiary print. Cannot be enrolled in other federally funded programs like EQIP/CSP/RCPP. Plant a cover crop no later than NRCS accepted date. Must have corn, soybeans, or wheat in rotation.

Private-Sector Cover Crop Incentive Program

Adjustments to Field Operations

Add Fall Cover Crop Planting

Adjust Spring Burndown Herbicides

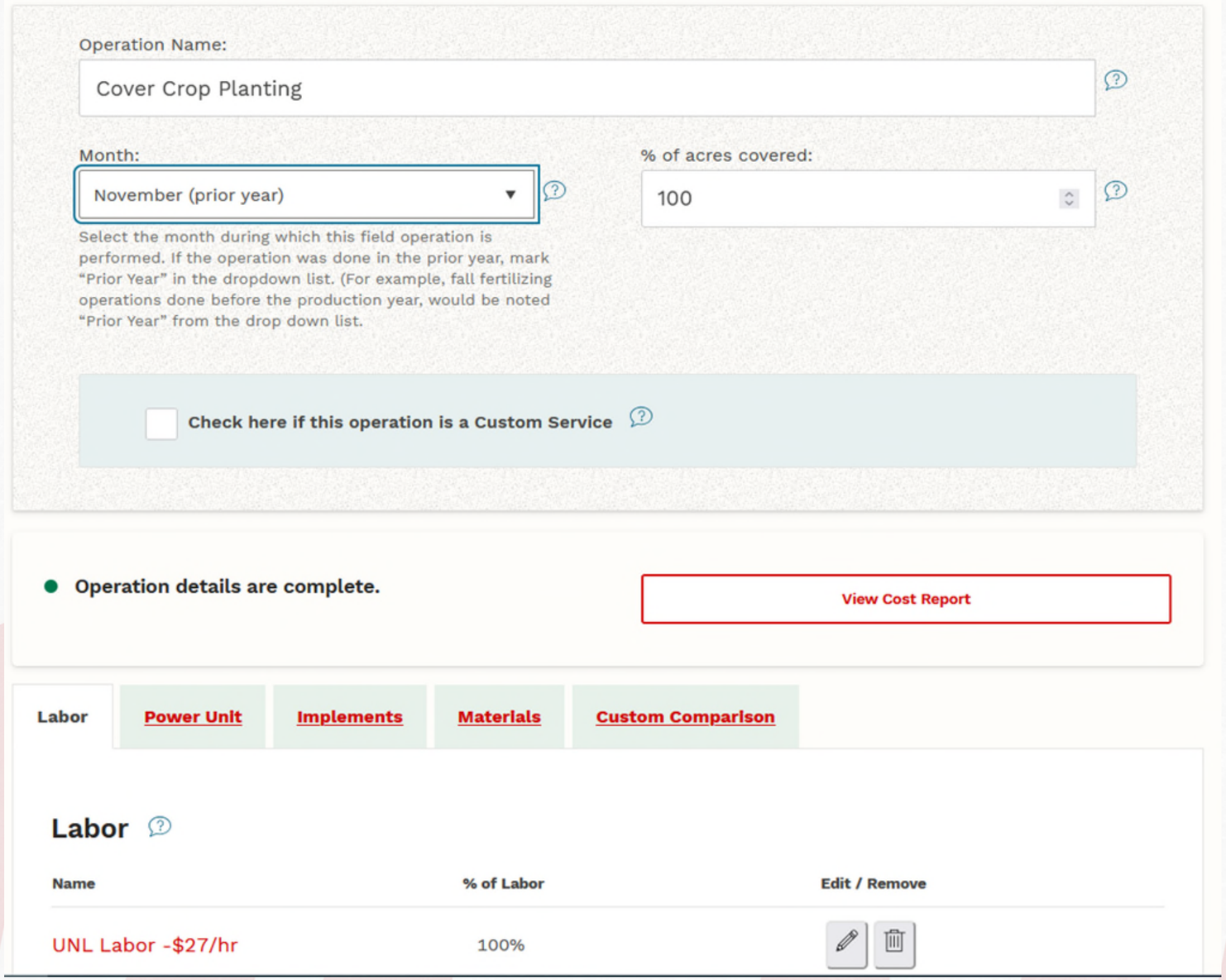
2025 UNL #023 Corn, Dryland (State), No Till, after Beans (Bt, RR, ECB, & RIB) - 2025

Total acres: 150 **Yield per acre: 145 bushels**

Field Operation Costs / Acre

Field Operation	Labor	Fuel	Repairs	Deprec.	Opp.	Total / acre
Spray Spring Burndown Herbicide	**Labor**	**Fuel**	**Repairs**	**Deprec.**	**Opp.**	**Total / acre**
UNL Medium Tractor >80 hp	0.50	0.35	0.21	0.76	0.13	
UNL Boom Sprayer			0.65	0.27	0.12	
	$0.50	**$0.35**	**$0.86**	**$1.03**	**$0.25**	**$2.98**
Spray Fertilizer	**Labor**	**Fuel**	**Repairs**	**Deprec.**	**Opp.**	**Total / acre**
UNL Medium Tractor >80 hp	0.99	0.70	0.43	1.52	0.27	
UNL Boom Sprayer			1.29	0.54	0.23	
	$0.99	**$0.70**	**$1.72**	**$2.06**	**$0.50**	**$5.96**
Plant - No Till	**Labor**	**Fuel**	**Repairs**	**Deprec.**	**Opp.**	**Total / acre**
UNL Large Tractor >150 hp	1.49	1.41	0.27	7.57	0.87	
UNL Planter - no till			10.45	1.63	1.03	
	$1.49	**$1.41**	**$10.71**	**$9.20**	**$1.90**	**$24.71**

Cover Crop Planting



Cover Crop Planting
(Includes cash and ownership costs)

Field Operation Costs / Acre

	Labor	Fuel	Repairs	Deprec.	Opp.	Total / acre
UNL Medium Tractor >80 hp	2.97	2.11	1.28	4.55	0.80	
UNL Drill - grass			0.50	1.15	0.91	
	$2.97	**$2.11**	**$1.78**	**$5.70**	**$1.71**	**$14.26**

Machine costs shown in this report do not include taxes, housing, insurance or licensing costs. 'THILM' expenses may be entered in detail for your own enterprises as cash overhead costs and summarized in 'Ownership and Overhead' costs.

Purchased Materials, Inputs, and Services

	% of acres applied	Qty applied / acre	Cost / unit	Total $ / acre
Cover Crop Seed	100	1 acre	$14.00/ acre	14.00
				$14.00

Spray Spring Burndown Herbicide

Spray Spring Burndown Herbicide
(Includes cash and ownership costs)

Field Operation Costs / Acre

	Labor	Fuel	Repairs	Deprec.	Opp.	Total / acre
UNL Medium Tractor >80 hp	0.99	0.70	0.43	1.52	0.27	
UNL Boom Sprayer			1.29	0.54	0.23	
	$0.99	**$0.70**	**$1.72**	**$2.06**	**$0.50**	**$5.96**

Machine costs shown in this report do not include taxes, housing, insurance or licensing costs. 'THILM' expenses may be entered in detail for your own enterprises as cash overhead costs and summarized in 'Ownership and Overhead' costs.

Purchased Materials, Inputs, and Services

	% of acres applied	Qty applied / acre	Cost / unit	Total $ / acre
Glyphosate 5# w/ Surfactant	100	32 ounce	$17.00/ gallon	4.25
21-0-0-24S	100	1.7 pound	$0.40/ pound	0.68
2,4-D Ester LV4	100	1 pint	$20.00/ gallon	2.50
				$7.43

Additional Revenue

Crop Residue

Crop Residue Income / Acre:

$ 0

Crop Insurance

Crop Insurance Income:

$ 0

Enter the estimated total amount of crop insurance income for this enterprise.

Other Income

For categories in this section, enter the estimated total income for this enterprise.

Government Payment Income:

$ 0

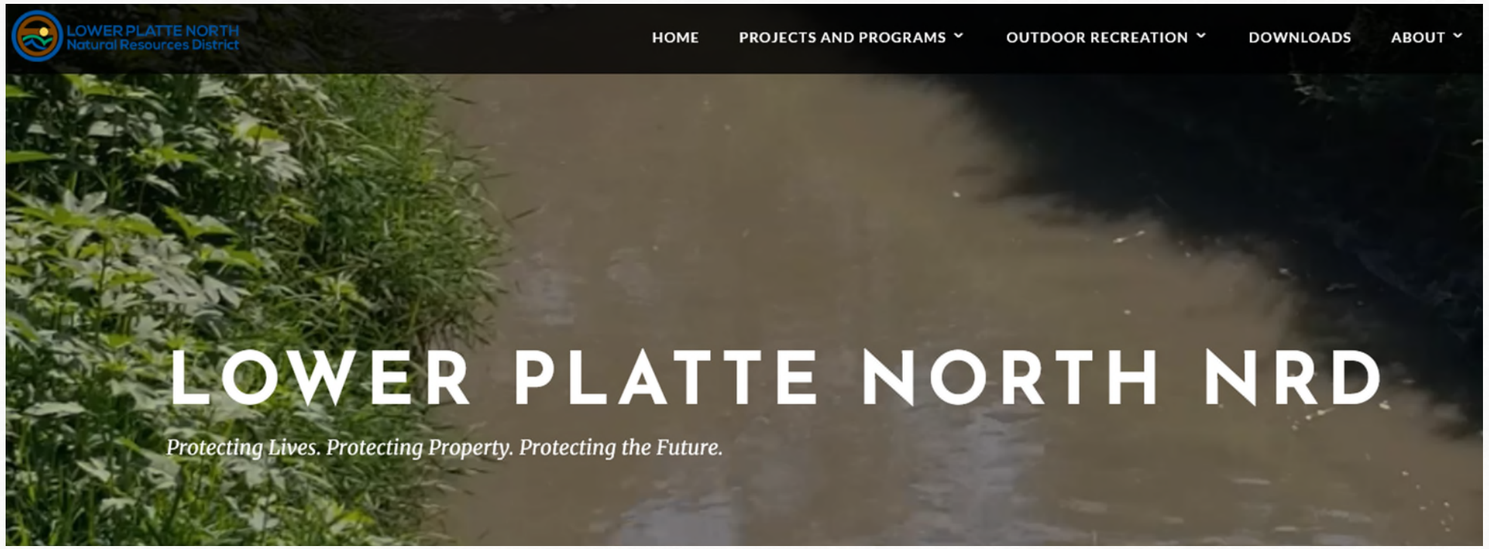
Other Enterprise Revenue:

$ 3000

Bottom Line: Partial Budget Comparison

Additional Revenue		Additional Costs	
ADM re:generations incentive program	$20.00	Operating Costs	$36.49
		Ownership and Overhead	$8.68
TOTAL	$20.00	TOTAL	$45.17

NET RETURN: -$25.17



Public-Sector Nutrient Management Incentive Program

Bottom Line: Partial Budget Comparison

Additional Revenue		Additional Costs	
NRD Incentive Program Payment	$9.00	Operating Costs – Soil Sampling	$9.00
Reduced Costs		**Reduced Revenue**	
Fertilizer Costs	$8.00		
TOTAL	$17.00	TOTAL	$9.00

NET RETURN: $8.00

Additional Revenue

Crop Residue

Crop Residue Income / Acre:

$ 0

Crop Insurance

Crop Insurance Income:

$ 0

Enter the estimated total amount of crop insurance income for this enterprise.

Other Income

For categories in this section, enter the estimated total income for this enterprise.

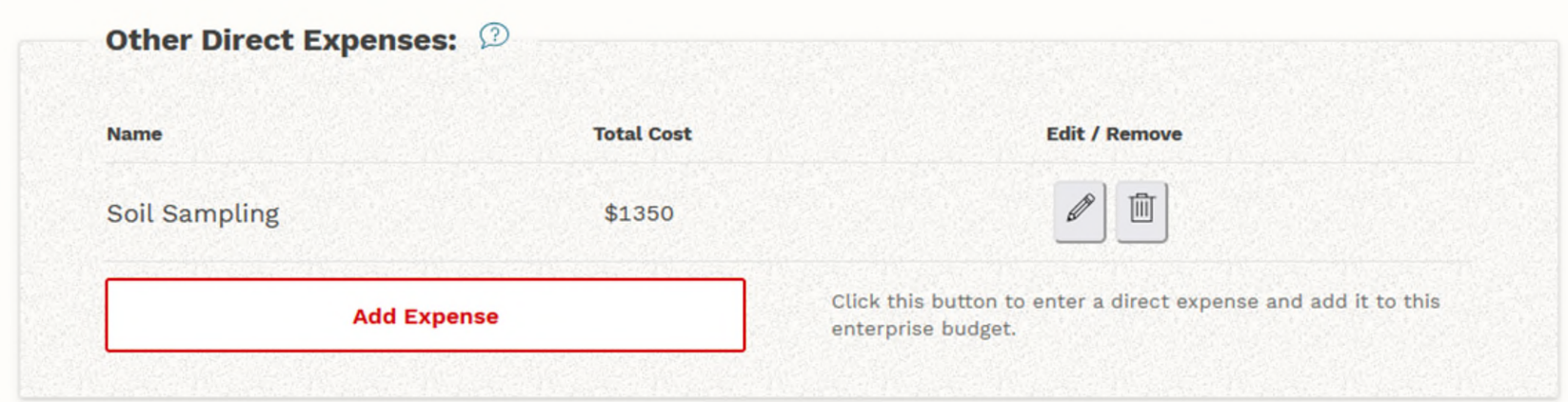
Government Payment Income:

$ 1350

Other Enterprise Revenue:

$ 0

Other Direct Expenses



Crop Comparison Tool

Equating Crop Enterprises

#023 Corn, Dryland (State), No Till, after Beans (Bt, RR, ECB, & RIB) - 2025

Net return above operating costs: **$239.61 / acre**

Base crop yield: **145 bushels**

Base crop price: **$4.00 / bushel**

Compare Base Crop using Alternate Material Input Price(s) (optional)

☐ Apply Alternate Input Price to Base Crop

Gross Margin Equivalent Yield Analysis

Alternative Crop	Projected Price	Equivalent Yield*
#023 Corn, Dryland (State), ADM, No Till, after Beans (Bt, RR, ECB, & RIB) - 2025	@ $4.00 / bu	151.8 bu
#023 Corn, Dryland (State), NRD, No Till, after Beans (Bt, RR, ECB, & RIB) - 2025	@ $4.00 / bu	145.0 bu
#023 Corn, Dryland (State), STACKED-ADM-NRD, No Till, after Beans (Bt, RR,	@ $4.00 / bu	151.8 bu

Gross Margin Equivalent Price Analysis

Alternative Crop	Projected Yield	Equivalent Price*
#023 Corn, Dryland (State), ADM, No Till, after Beans (Bt, RR, ECB, & RIB) - 2025	@ 145 bu/ ac	$4.19 / bu
#023 Corn, Dryland (State), NRD, No Till, after Beans (Bt, RR, ECB, & RIB) - 2025	@ 145 bu/ ac	$4.00 / bu
#023 Corn, Dryland (State), STACKED-ADM-NRD, No Till, after Beans (Bt, RR,	@ 145 bu/ ac	$4.19 / bu

CENTER FOR AGRICULTURAL PROFITABILITY

Institute of Agriculture and Natural Resources

cap.unl.edu

Funding Acknowledgement:

This project was made possible by the Nebraska Corn Development, Utilization and Marketing Board Project Number: 88-R-2223-06:
Making the Ag Budget Calculator (ABC) A More Effective Financial Decision Tool

Bottom Line: Partial Budget Comparison

Additional Revenue		Additional Costs	
NRD Incentive Program Payment	$9.00	Operating Costs – Soil Sampling	$9.00
ADM re:generations incentive program	$20.00	Operating Costs – Cover Crop Seed	$14.00
		Operating Costs – Pesticide	$3.72
		Operating Costs – Labor	$3.38
		Operating Costs – Fuel and Energy	$2.91
		Operating Costs – Repairs and Maintenance	$2.99
		Interest on Operating Capital	$0.71
		Ownership Costs – Equipment Depreciation	$3.82
		Ownership Costs – Equipment Opportunity	$1.87
Reduced Costs		**Reduced Revenue**	
Operating Costs - Fertilizer	$8.00		
TOTAL	**$37.00**	**TOTAL**	**$42.40**

NET RETURN: -$5.40

Nebraska Extension:
Your partner in education

Crystal A. Powers

Program Area Leader

Statewide Water Educator

N EXTENSION

Nebraska Water Center

Daugherty Water for Food Global Institute

THE DAUGHERTY WATER for FOOD GLOBAL INSTITUTE

at the University of Nebraska

Nebraska Extension translates science to co-create a better tomorrow with Nebraskans

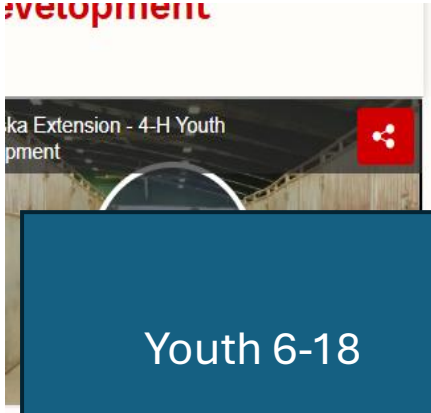
Strengthen Nebraska Agriculture & Food Systems

Inspire Nebraskans & Their Communities

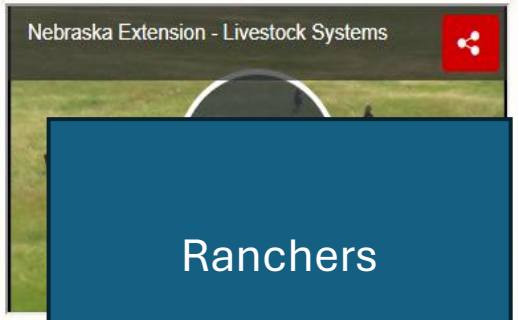
Enhance The Health & Wellbeing Of All Nebraskans

Current Extension water programs

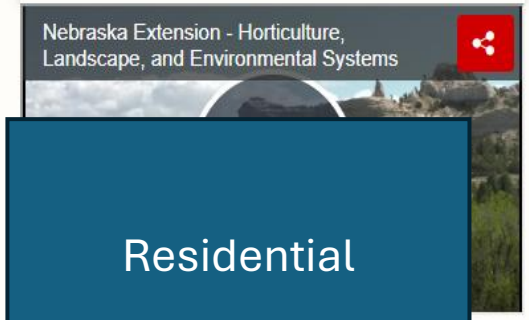
Connecting Nebraskans



Youth 6-18



Ranchers



Residential

Farmers & Ranchers

od, Nutrition
d Health

Public

Early Childhood
Program

Daycares

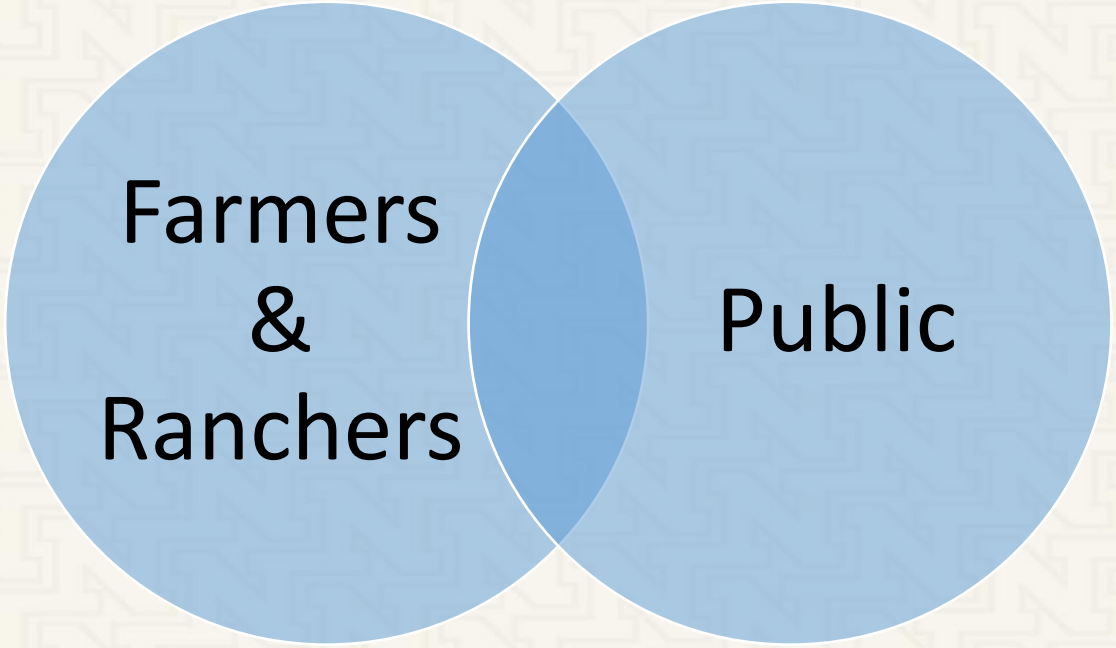
Rural Prosperity
Nebraska

Rural Communities

Water and
Cropping Systems

Farmers

Extension Topics



- Nitrogen
- Irrigation
- Soil health & other conservation
- Manure
- Land management
- Economics

- Health (WCS/FNH)
- Water testing & treatment (HLES/WCS)
- Lawn care (HLES)

Water Education

“All Nebraskans have a role to ensure a future with abundant, safe water.”
2020 Nebraska Nitrate Working Group

Water for Tomorrow

- Farms
- Homes

Safe Drinking Water Today

All Nebraskans:

- Communities
- Private wells

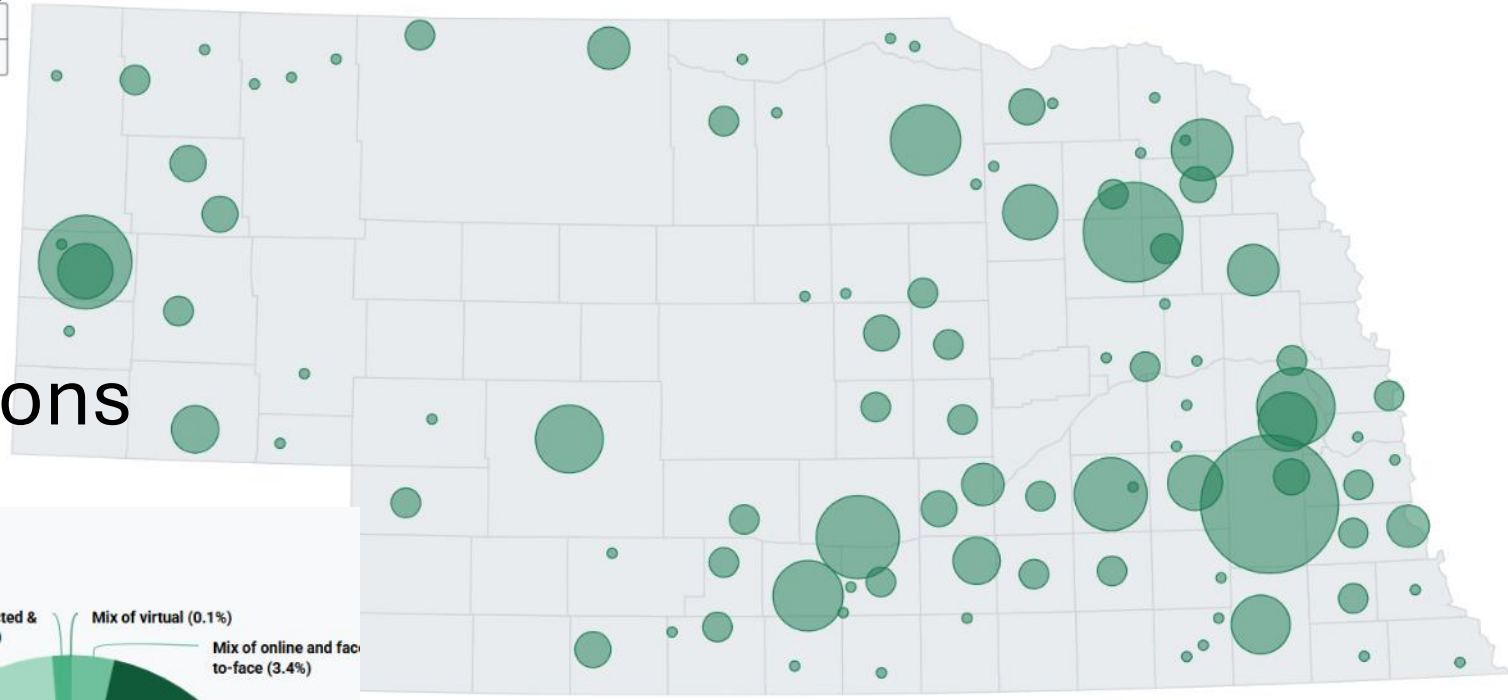
Strengthen Nebraska's agriculture through **growing more with less**

- Improving cropping systems productivity and profitability
- Protecting the water, soils, and biodiversity that forms the foundation of the places we call home

2024 Water & Crops team reach

Direct reach:

28K Nebraska crop operations



Participants

51,483

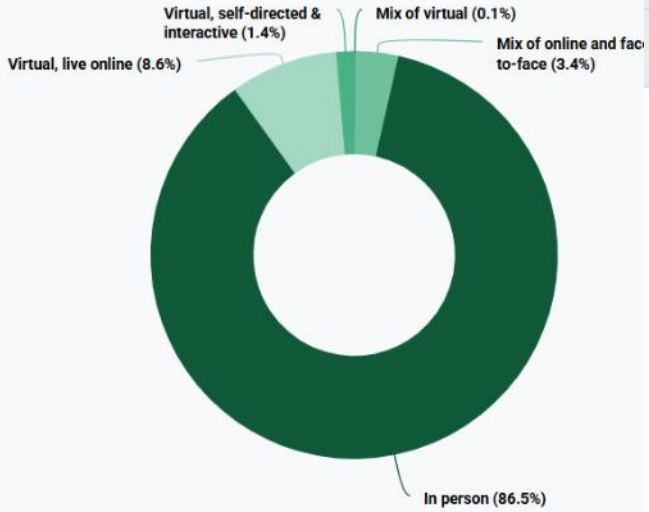
Sessions

1,187

Hours

3,480

Delivery Methods



Outreach:
11 million

Nitrogen and Water Management 2024

Reach

5,500 water & nitrogen

1,500 soil health

Impact

$10.50/ac from 4Rs Nutrient Stewardship Day

98% of attendees at Soils School improved understanding

100% of Master Irrigator respondents had an intended follow-up action

“All Nebraskans have a role to ensure a future with abundant, safe water.”
2020 Nebraska Nitrate Working Group

Nebraska On-Farm Research Network

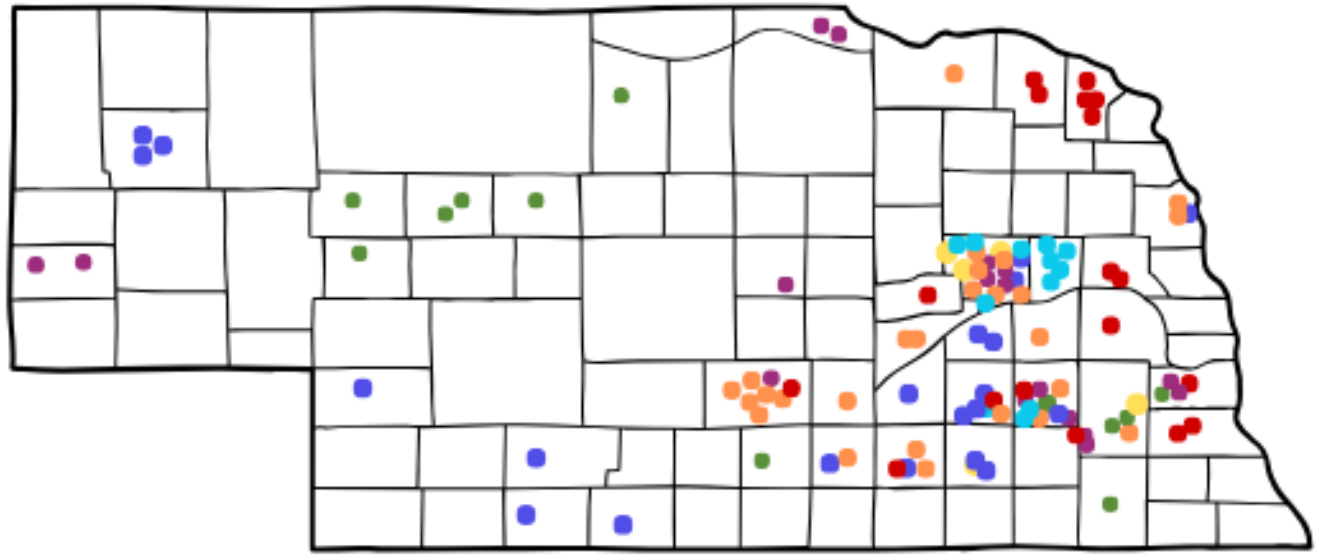
After Attending Our Research Results Meetings

87% Of attendees learned new information on technology.

92% Of attendees learned new information on crop production.

88% Of attendees learned new information on how to interpret statistical results.

77% Of attendees learned new information on crop protection.



2025 Studies

- Cover crops
- Crop Production
- Fertility & Soil Management
- Non-Traditional
- Equipment
- HICCIP
- Crop Protection

On-Farm Research participants implement their adoptions for an average of 7-8 growing seasons, with an average savings between:

$15–30 per acre on average

An Estimated

$10.6 million in total program impact

UNL TAPS
TESTING AG PERFORMANCE SOLUTIONS

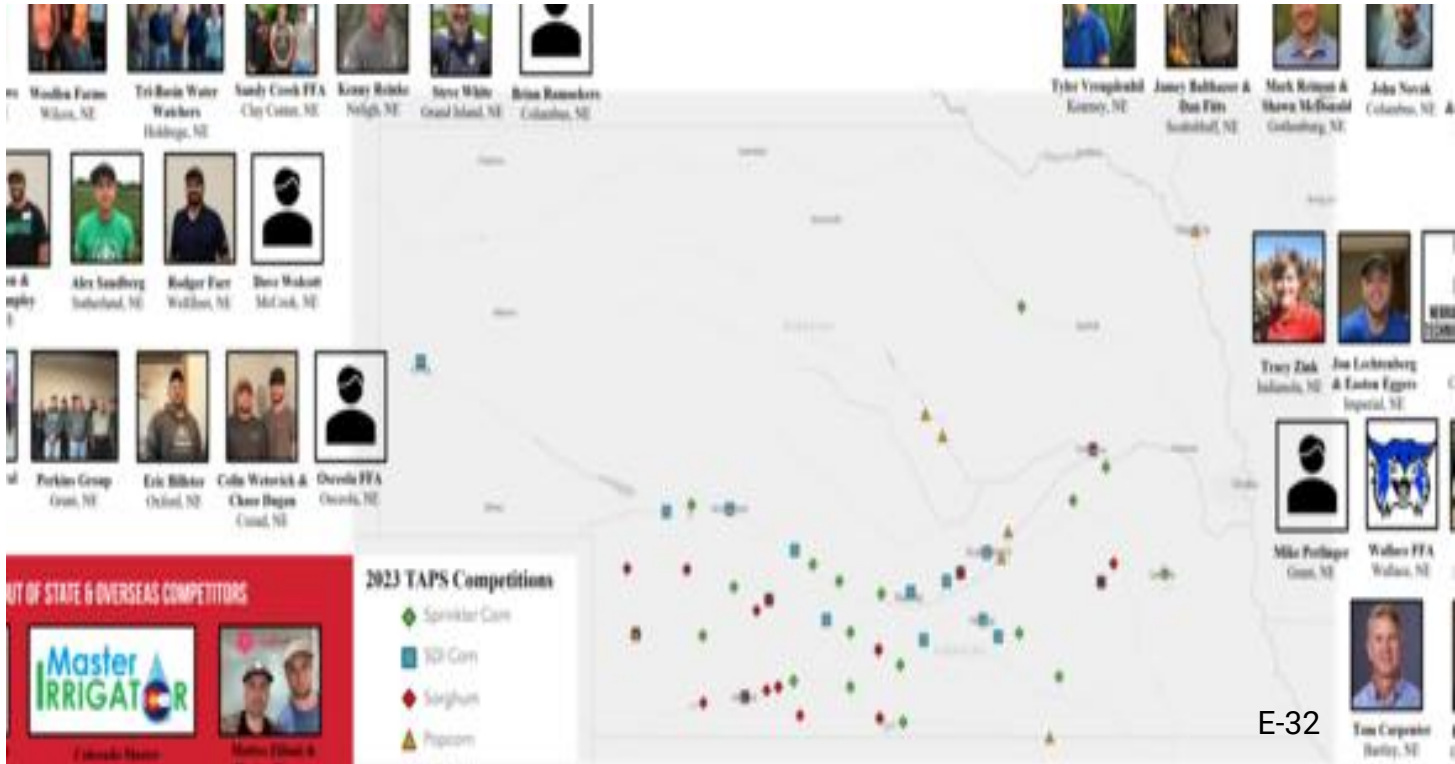
"Directly from the competition I have changed my nitrogen rates seeing that top 30% of yields from the competition many times have a wide range of nitrogen applied. This means the little extra nitrogen that many believe boosts the yield typically does not provide the benefit. I now apply at or below the UNL rate..." Ryan Hanousek

413 participants since 2017

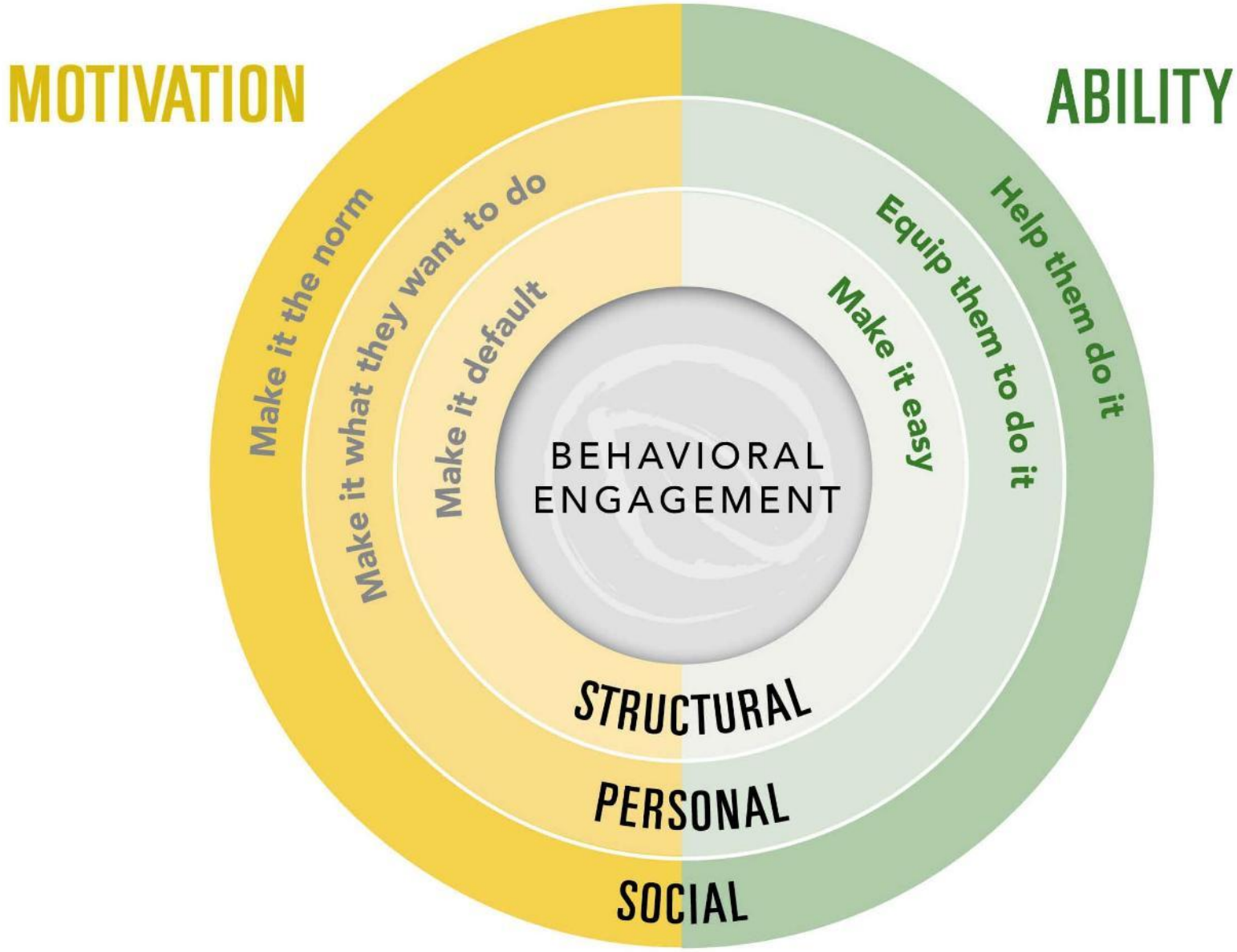
106 industry partners

86% adopted new management practices

75% adopted new ag tech

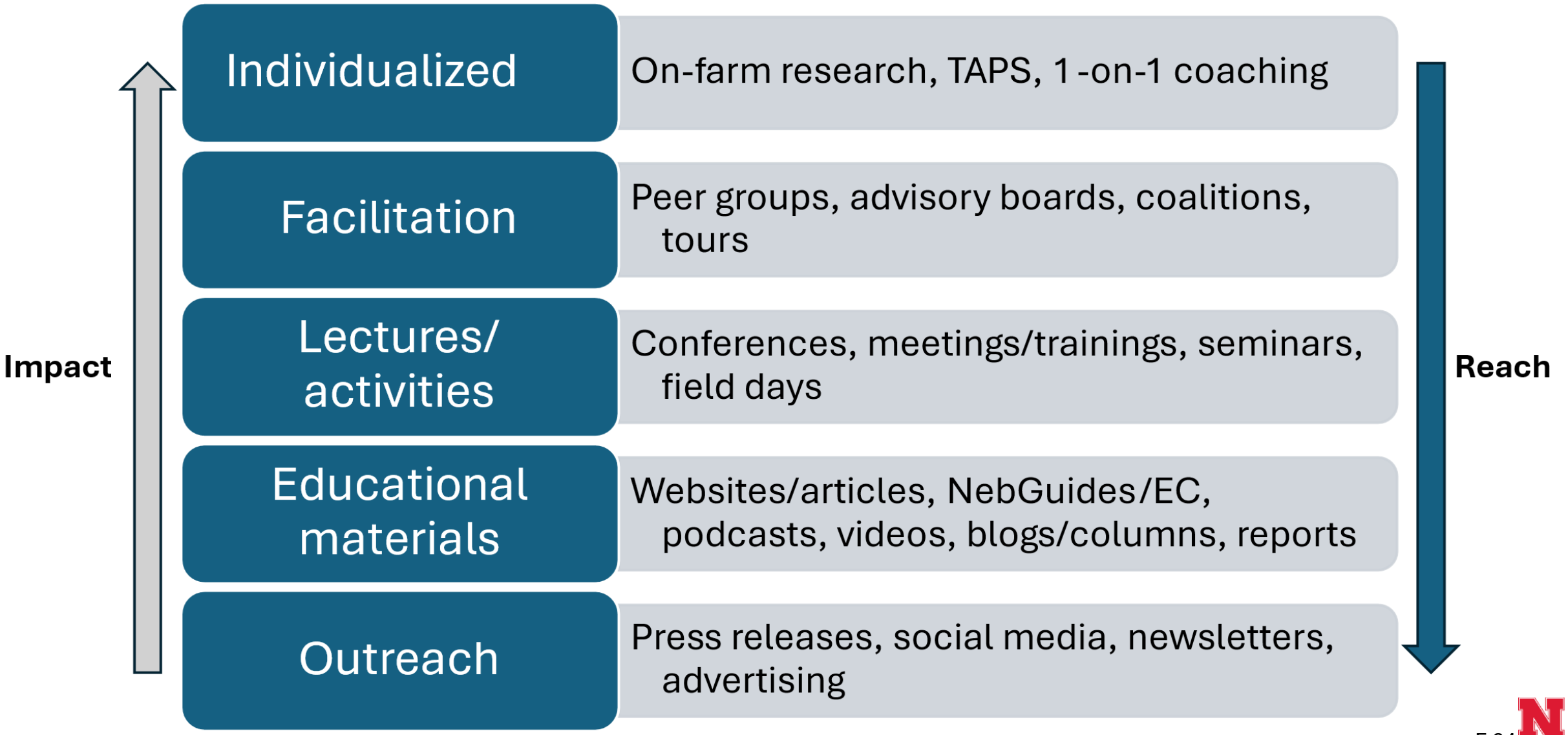


Our theory of change



Maxfield et al. 2013

Team Impact Portfolio



Invest in programs with impact

Nebraska Agriculture Learning Network

Connect

SHOP TALK: LOCAL PEER-LEARNING GROUPS

Test

TAPS COMPETITION

Experience

NEBRASKA ON-FARM RESEARCH NETWORK

Nebraska Master Farmer certification:
Water Steward endorsement

Experience core (20 hrs)

- *New* Peer learning groups
  - In-person, irrigated & dryland
  - Online?
- TAPS
- NOFRN
  - N challenge

Knowledge Core (10 hrs)

- *New* online courses
  - Irrigation
  - Soil fertility
  - Water science
  - Soil health & climate resilience
  - Communicating conservation
- Existing Extension portfolio
- Existing partner courses

Final assessment: Water Stewardship Action Plan

Incentive-based education examples

Master Irrigator graduates receive:

- Texas: access to conservation district cost-share (Local $)
- Oklahoma: $2,000 toward irrigation technology (State $)
- Colorado: cash payment (State $), NRCS priority points
- Minnesota: regulatory certainty (State)

Measure impact

Measure the impact of investment

Education investment

- Extension measures:
  - How are producers changing?
  - What is the reduction in water & N?
  - What value does it bring to farmer?

Incentive Investments

- How does policy impact farmer bottom line?
- Did the policy improve water outcomes?
- Daugherty Water for Food Policy team (Ag Economics) has an analyst team

Invest in Capacity

Network of Water Science

220+ academic faculty

Educators

13 Statewide

23 County-based

Specialists (18FTE)

15 Agronomy & Horticulture

7 School of Natural Resources

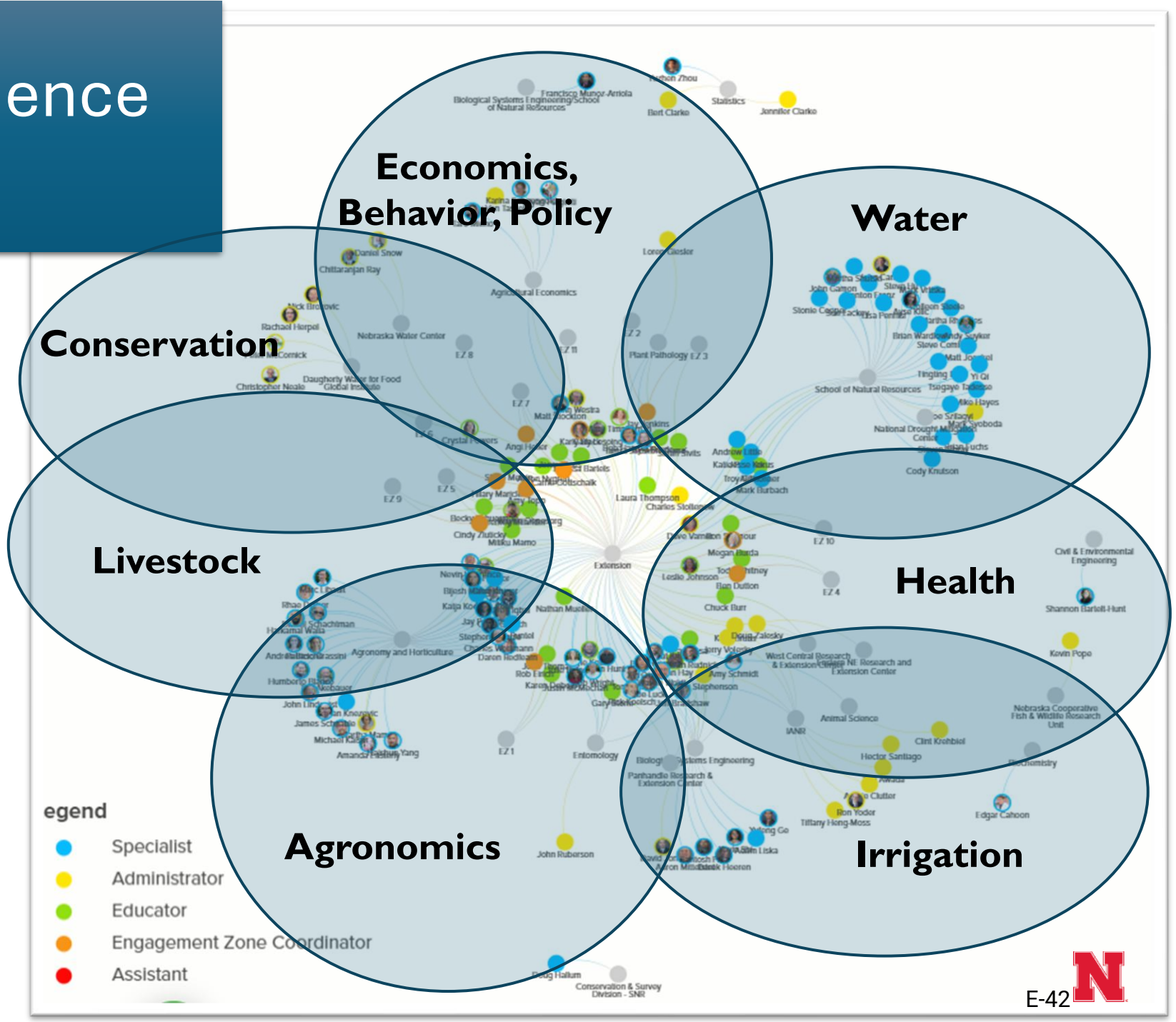
6 Biological Systems Engineering

4 Entomology

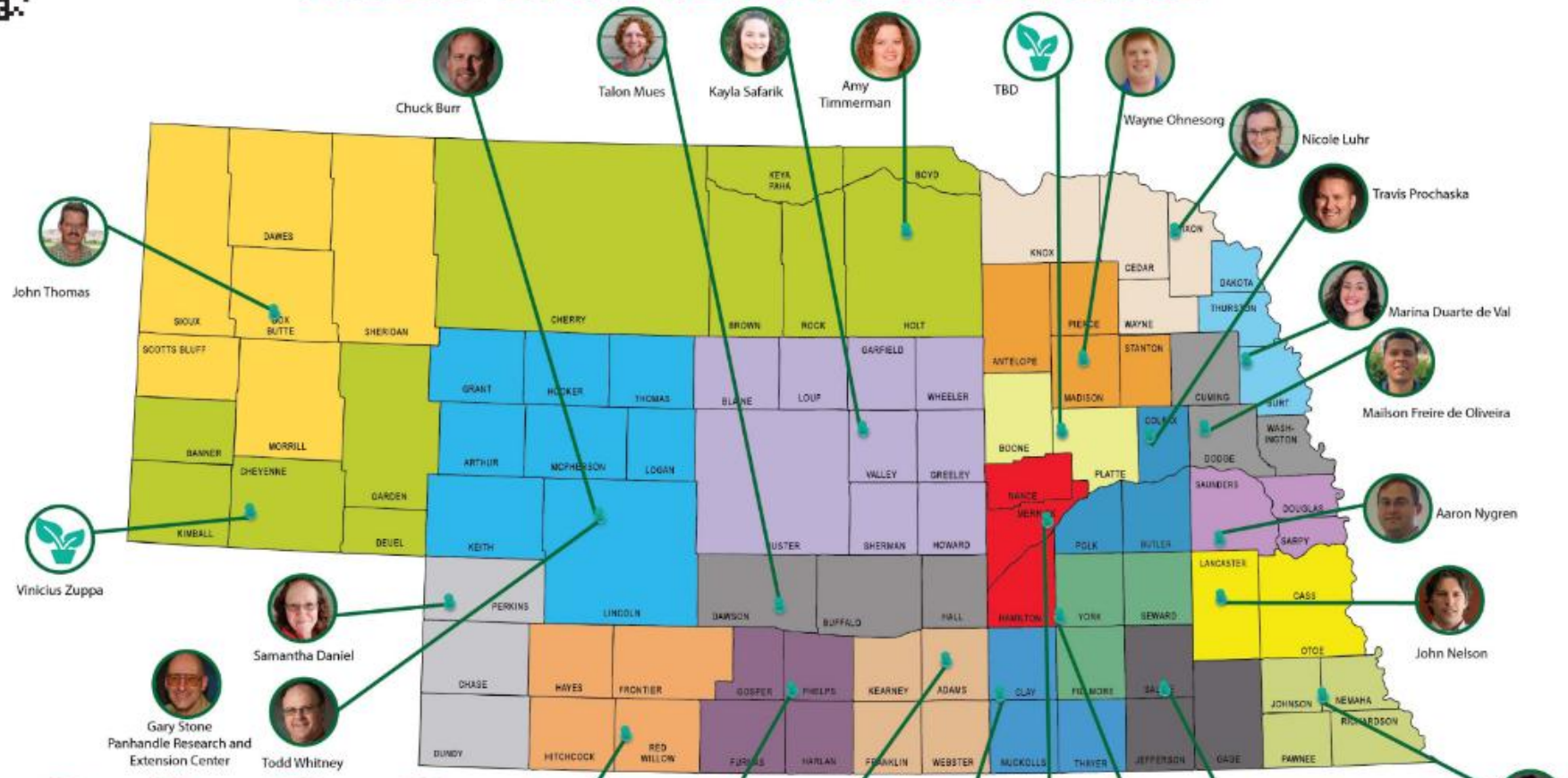
4 Plant Pathology

Support staff:

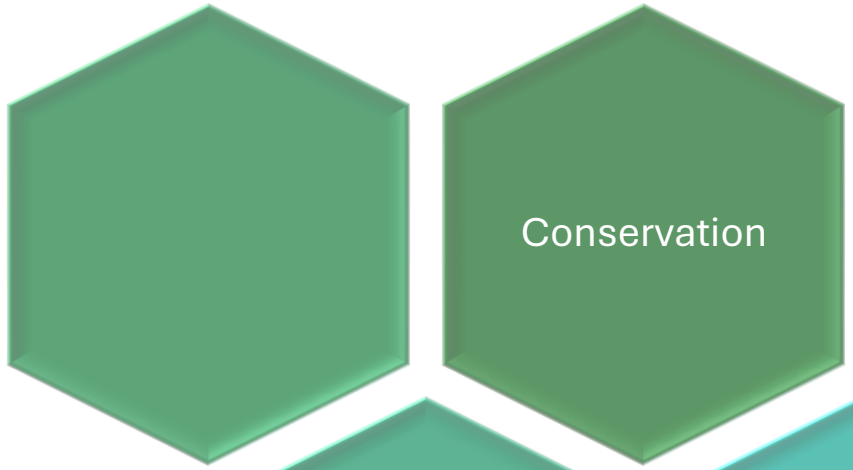
Comms, grants, admin



WATER AND CROPPING SYSTEMS ACCOUNTABILITY REGIONS



Established partners:
Nexus of agriculture



Local, State, Federal agencies

NGOs

Communities

Commodity groups

Cooperatives

Crop consultants

Input suppliers

AgTech startups

Value chain partners

Safe Water Today

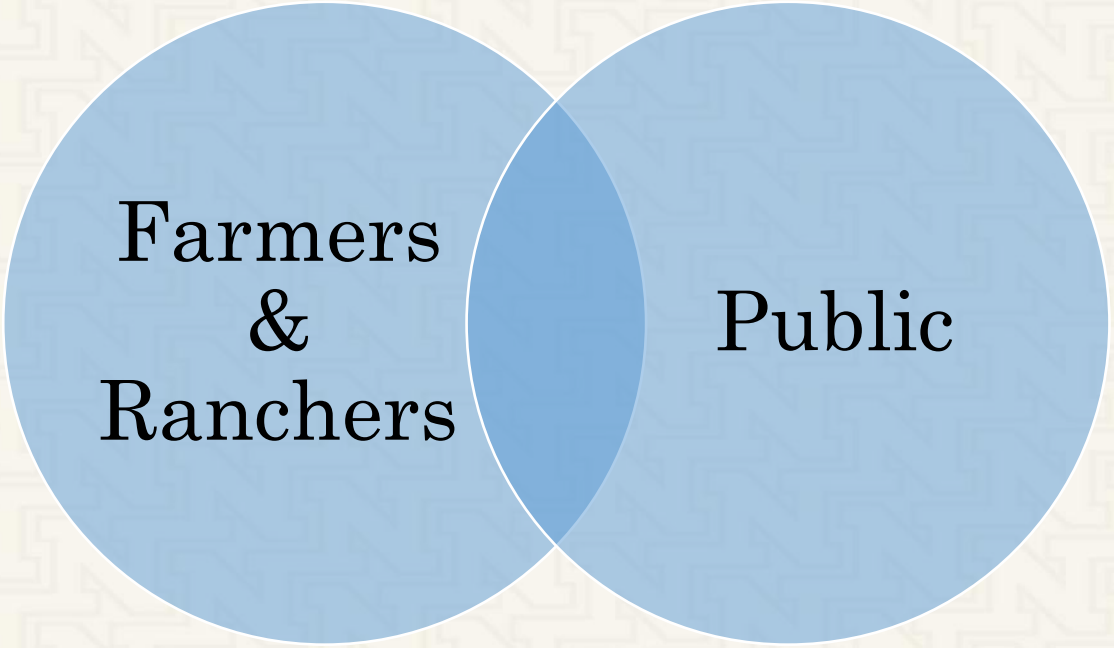
Drinking water & health education

- Team: Becky Scheurman, Anni Poetzl, Crystal Powers, UNMC Water Climate & Health
- Content for:
  - Medical clinics & health care providers
  - Daycares & early childhood providers
  - Women in Agriculture
  - Community events
- Test and treat for a variety of water quality concerns

THE DAUGHERTY WATER for FOOD GLOBAL INSTITUTE at the University of Nebraska

UNMC

Extension Topics



- Nitrogen
- Irrigation
- Soil health & other conservation
- Manure
- Land management
- Economics

- Health (WCS/FNH)
- Water testing & treatment (HLES/WCS)
- Lawn care (HLES)

K-12

Formal Education

- Know Your Well – A High School Community Science Program
- Water policy social studies

In-formal: small, individual programs

How can we support the Task Force Goals?