Environment and Natural Resources Trust Fund
2020 Request for Proposals (RFP)

Project Title: **ENRTF ID: 023-A**

Networking and Economics of Soil Health– Phase I

Category: A. Foundational Natural Resource Data and Information

Sub-Category:

Total Project Budget: $ 602,310

Proposed Project Time Period for the Funding Requested: June 30, 2023 (3 yrs)

Summary:

Collecting and aggregating soil health data, connecting farmers interested in soil health together, while working with other farmers implementing soil health practices.

Name: Jennifer Hahn

Sponsoring Organization: Minnesota Soil Health Coalition

Job Title: Coalition Coordinator

Department:

Address: 1157 110th Ave

Luverne MN 56156

Telephone Number: (651) 485-7848

Email mnsoilhealthcoalition@gmail.com

Web Address:

Location:

Region: Statewide

County Name: Statewide

City / Township:

Alternate Text for Visual:

Soil health on-farm research, education/outreach, peer to peer learning, a hub for dissemination, training, mentoring, and support, producer driven, producer led coalition.

_____ Funding Priorities	_____ Multiple Benefits	_____ Outcomes	_____ Knowledge Base
_____ Extent of Impact	_____ Innovation	_____ Scientific/Tech Basis	_____ Urgency
_____ Capacity Readiness	_____ Leverage	_____ TOTAL	_____%

PROJECT TITLE: Networking and Economics of Soil Health– Phase I

I. PROJECT STATEMENT

The objectives of this study are collecting and aggregating soil health data, connecting farmers interested in soil health together, while working with other farmers implementing soil health practices. This database will be shared via multiple avenues: farmer to farmer mentoring, publications, social media, meetings, and field days. By obtaining and analyzing field scale data from working lands, more precise recommendations and economic data will be available for developing technical and program guidance. Data sharing is paramount to increase awareness, education, and effectiveness of implementation efforts, allowing planners to provide quality recommendations, producers to understand the dynamics of implementation, and for farmers to connect and work with other farmers implementing soil health practices.

The approach is to develop a farmer led program with the primary focus to support farmer to farmer mentoring and networking which has shown to have substantial results and proven effective elsewhere. This project will support producers around the state to identify, learn from, and work with other producers currently implementing soil health practices by utilizing the Minnesota Soil Health Coalition's mentor network. By creating an accessible database of sustainable agriculture data, we can build a long-lasting, action-based conservation ethic throughout Minnesota. This provides the opportunity to improve the economic situation for farmers while simultaneously improving our natural resources. This project will accelerate adoption of soil health practices by building a coalition of soil health farmers to learn together, collect data, and share information - education by farmers to farmers.

Increasing cover crop adoption is a central goal in *Minnesota's Nutrient Reduction Strategy*, but to date there has been limited adoption. Minnesota's soil health management data is limited, short-term, and scattered amongst different groups in the state. Soils under agricultural production have experienced degradation that affects infiltration, runoff, wind and water erosion, sedimentation, groundwater recharge, surface water quality, and nutrient density of crops produced. This often requires higher inputs to produce crops resulting in a reduced return on investment (ROI). Producers that have been implementing soil health practices have experienced positive changes in their natural resources, yields, and ROI.

II. PROJECT ACTIVITIES AND OUTCOMES

Activity 1: Secure equipment, create database, test soils, manage economic and soil health data
ENRTF BUDGET: $293,600
Description: Obtain equipment required for the project, design and develop databases, develop tracking systems, and identify up to 30 sites for testing. Each site will have the following information collected: **Soil tests include** soil structure, compaction in row and between rows, bulk density, temperature, earthworms, soil texture, organic matter, residue, infiltration, aggregate stability, Haney and PLFA testing on up to 30 sites annually. Field and lab testing will be completed in addition to working with producers to obtain their management and economic data, as well as entering findings into databases. **Management data collected includes** rotation, timing of planting and harvesting cash crop, cash crop type, herbicide and fertilizer type, rate, date, and application method, tillage type and date, irrigation type and amount, annual and growing season rainfall, cover crop type, seeding rate, date, method, and cost, termination method and termination height of cover crop, forage management of cover crops, and growing degree days. RUSLE2 and WEPS will also be utilized to track erosion. **Economic data collected includes** planting cash crop, spraying, fertilizer application, herbicide, pesticide, fungicide, and fertilizer costs, manure application, manure costs, harvest, tillage, labor, cash crop seed, cover crop seed and planting, cover crop termination costs, forage value of cover

crops, income from cash crop, yields, conservation program payments, and erosion related repairs.

Outcome	Completion Date
1. Secure supplies to complete soil health testing	*09/01/2020*
2. Develop and design database and tracking systems	*2/01/2021*
3. Identify sites and secure signed agreements (up to 30 sites)	*11/1/2020*
4. Annual testing, tracking, and analyzing tests and data (up to 30 sites)	*6/30/2023*

Activity 2: Education, outreach, and mentoring to strengthen understanding and increase implementation
ENRTF BUDGET: $308,710
Description: Share study findings with producers, organizational staff (conservation and industry partners), and the public, and support farmer to farmer mentoring. Host 9 field days, 12 targeted trainings for producers, create 6 technical documents, providing mentoring to a minimum of 200 producers, and develop a website with story maps, case study summary disseminating findings to maximize sharing of findings.

Outcome	Completion Date
1. Host field days to share data (3 annually=9 total; reaching ~600 people)	*6/30/2023*
2. Host 12 targeted trainings for producers (4 annually reaching 200 producers)	*6/30/2023*
3. Develop educational materials and technical documents (2 annually; 6 total) and post on the Coalition website to share data across the state	*6/30/2023*
4. Farmer to farmer mentoring and support for a minimum of 200 producers statewide	*6/30/2023*
5. Develop website, story map, and case study summaries to disseminate findings	*6/30/2023*

III. PROJECT PARTNERS AND COLLABORATORS:
Paid by grant: Minnesota Soil Health Coalition and the Water Resources Center, Minnesota State University Mankato
Partners and Collaborators: MN Natural Resources Conservation Service, Minnesota Office of Soil Health, Renville SWCD, Redwood SWCD, Carver SWCD, Washington SWCD, Stearns SWCD, Lac Qui Parle SWCD, Benton, Carlton SWCD, and Faribault SWCD.

IV. LONG-TERM IMPLEMENTATION AND FUNDING: Networking and Economics of Soil Health– Phase I
The project aims to develop a long term Minnesota soil health dataset, continuing beyond the time limits of this proposal. This project will help document the many economic and natural resource benefits of soil health and will be part of an ever-increasing database of information that can be used for outreach and education, planning and policy development. We will continue to work with local and state conservation partners to secure funding to support this effort.

V. SEE ADDITIONAL PROPOSAL COMPONENTS:
A. Proposal Budget Spreadsheet
B. Visual Component or Map
C. Parcel List Spreadsheet
D. Acquisition, Easements, and Restoration Requirements
E. Research Addendum (Not required at proposal submission stage. Required later in process, if proposal is recommended. Staff will provide further information at that time)
F. Project Manager Qualifications and Organization Description
G. Letter or Resolution
H. Financial Capacity

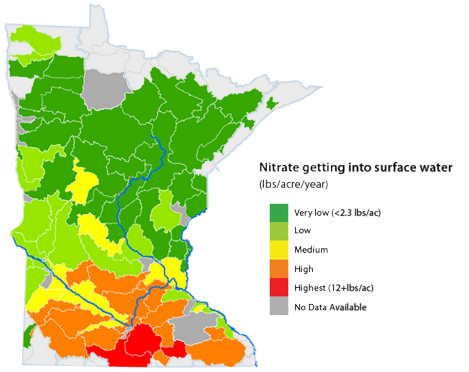
Attachment A: Project Budget Spreadsheet
Environment and Natural Resources Trust Fund
M.L. 2020 Budget Spreadsheet
Legal Citation:
Project Manager: Jennifer Hahn
Project Title: Networking and Economics of Soil Health– Phase I
Organization: Minnesota Soil Health Coalition
Project Budget: *$602,310*
Project Length and Completion Date: 3 years 6/30/2023
Today's Date: 4/10/2019

ENVIRONMENT AND NATURAL RESOURCES TRUST FUND BUDGET	Budget	Amount Spent	Balance
BUDGET ITEM			
Personnel (Wages and Benefits)	$ 300,000	$ -	$ 300,000
Position/Position Type 1, $ 300,000 (70%salary 30%benefits), 100%FTE each year for 3 of years			
Professional/Technical/Service Contracts Water Resources Center (single source) Website, overview and case studies Events Calendar Develop online forum Story Map and Mentor map Contact database Summary publications - Developing educational materials, technical documents, 2 per year, 6 total Case study overviews and summary documents	$ 210,000		$ 210,000
	$ -	$ -	$ -
Equipment/Tools/Supplies			
Soil health testing supplies	$ 35,700	$ -	$ 35,700
Capital Expenditures Over $5,000			
GPS unit and sofware	$ 17,500	$ -	$ 17,500
Fee Title Acquisition			
	$ -	$ -	$ -
Easement Acquisition			
	$ -	$ -	$ -
Professional Services for Acquisition			
	$ -	$ -	$ -
Printing			
Outreach and education literature	$ 3,000	$ -	$ 3,000
Travel expenses in Minnesota			
Traveling for soil testing and outreach/education	$ 10,910	$ -	$ 10,910
Other			
Haney and PLFA testing 30 sites annually for 3 years	$ 16,200		$ 16,200
Hosting field days, meetings, and trainings	$ 9,000	$ -	$ 9,000
COLUMN TOTAL	$ 602,310	$ -	$ 602,310

SOURCE AND USE OF OTHER FUNDS CONTRIBUTED TO THE PROJECT	Status (secured or pending)	Budget	Spent	Balance
Non-State: *MN NRCS*	pending	$ 255,500	$ -	$ 255,500
Non-State: *MN Soybean Research and Promotion Council*	pending	$ 60,000	$ -	$ 60,000
State:		$ -	$ -	$ -
In kind: *Provided by the Minnesota Soil Health Coalition* and MSU	secured	$ 114,000	$ -	$ 114,000

Other ENRTF APPROPRIATIONS AWARDED IN THE LAST SIX YEARS	Amount legally obligated but not yet spent	Budget	Spent	Balance
		$ -	$ -	$ -

SOIL HEALTH
RESEARCH, MENTORING & EDUCATION



Source: Nitrogen in Minnesota Surface Waters (MPCA, 2013)

DATA COLLECTION

On Farm Research (30 farms)

Field Days & Demonstrations

Training, Mentoring & Support (200 farmers)

Supporting Peer-to-peer Learning

EDUCATION & OUTREACH

Producer-driven, Producer-led Coalition

Hub for Dissemination

Website, Publications & Events Calendar

Project Title: Networking and Economics of Soil Health– Phase I
Project Manager Qualifications and Organization Description

Jennifer Hahn, Project Manager

Jennifer Hahn as the Minnesota Soil Health Coalition Coordinator having 14 years of experience working with producers to assess and address resource concerns, has completed soil health testing for producers, been a soil scientist, resource soil scientist, soil conservation technician, a soil conservationist, and a district conservationist with NRCS. Jennifer has experience in research, providing training, education, and outreach in soil health in addition to working with farmers to analyze profitability of utilizing conservation practices. She holds a Bachelor's degree in Environmental Science minoring in Soil and Water Science from the University of Minnesota. The project will be overseen by the Minnesota Soil Health Coalition and partner with Minnesota State University Mankato to complete the soil testing, working with producers to obtain the management and economic data, compile, analyze, and share the data. Producers involved in the study, Coalition members, Minnesota State University Mankato, and Jennifer Hahn will be completing the outreach and education component of the project.

Mission of the Minnesota Soil Health Coalition: Producer driven education, outreach, and adoption utilizing information exchange to promote the principles of soil health practices. The Coalition is led by the Producer Board and consists of members; only producers can be voting members, all non-producer members will be associate members and not have voting privileges. Funds will be secured from membership dues and support from agencies, organizations, and businesses. The Minnesota Soil Health Coalition will be a non-profit 501(C)(3) organization. The vision of the Coalition is producer driven support to encourage voluntary adoption of soil health principles today and for the future. The values of the Coalition are to communicate relevant soil health information consistently in a practical manner by providing information exchange, compiling, and sharing information. Provide ongoing education and outreach to assist in the improvement of water, soil, and air quality for the state. Support visual and quantifiable cropland landscape change by promoting improved resource base (regenerative/sustainable). Producer driven focus on information sharing, education, and networking to build and strengthen soil health practice application in Minnesota.

Water Resources Center, Minnesota State University, Mankato (WRC-MSU, Mankato)
In 1987 the WRC-MSU, Mankato was created to serve as a regional center for gathering, interpreting, and distributing data of environmental significance. Faculty and students accomplish these tasks through applied research, educational programming, technical assistance, and water resource planning. In addition, we have GIS staff with the capacity to create sophisticated GIS analysis and maps and 3-dimensional landscape visualization. Using the latest data, the WRC-MSU, Mankato works with citizens within the Minnesota River Basin to enhance the quality of regional lakes, rivers, wetlands, and groundwater.

Since its beginning, the WRC-MSU, Mankato has participated in over 100 research, educational, and planning projects involving partnerships with dozens of public and private organizations. These projects range from groundwater, lake assessment, and TMDL studies to citizen engagement and water quality workshops, to the development of watershed-based plans for surface water quality protection. Our stability since 1987 stands as a testament to the objective and quality products we produce. Long-term partnerships with counties, nonprofit organizations, and state agencies have resulted in many important and far- reaching land and water resource initiatives. We have a dedicated staff and look forward to enhancing the public's understanding and connection with water resources in the region.