

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

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**Project Title:**

**ENRTF ID: 171-E**

Tracking Climate Benefits of Natural and Working Lands

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**Category:** E. Air Quality, Climate Change, and Renewable Energy

**Sub-Category:**

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**Total Project Budget: \$** 390,500

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

**Summary:**

Assess the climate change mitigation benefits provided by Minnesotas natural and working lands through an inventory and an interactive tool designed to measure and maximize these benefits going forward.

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**Name:** Suzanne Rhees

**Sponsoring Organization:** MN Board of Water and Soil Resources

**Job Title:** Conservation Projects Coordinator

**Department:** \_\_\_\_\_

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**Location:**

**Region:** Statewide

**County Name:** Statewide

**City / Township:**

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**Alternate Text for Visual:**

What are natural and working lands? Approximate acreage of lands in permanent and temporary protection; illustration of practices that sequester greenhouse gases; list of primary greenhouse gases.

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



**PROJECT TITLE: Tracking the Climate Benefits of Natural and Working Lands**

**I. PROJECT STATEMENT**

This project will assess the amount of greenhouse gas capture and storage provided by natural and working lands in Minnesota, focusing primarily on agricultural landscapes. It is focused on two primary questions:

- What are the climate change mitigation benefits currently being provided by Minnesota's natural and working lands across its agricultural regions?
- How can these benefits be sustained and increased into the future?

Across Minnesota's landscape, almost 1.5 million acres are in some form of protected status, including short-term programs such as the Conservation Reserve Program and permanent ones such as Reinvest in Minnesota easements. Best management practices were being implemented on another 4 million acres of cropland were under state or federal conservation programs as of 2017. These lands provide multiple ecosystem benefits, but one of the most important – their capture and storage of greenhouse gases (carbon dioxide (CO<sub>2</sub>), nitrous oxide (N<sub>2</sub>O) and methane (CH<sub>4</sub>)) – has been difficult to quantify.

Since 2009, BWSR has been estimating carbon storage from a variety of conservation practices, ranging from wetland restoration to establishment of cover crops and field windbreaks, documented in the eLINK reporting system. Those estimates, based on a 2008 study, are due for an update in light of research advances.

The project will result in an interactive, practical web-based estimating tool for sequestration of soil carbon and mitigation of other greenhouse gas (GHG) emissions, for use by producers, local government partners, grant programs, conservation organizations, and other public and private interests. The tool will enable these individuals and organizations to track and, where feasible, to increase their efforts. It can be used to prioritize and target investments in restoration of prairie and grassland ecosystems, incentivize conservation practices, and improve wetland restoration practices. It addresses one of the key priorities of the Walz administration (Executive Order 19-27 directs state agencies to reduce greenhouse gas emissions by 30% by 2025 relative to a 2005 baseline). Should carbon markets become available in Minnesota in the future, the tool will also help producers to enter those markets.

**II. PROJECT ACTIVITIES AND OUTCOMES**

**Activity 1: Establish advisory team, summarize current research, evaluate models and tools**

**Description:**

- Establish stakeholder advisory team, listed below under "Project Partners."
- Review and summarize current research and available models and tools for calculating GHG emissions. The Air Policy Unit at the MPCA has completed a comprehensive analysis of "Greenhouse Gas Mitigation through Conservation Practices." The team will summarize this research and identify any gaps or additional needs.
- Assess available models and quantification tools for measuring emissions and benefits of conservation practices, including the USDA's COMET Tool (which uses the DAYCENT and DNDC models) and other models currently in use nationally and in selected states. There are pros and cons of each model that should be considered, based on available inputs and calibration datasets, preferred level of complexity, and allowable level of uncertainty, before the state decides on a specific methodology. After evaluating available tools, and with the input of the advisory team, a platform for the calculator will be selected.

**ENRTF BUDGET: \$85,500**

Outcome	Completion Date
1. Advisory team established; consultant(s) selected	Fall 2020
2. Interim report on state of current practice and available models	December 2020



**Environment and Natural Resources Trust Fund (ENRTF)**  
**2020 Main Proposal Template**

**3. Model evaluation and selection**

*Winter 2021*

**Activity 2: Calibrate the model; develop the tool**

The selected model will need to be calibrated to Minnesota-specific conditions. The project will simulate the historic conditions associated with cropland and pasture in the different regions of the state and compare that to a simulation of current or planned conditions (e.g., adoption of conservation practice or conversion). The difference in GHG emissions between the two scenarios provides the GHG benefit(s).

Land areas to be assessed include row crop lands converted to grassland or where cover crops, reduced tillage, perennial crops, and other BMPs have been established, as well as wetland and shoreland restorations and managed grazing practices. Conservation practices would be assessed on lands in state and federal easement programs (CREP, RIM, Wetland banking) and cost-share programs such as EQIP and CSP, as well as lands protected through grant programs such as the Lessard-Sams Outdoor Heritage Fund and the Clean Water Fund.

**ENRTF BUDGET: \$217,000**

<b>Outcome</b>	<b>Completion Date</b>
<i>1. Model calibration</i>	<i>Spring-Summer 2021</i>
<i>2. Model evaluation and testing</i>	<i>Fall 2021</i>
<i>3. Develop web-based tool</i>	<i>Winter 2022</i>

**Activity 3: Test, publicize, and share the tool**

The tool will be evaluated and tested on representative tracts of land in comparison to other tools currently in use. Once vetted, the tool will be shared with local government partners, agricultural organizations, and private-sector companies interested in increasing their sustainability practices. At least three workshops and/or webinars will be scheduled through BWSR's existing training program for conservation professionals. The MN Geospatial Commons website would be the preferred host for the tool; budget includes MnGEO coordination.

**ENRTF BUDGET: \$88,000**

<b>Outcome</b>	<b>Completion Date</b>
<i>1. Testing and validation of tool, website integration</i>	<i>Spring 2022</i>
<i>2. Dissemination to partners, training and outreach</i>	<i>Summer-Fall 2022</i>
<i>3. Share project results; develop schedule and method for updates</i>	<i>Winter 2023</i>

**III. PROJECT PARTNERS AND COLLABORATORS:**

**Partners receiving ENRTF funding**

- BWSR Project Coordinator (10% time – unclassified position)
- Model and Tool Development (consultant TBD; an RFP will be issued)
- MNIT Services – MnGEO (integration and web hosting)

**Partners not receiving ENRTF funding**

Minnesota Department of Agriculture, Pollution Control Agency, Department of Natural Resources, MNIT, Natural Resources Conservation Service, University of Minnesota Water Resources Center, The Nature Conservancy and the World Resources Institute.

**IV. LONG-TERM IMPLEMENTATION AND FUNDING:**

This project will be completed within the three-year time frame specified by LCCMR, but the model and inventory will continue to be updated. Management of land in long-term protection and conservation practices is not static: practices come and go, and GHG benefits can decline as ecosystems mature. Once the model and database are established, BWSR staff will make regular updates coordinated with MPCA's greenhouse gas emissions reporting.

Attachment A: Project Budget Spreadsheet  
 Environment and Natural Resources Trust Fund  
 M.L. 2020 Budget Spreadsheet

Legal Citation:

Project Manager: Suzanne Rhees, Conservation Projects Coordinator

Project Title: Tracking the Climate Benefits of Natural and Working Lands

Organization: Minnesota Board of Water and Soil Resources

Project Budget: \$390,500

Project Length and Completion Date: 3 years, June 30, 2023

Today's Date: March 15, 2019



ENVIRONMENT AND NATURAL RESOURCES TRUST FUND BUDGET		Budget	Amount Spent	Balance
<b>BUDGET ITEM</b>				
<b>Personnel (Wages and Benefits)</b> BWSR Project Manager (10%; 73% salary, 27% benefit, 3 yrs) - position is unclassified, and this project is not part of current work plan.		\$ 40,500	\$ -	\$ 40,500
<b>Professional/Technical/Service Contracts:</b> BWSR will issue an RFP and contract with a consultant team with significant, relevant experience in the field of GHG modeling, tracking data, and operationalizing best management practices for carbon sequestration and GHG mitigation.		\$ 325,000		\$ 325,000
<b>MNIT Services:</b> service contract with MnGEO to provide relevant geospatial data and make the estimating tool publicly available through the MN Geospatial Commons.		\$ 25,000	\$ -	\$ 25,000
<b>Equipment/Tools/Supplies</b>				
		\$ -	\$ -	\$ -
<b>Capital Expenditures Over \$5,000</b>				
		\$ -	\$ -	\$ -
<b>Fee Title Acquisition</b>				
		\$ -	\$ -	\$ -
<b>Easement Acquisition</b>				
		\$ -	\$ -	\$ -
<b>Professional Services for Acquisition</b>				
		\$ -	\$ -	\$ -
<b>Printing</b>				
		\$ -	\$ -	\$ -
<b>Travel expenses in Minnesota</b>				
		\$ -	\$ -	\$ -
<b>Other</b>				
		\$ -	\$ -	\$ -
<b>COLUMN TOTAL</b>		\$ 390,500	\$ -	\$ 390,500
<b>SOURCE AND USE OF OTHER FUNDS CONTRIBUTED TO THE PROJECT</b>		<b>Budget</b>	<b>Spent</b>	<b>Balance</b>
<b>Non-State:</b> U.S. Climate Alliance (USCA) Natural and Working Lands: funding from Doris Duke Charitable Foundation may be available for research into particular aspects of GHG modeling (e.g., grazing systems, wetlands). Up to \$150,000 may be available for all research projects in Minnesota; this project is one of several that may be considered.	<b>Status (secured or pending)</b>			
	Pending	\$ 30,000	\$ -	\$ 30,000
<b>State:</b>		\$ -	\$ -	\$ -
<b>In kind:</b> World Resources Institute, funded by USCA (see above) will be developing a state-level GHG inventory, working with MPCA and other agencies, throughout 2019-2020. Funding is for a two-year period.	<b>Status (secured or pending)</b>			
	Secured	\$ 10,000	\$ -	\$ 10,000
<b>Other ENRTF APPROPRIATIONS AWARDED IN THE LAST SIX YEARS</b>		<b>Budget</b>	<b>Spent</b>	<b>Balance</b>
		\$ -	\$ -	\$ -

## What are natural and working lands?

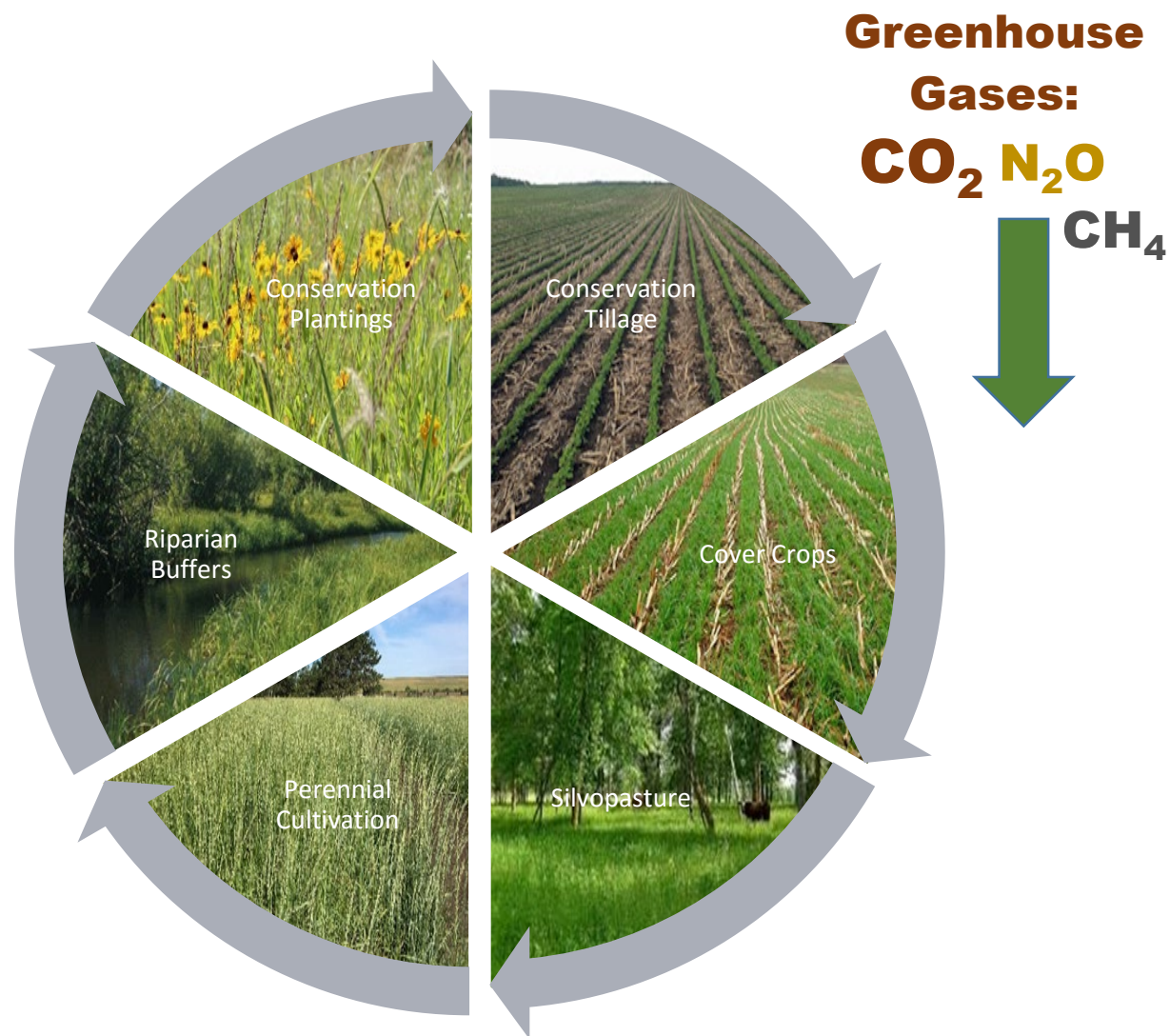
- ☐ ±1.5 million acres of protected lands (permanent and temporary) in 2018
- ☐ Over 4 million acres of agricultural land in conservation practices (2009-2017)

## Key questions:

- ☐ What climate change mitigation benefits do these lands provide?
- ☐ How can these benefits be sustained and increased into the future?

## The proposal:

- ☐ An inventory and interactive tool to assess the climate change mitigation benefits of natural and working lands and maximize these benefits going forward



## Project Manager Qualifications

### Proposed Project: *Tracking the Climate Benefits of Natural and Working Lands*

**Project Manager:** Suzanne Rhees

**Organization:** Minnesota Board of Water and Soil Resources (BWSR)

**Title:** Conservation Projects Coordinator

**BWSR Mission Statement and Charge:** Improve and protect Minnesota's water and soil resources by working in partnership with local organizations and private landowners. BWSR is the state soil and water conservation agency, and it administers programs that prevent sediment and nutrients from entering our lakes, rivers, and streams; enhance fish and wildlife habitat; and protect wetlands. The 20-member board consists of representatives of local and state government agencies and citizens.

#### **Project Manager Experience – Suzanne Rhees:**

Suzanne Rhees, AICP, is Conservation Projects Coordinator for the Board of Water and Soil Resources (BWSR). Along with Dan Shaw, she coordinates BWSR's work on energy and climate. These include:

- Updates to BWSR's Climate Resiliency Toolbox, a web-based guide, and related on-line resources
- Updates to BWSR's Climate Trends and Action Plan (ongoing in 2019)
- Participation on interagency Energy and Climate Team
- Updating of eLINK database of conservation projects and carbon sequestration estimates for consistency with MPCA methods

Her related projects include:

- Feasibility study and program plan for a Working Lands Watershed Restoration Program (<http://www.bwsr.state.mn.us/planning/WLWRP/wlwrp.html>) to incentivize adoption of perennial and cover crops by farmers to improve water quality.
- Interagency initiatives to promote land use changes (i.e., perennial and cover crop adoption, crop rotations, and other BMPs) to protect groundwater/drinking water in vulnerable areas.
- [Advancing Safe and Sustainable Water Reuse in Minnesota: 2018 Interagency Report on Water Reuse \(PDF\)](#): Lead technical writer for MDH-managed Clean Water Fund project.

Before coming to BWSR, Ms. Rhees' experience included practice as a planning consultant and project manager in the areas of land use and resource protection, with an emphasis on green infrastructure and farmland preservation. At the DNR, she managed projects examining the effects of groundwater use on streams, lakes, and wetlands, led agency participation in the EQB *Water Policy Plan, Beyond the Status Quo*, and participated in rulemaking for the Mississippi River Corridor Critical Area, among other projects. Ms. Rhees coordinated the MPCA's *Water Governance Evaluation* (2013), a report to the Legislature evaluating the history and status of water management in Minnesota and recommending strategies to streamline the system.

#### **Education**

- BA Southeast Asian Studies, University of California, Berkeley
- MA Regional Planning, University of Pennsylvania