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

1. **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**

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| **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. |  |
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| **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* |
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| **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.  |  |
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| **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**