



Environment and Natural Resources Trust Fund

2021 Request for Proposal

General Information

Proposal ID: 2021-381

Proposal Title: Nitrate Testing and Education for Private Well Owners

Project Manager Information

Name: Margaret Wagner

Organization: Minnesota Department of Agriculture

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Project Basic Information

Project Summary: This project will provide lab equipment and technical support to soil and water conservation districts so they can offer no-cost nitrate testing as well as outreach to private well owners.

Funds Requested: \$197,000

Proposed Project Completion: 2023-06-30

LCCMR Funding Category: Small Projects (H)

Secondary Category: Water Resources (B)

Project Location

What is the best scale for describing where your work will take place?

Statewide

What is the best scale to describe the area impacted by your work?

Statewide

When will the work impact occur?

During the Project

Narrative

Describe the opportunity or problem your proposal seeks to address. Include any relevant background information.

Approximately 75 percent of Minnesotans rely on groundwater for their drinking water. Public wells are monitored by the Minnesota Department of Health whereas there are no requirements to test private wells leaving the responsibility of testing to well owners. Nitrate-nitrogen is an important plant nutrient, but elevated levels in drinking water is a public health concern. The groundwater in central and southeast Minnesota with sandy soils or fractured bedrock geology is particularly vulnerable to nitrate contamination. According to the MDA's initial Township Testing results, at least 10% of the wells in 143 townships exceeded the nitrate-nitrogen Health Risk Limit of 10 mg/L (MDA, 2020). Results indicate there are regional concerns with elevated nitrate in groundwater.

Since 1993, the MDA has worked with local partners to hold "walk-in" nitrate testing clinics where private well owners can have their water sample tested at no charge. The relationships are in place for the MDA to loan nitrate testing machines to local partners. When using these machines, water sample analysis is quick and nitrate results are available within minutes. As part of the analysis, a trained technician or water quality professional will be available to answer questions and provide guidance.

What is your proposed solution to the problem or opportunity discussed above? i.e. What are you seeking funding to do? You will be asked to expand on this in Activities and Milestones.

The MDA owns 21 nitrate testing machines (lab grade spectrophotometers) and loans them out to local partners such as soil and water conservation districts and counties. The machines need routine maintenance and repair and in some instances replacement due to age and poor condition. Since 1993, the MDA and local partners have tested over 60,000 water samples and provided educational materials to thousands of Minnesota families. Funding will directly support maintenance, repair, and replacement of the machines no longer operational. Machines will continue to be available to local partners and be housed at local partner offices or regional MDA offices. Local partners host the clinics, provide one-on-one testing, or help manage research and demonstration projects by providing staff for water sample collection and analysis. Although the clinics are locally driven, the program continues to require a minimal amount of statewide organizational assistance. Funds would provide the critical framework through the support of a part-time project coordinator (0.5 FTE), financial support to maintain the network of equipment, supplies, outreach materials, and provide quality assurance of lab analysis aspects of the program. The MDA will build on relationships with current partners to expand the program.

What are the specific project outcomes as they relate to the public purpose of protection, conservation, preservation, and enhancement of the state's natural resources?

1. Inform well owners about nitrate-nitrogen levels in their private, livestock and irrigation wells, mainly in rural areas.
2. Engage local partners in delivering targeted outreach and education to private well owners in areas with vulnerable groundwater and statewide.
3. Provide feedback to well owners and provide information on best management practices if nitrogen fertilizer is the suspected contaminant source.
4. Provide lab equipment to analyze water samples at three research and demonstration sites evaluating the water quality impact of agricultural best management practices, in partnership with the U of M and local SWCDs.

Activities and Milestones

Activity 1: Hire a project coordinator and purchase 13 nitrate testing machines and associated supplies and calibrate and maintain seven existing machines.

Activity Budget: \$193,000

Activity Description:

The project coordinator will assist with the planning, scheduling and coordination of the nitrate testing equipment, promoting events, and provide training to new cooperators. Local partners will receive nitrate testing equipment and supplies to allow the continuation of “walk-in” style nitrate testing clinics at community events, county fairs or stand-alone events. The MDA will serve as distribution coordinator for equipment and supplies. The distribution centers will be at regional MDA offices and offices of local project partners.

The machines purchased will be two different models: Hach DL6000 and Hach DL1900. HACH DL6000 is a higher capacity model and will remain at locations with higher volumes of samples while the Hach DL1900 is portable and will be shared with surrounding counties. The Hach DL1900 includes premixed vials, where the water sample is simply added to a vial with a reagent, which simplifies the process. The method is US EPA approved and is simple, safe and economical. Overall, the MDA would purchase 13 new machines to replace ones that are broken or past the point of repair and keep eight existing machines, seven of which will be calibrated and maintained over the two-year project period

Activity Milestones:

Description	Completion Date
Purchase nitrate testing machines (HACH DR6000 and DR1900) and required supplies	2021-08-31
Hire part-time project coordinator	2021-08-31
Maintain and calibrate existing nitrate testing machines	2022-12-31

Activity 2: Provide technical support and training so equipment is used safely, and results are accurate. Provide education to well owners.

Activity Budget: \$4,000

Activity Description:

MDA staff will provide training, quality assurance/quality control methods and troubleshooting to the local partner as needed and provide a “how to guide” to host a clinic. The walk-in style of clinic creates a non-regulatory environment that homeowners can comfortably ask questions about their specific situation, obtain their nitrate results with some interpretation, and can easily obtain educational materials. As part of the analysis, a trained technician or water quality professional will be available to answer questions and provide guidance to the well owner, and provide relevant supplemental written information about water quality, well information and measures to protect drinking water.

The MDA will build on existing relationships with current partners. Examples include soil and water conservation districts in Becker, Fillmore, Crow Wing, Houston, Goodhue, Olmstead, Sherburne, Pope, Wabasha, and Wadena counties. The goal is to expand partnerships to include additional counties in the program statewide.

Activity Milestones:

Description	Completion Date
MDA will provide training and technical support to local partners hosting events	2021-10-31

MDA will visit local partners to check status of machines and answer questions	2022-07-31
Nitrate testing events are hosted by local partners with equipment and technical support from the MDA	2023-06-30

Project Partners and Collaborators

Name	Organization	Role	Receiving Funds
Steve Robertson	Minnesota Department of Health	The MDH is a partner in this project because they address the public health related aspects of nitrate in groundwater, regulate public and private wells and recommend how private well owners can prevent or mitigate nitrate and other contaminants in their well to ensure safe drinking water.	No
Darren Newville	East Otter Tail Soil and Water Conservation District	Partners will use nitrate testing equipment and supplies for the continuation and expansion of “walk-in” style nitrate testing at community events, county fairs or stand-alone events. Partners host and execute the clinics, provide one-on-one follow-up information, and/or help manage demonstration projects by providing staff for water sample collection and analysis.	No
Laura Christensen	Fillmore Soil and Water Conservation District	Partners will use nitrate testing equipment and supplies for the continuation and expansion of “walk-in” style nitrate testing at community events, county fairs or stand-alone events. Partners host and execute the clinics, provide one-on-one follow-up information, and/or help manage demonstration projects by providing staff for water sample collection and analysis.	No
Anne Oldakowski	Wadena Soil and Water Conservation District	Partners will use nitrate testing equipment and supplies for the continuation and expansion of “walk-in” style nitrate testing at community events, county fairs or stand-alone events. Partners host and execute the clinics, provide one-on-one follow-up information, and/or help manage demonstration projects by providing staff for water sample collection and analysis.	No
Holly Kovarik	Pope Soil and Water Conservation District	Partners will use nitrate testing equipment and supplies for the continuation and expansion of “walk-in” style nitrate testing at community events, county fairs or stand-alone events. Partners host and execute the clinics, provide one-on-one follow-up information, and/or help manage demonstration projects by providing staff for water sample collection and analysis.	No

Long-Term Implementation and Funding

Describe how the results will be implemented and how any ongoing effort will be funded. If not already addressed as part of the project, how will findings, results, and products developed be implemented after project completion? If additional work is needed, how will this be funded?

This funding will provide the program coordination and equipment to allow the Minnesota Department of Agriculture to continue to work with local partners and provide accurate nitrate testing to private well owners statewide. Due to this investment in education and technical support, private well testing and nitrate clinics will continue after the completion of this project. The MDA will continue to support this work as time and funding allow.

Other ENRTF Appropriations Awarded in the Last Six Years

Name	Appropriation	Amount Awarded
Using Perennial Grain Crops in Wellhead Protection Areas to Protect Groundwater	M.L. 2018, Chp. 214, Art. 4, Sec. 2, Subd. 04j	\$250,000

Project Manager and Organization Qualifications

Project Manager Name: Margaret Wagner

Job Title: Clean Water Technical Assistance Unit Supervisor

Provide description of the project manager’s qualifications to manage the proposed project.

Margaret Wagner is the Clean Water Technical Unit supervisor at the Minnesota Department of Agriculture (MDA). She

holds a BS from Colorado College in Environmental Science and a MS from the University of Minnesota in Applied Plant Science (Agronomy). She supervises a team of soil scientists, hydrologists and research scientists that evaluate the water quality impact of agricultural practices and support on-farm demonstrations and water monitoring. These projects ensure that current and accurate scientific information is made available and used to address local water quality concerns in agricultural areas of Minnesota. Margaret and her staff work with many partners including farmers, crops advisers, university researchers, private industry, soil and water conservation districts, and other state agencies. She has worked at the Minnesota Department of Agriculture since 2010. Regarding administration of this grant, Margaret has experience developing education and research projects, overseeing work plans and progress reports and managing budgets.

Margaret is collaborating with Larry Gunderson to complete the work in this proposal. Larry Gunderson is a Fertilizer Management Unit supervisor at the MDA. He holds a BS from the University of Minnesota in Agricultural Education and a MS from the University of Minnesota in Water Resources Science. Larry manages the current nitrate analysis equipment loan program. Larry and his team are responsible for implementing the Nitrogen Fertilizer Management Plan and Groundwater Protection Rule, testing for nitrate in private wells, and agricultural practice inventories. He has been with the Minnesota Department of Agriculture since 2014. Prior to that he worked at the Minnesota Pollution Control Agency for almost 18 years

Organization: Minnesota Department of Agriculture

Organization Description:

The mission of the Minnesota Department of Agriculture is to enhance Minnesotans' quality of life by ensuring the integrity of our food supply, the health of our environment, and the strength of our agricultural economy. This project aligns with our organizational mission to enhance the health of our environment with a focus on protection of drinking water resources.

The Minnesota Department of Agriculture is the lead agency responsible for fertilizer use and management. Work of the Pesticide and Fertilizer Management Division, Nonpoint Fertilizer Section is guided by the Groundwater Protection Act (Minnesota Statutes 103H), Minnesota Fertilizer, Soil Amendment, and Plant Amendment Law (Minnesota Statute Chapter 18C), the Groundwater Protection Rule (Minnesota Rule 1573) and the Minnesota Nitrogen Fertilizer Management Plan. Staff submitting this proposal focus on activities that help identify potential sources of nitrate-nitrogen contamination and evaluate and implement practices at the local level to reduce nitrate-nitrogen in groundwater.

Budget Summary

Category / Name	Subcategory or Type	Description	Purpose	Gen. Ineligible	% Benefits	# FTE	Classified Staff?	\$ Amount
Personnel								
Nitrate Testing Program Coordinator		Responsible for overseeing the program, maintaining equipment and supplies, and acting as a point of contact for local partners. Specifically this position will maintain an inventory of equipment and supplies, ensure all equipment is properly maintained and calibrated, visit local partners to provide on-site technical assistance, provide instructions on how to host a nitrate clinic, assist with the development of promotional materials and attend select nitrate testing clinics.			32%	1		\$73,900
							Sub Total	\$73,900
Contracts and Services								
HACH	Professional or Technical Service Contract	Overall, funding will purchase 13 new machines to replace ones that are broken or past the point of repair and keep eight existing machines, seven of which will be calibrated and maintained over the two-year project period. For those seven machines, we will work with the manufacturer to schedule services.				0		\$10,500
							Sub Total	\$10,500
Equipment, Tools, and Supplies								
	Equipment	Spectrophotometer HACHDR6000	5 high volume nitrate testing machines. The DR600 is a bench top spectrophotometer that delivers top performance for high volume lab analysis.					\$49,500
	Equipment	Spectrophotometer Hach DR1900	8 portable nitrate testing machines. The DR1900 excels in the field because it is the lightest and most compact portable					\$32,000

			spectrophotometer making it easy to share between local offices and events.					
	Tools and Supplies	Pipettes	Standard/required supply for nitrate testing with spectrophotometers (n=2 per spectrophotometer * 13 spectrophotometers)					\$10,400
	Tools and Supplies	Flow through cell for HACH DR6000	Standard/required supply for nitrate testing with spectrophotometers (n=1 per spectrophotometer * 5 spectrophotometers)					\$2,750
	Tools and Supplies	Carrying cases for 8 portable nitrate testing machines (HACH DR1900)	Protect machines during transport to ensure they remain accurate and undamaged.					\$2,000
	Tools and Supplies	Flow through cell for DR1900 (TNT + High Range)	Standard/required supply for nitrate testing with spectrophotometers (\$2 each * 1,500 samples per year * 2 years = \$6000)					\$6,000
	Tools and Supplies	Flow through cell for DR1900 (TNT + Low Range)	Standard Required supply for nitrate testing with spectrophotometers (\$2 each * 1,500 samples per year * 2 years = \$6000)					\$6,000
							Sub Total	\$108,650
Capital Expenditures								
							Sub Total	-
Acquisitions and Stewardship								
							Sub Total	-
Travel In Minnesota								
							Sub Total	-
Travel Outside Minnesota								
							Sub Total	-

Printing and Publication								
	Printing	Update and print existing MDA and MDH publications related to private wells and protecting drinking water	Provide guidance to the well owner, and provide relevant supplemental written information about water quality, well information and measures to protect drinking water. This may include educational materials regarding interpretation of results, land management BMPs, water treatment systems, low interest loans, and well construction/replacement.					\$3,950
							Sub Total	\$3,950
Other Expenses								
							Sub Total	-
							Grand Total	\$197,000

Classified Staff or Generally Ineligible Expenses

Category/Name	Subcategory or Type	Description	Justification Ineligible Expense or Classified Staff Request
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Non ENRTF Funds

Category	Specific Source	Use	Status	Amount
State				
			State Sub Total	-
Non-State				
			Non State Sub Total	-
			Funds Total	-

Attachments

Required Attachments

Visual Component

File: [c7d8d4dd-b0b.pdf](#)

Alternate Text for Visual Component

The Minnesota Department of Agriculture focuses its work in areas where there is nitrate contamination of groundwater from nitrogen fertilizer use. The MDA is working with 38 local partners on nitrate monitoring and reduction projects. Many of these partners rely on the MDA's equipment for local nitrate testing events. This proposal will allow the MDA to continue to support robust partnerships and expand to additional areas of the state.

Optional Attachments

Support Letter or Other

Title	File
Fillmore SWCD Letter of Support	5a883a9d-7dd.pdf
Pope SWCD Letter of Support	0b8348da-7e6.pdf
Wadena SWCD Letter of Support	2dfbd57b-e97.pdf

Administrative Use

Does your project include restoration or acquisition of land rights?

No

Does your project have patent, royalties, or revenue potential?

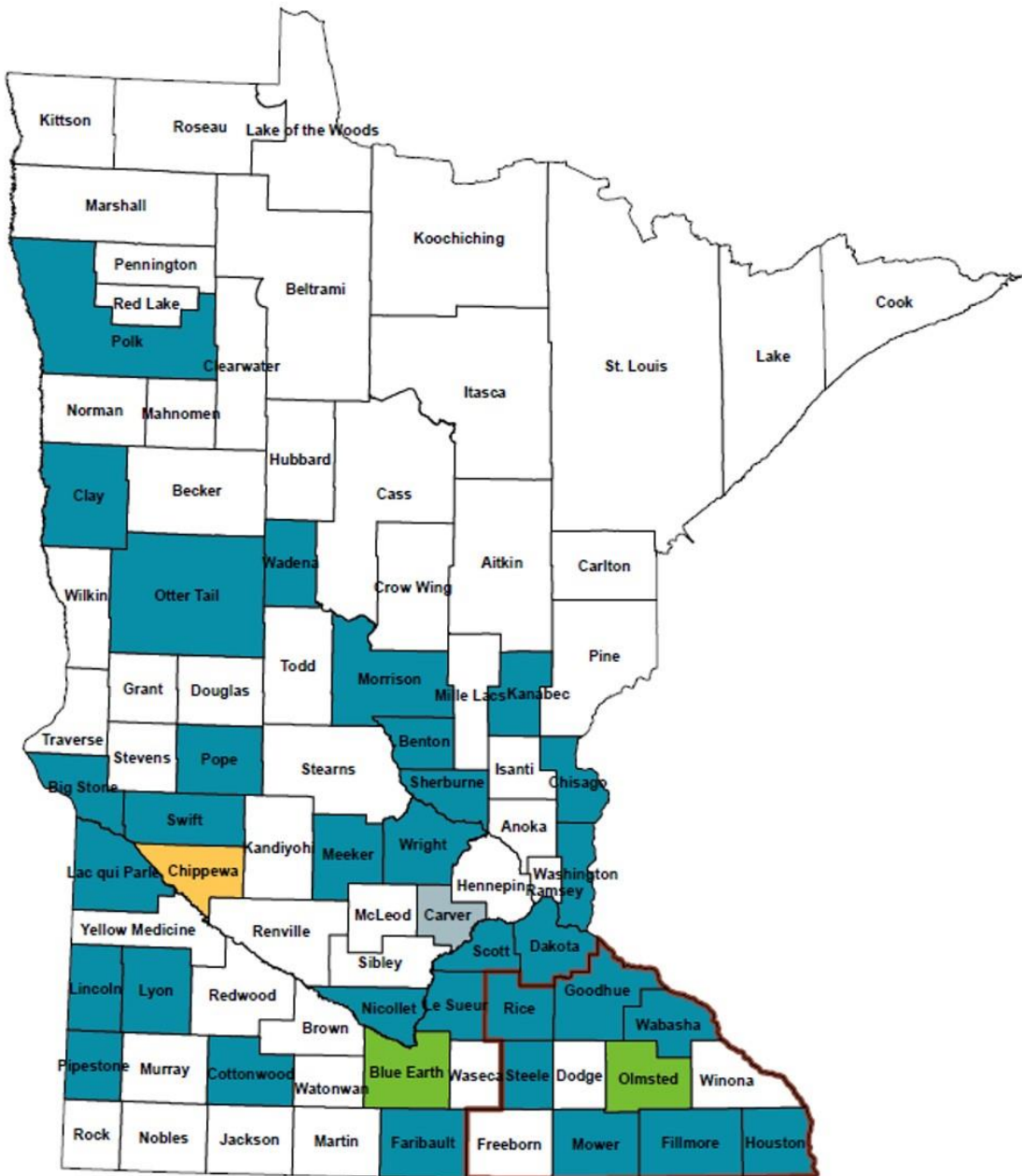
No

Does your project include research?

No

Does the organization have a fiscal agent for this project?

No



MDA Groundwater Local Partners 2018-2019

- Soil and Water Conservation Districts (SWCDs)
- County Land & Resource Management
- County
- County Water Management Organization
- Southeast SWCD Technical Support JPB & Southeast Minnesota Water Resources Board

