

**Environment and Natural Resources Trust Fund
2018 Request for Proposals (RFP)**

Project Title:

ENRTF ID: 181-F

Restoration Strategies for Ditched Peatland SNA - Phase II

Category: F. Methods to Protect or Restore Land, Water, and Habitat

Total Project Budget: \$ 460,294

Proposed Project Time Period for the Funding Requested: 2 years, July 2018 to June 2020

Summary:

This project will conduct a feasibility study, and design and implement a pilot habitat restoration project resulting in the increased health and resiliency of a pattern peatland ecosystem.

Name: Michele Walker

Sponsoring Organization: MN DNR

Address: 2532 Hannah Ave NW
Bemidji Mn 56601

Telephone Number: (218) 308-2464

Email michele.walker@state.mn.us

Web Address _____

Location

Region: Northwest

County Name: Lake of the Woods, Roseau

City / Township:

Alternate Text for Visual:

Winter Roads Peatland project map

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



Environment and Natural Resources Trust Fund (ENRTF)

2018 Main Proposal

Project Title: Restoration Strategies for Ditched Peatland Scientific and Natural Areas-Phase II

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I. PROJECT STATEMENT

The vast peatlands of northern Minnesota are some of the most intriguing landscapes in the world and one of the state's most extensive ecosystems. Unlike Minnesota's other large ecosystems such as prairies and broadleaf forests, most of Minnesota's peatlands have not been cleared or fragmented by development. An intricate relationship between vegetation, subtle topography, hydrology and climate has formed and is critical to maintaining these high functioning patterned peatland habitats that are recognized regionally and internationally. Peatlands have numerous functions including habitat for rare and unique species, carbon sequestration, water quality protection, and water retention.

The 4,250 acre Winter Road Lake Peatland Scientific and Natural Area (SNA) is located in Lake of the Woods and Roseau counties (see attached map). It is one of 18 ecologically significant patterned peatlands designated as SNAs by the Minnesota legislature (MS 84.036). The natural hydrologic condition of this peatland was disrupted in the early 1900's by the installation of drainage ditches and roads. The drainage ditches interrupt surface flow patterns while the roads block normal flow of water through the peatland. Ditching within the SNA continues to degrade the vegetation and related functions of the peatland. This results in hydrologic and habitat changes that lower the ecological integrity of the peatland, negatively impact important and unique wildlife species, cause flooding in the basin, and may contribute to CO₂ losses.

Phase I, a previously funded LCCMR project (*ML11 ENTRF- Developing Restoration Approaches to Ditches in Peatland Scientific and Natural Areas*), was completed in 2015 to better understand these effects and to identify restoration opportunities. This study monitored the peatland hydrology and vegetation over three years. The monitoring results found there are negative effects of ditching on the hydrology and habitat. The study recommended that a limited approach to restoration be conducted at as specific area in the Winter Road Peatland, while continuing to evaluate other restoration sites in progress in the State.

The goal of Phase II is to conduct a pilot habitat restoration project specified in the Phase I report. This will involve conducting a feasibility study, designing and implement a pilot habitat restoration project that will result in the increased health and resiliency of a pattern peatland ecosystem. This project will also evaluate opportunities of wetland banking and ditch abandonment.

Key elements of this project to achieve the goal will include:

1. Conduct an overall feasibility study for a full restoration project, and develop and implement a restoration plan for a pilot ditch segment in the Winter Road Lake Peatland.
2. Conduct a systematic evaluation of the ditch system at Winter Road Lake Peatland to identify ditch closure opportunities, constraints, threats of future disturbance, and restoration priorities.
3. Work with the drainage authority (LOW and Roseau Counties) on requirements and procedures for ditch abandonment of the pilot ditch segment, including the applicability of wetland banking credits post restoration.
4. Continue long-term monitoring network for water levels, flows in the ditches, and vegetation installed in Phase I for eventual use in evaluating the effectiveness of ditch abandonment projects.

II. PROJECT ACTIVITIES AND OUTCOMES

Activity 1: Peatland Hydrology and Vegetation Pilot Restoration Project _____ Budget: \$360,000

Conduct a site specific evaluation of the recommended ditch abandonment site from Phase I, determine the feasibility of the abandonment efforts for the site, explore the opportunities for water banking, and design and implement pilot restoration. Evaluate methods for ditch abandonment by conducting a site specific analysis including but not limited to filling of ditch, utilizing natural fill, breaching embankment, and ditch blocks. Evaluate vegetation establishment/management methods to achieve the desired habitat outcomes. Produce a report with the recommended abandonment methods/procedures and priority list of ditch segments along with vegetation restoration/management recommendations. Implement Pilot restoration according to feasibility and design specifications.

Outcome	Completion Date
1. Conduct site specific feasibility study for Pilot project focusing on site access, equipment needs, construction timing, potential effectiveness, cost, and priority.	12/31/2018



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2. Produce a complete design and restoration report with recommended ditch abandonment methods, restoration techniques, vegetation management and water banking opportunities.	5/30/2019
3. Implement pilot project by constructing restoration to design specifications in restoration report.	3/31/2020

Activity 2: Hydrologic Assessment and Monitoring of the SNA

Budget: \$ 100,294

Continue monitoring the peatland water budgets with previously installed and maintained automated gaging sites, manual surface water monitoring locations, precipitation gaging stations and water level monitoring piezometers. Data will be used to evaluate the pilot project.

Outcome	Completion Date
1. Maintain two (2) automated surface water and precipitation gaging stations with satellite telemetry.	06/01/2020
2. Biannual installation and removal of data loggers/pressure transducers in piezometers at each vegetation monitoring plot for groundwater level measurements.	06/01/2020
3. Conduct annual synoptic surface water flow measurements at eight (8) sites eight (8) times per year.	06/01/2020
4. Compile collected data and report the results with a determination of effects of restoration on the peatland water budget. This information will roll into the feasibility study as it is compiled and results obtained.	06/01/2020

III. PROJECT STRATEGY

A. Project Team/Partners

Project team will include the staff from the DNR Divisions Ecological and Water Resources and Fish and Wildlife. Michele Walker-MN DNR NW Regional Groundwater Specialist (Project Manager); Shelley Hedtke SNA Regional Management Specialist or Tyler Janke SNA Specialist (Hydrologist); Gretchen Mehmel Area Wildlife Manager and Charlie Tucker Assistant Area Wildlife manager (project coordination). In addition contractors will be used for ditch abandonment, habitat restoration, and wetland banking analysis.

Supporting Partners: Lake of the Woods County Environmental Director, Roseau County Environmental Director; Red Lake Band of Ojibway; Phil Talmage Area Fisheries Supervisor; Adam Munstenteiger Area Forest Supervisor; Board of Water and Soil Resources.

B. Project Impact and Long-Term Strategy

Developing a feasibility plan, design and pilot restoration implementation based on Phase I information will result in a project that will set the stage for a comprehensive restoration strategy for the entire Winter Road Lake Peatland system and provide information for sustainable management practices that may be replicated in other ditched peatland systems. Technical analysis and engineering will be completed along with ditch abandonment, ditch restoration, and wetland banking considerations to benefit to all stakeholders/partners. Because of the systematic approach taken, results from Phase I and II will lead to efficient and effective peatland management and restoration practices in this and in other ecologically significant patterned peatlands.

C. Timeline Requirements

This Phase II proposal is a two-year initiative to build on the data and outcomes from Phase I, and will result in a well-developed pilot restoration and continued data collection that will be used to develop effective and efficient peatland management for full restoration of the highly ecologically important Winter Road Lake Peatland systems and beyond.

2018 Detailed Project Budget

Project Title: Restoration Strategies, Ditched Peatland SNAs - Phase II

IV. TOTAL ENRTF REQUEST BUDGET 2 years

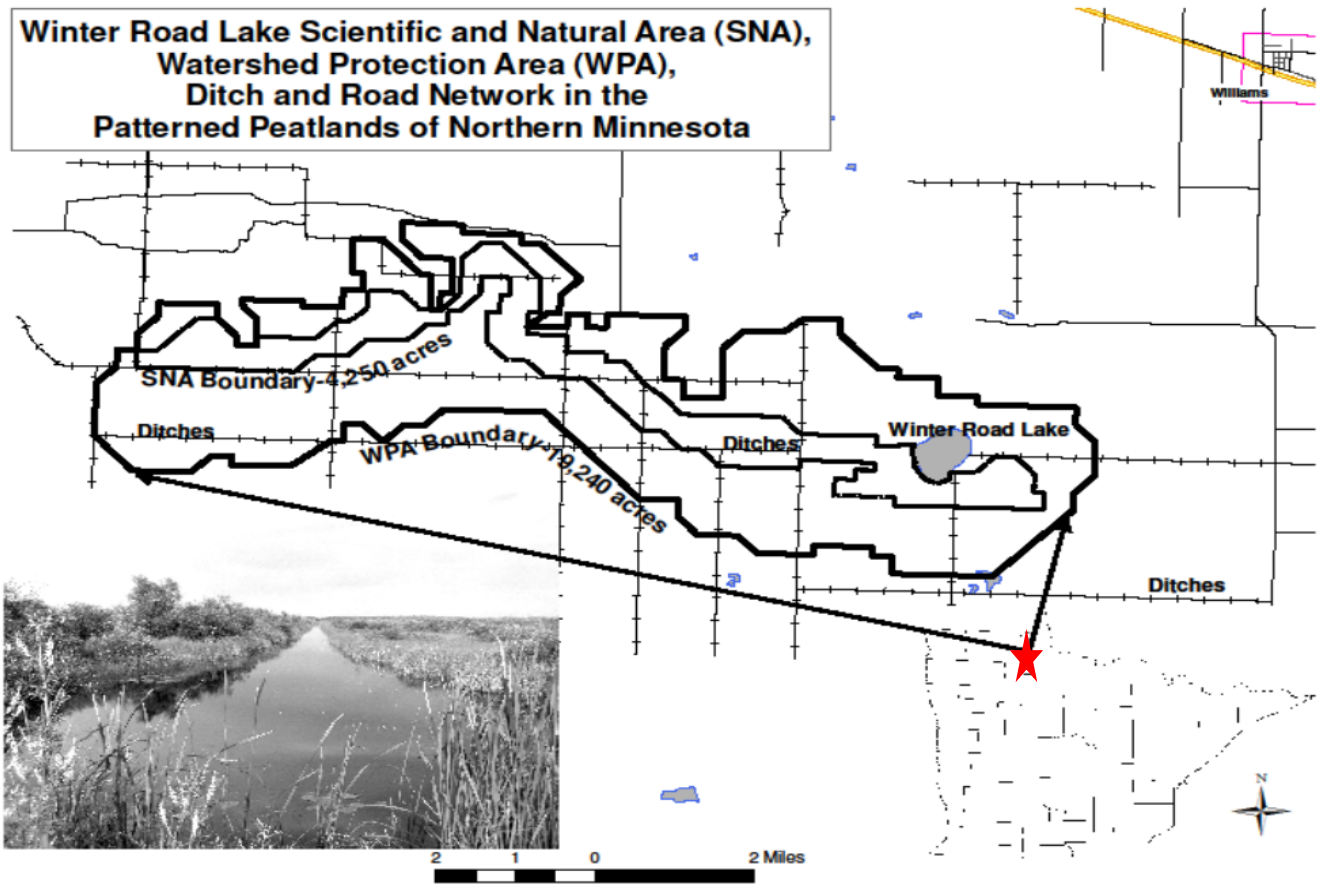
BUDGET ITEM	AMOUNT
Personnel: 0.50 FTE Project Manager (.25 FTE/yr, \$25,000/yr for 2 yrs) manage overall project, oversee contract, coordinate fieldwork. 0.50 FTE Hydrologist (.25 FTE/yr \$25,000/yr for 2 years) conduct fieldwork, maintain equipment, assist contractor on site when needed. 0.25 FTE SNA, Wildlife or other pertinent staff necessary for project coordination (.125 FTE/yr \$10,000/year for 2 years) Salaries include ~15-25% fringe benefits as per state union contracts.	\$ 120,000
Professional/Technical/Service Contracts: Environmental Consulting firm and/or University to complete the Ditch Abandonment and Peatland Restoration Feasibility Study and implement pilot project	\$ 300,000
Equipment/Tools/Supplies: Purchase of dataloggers and maintenance supplies for piezometers and gaging stations	\$ 15,000
Acquisition (Fee Title or Permanent Easements): None	\$ -
Travel: DNR fleet charges (for operation of trucks, cars, & special fieldwork equipment) & instate travel costs (as per state contracts)	\$ 11,000
Additional Budget Items: Direct and Necessary costs for those activities. DNR's direct and necessary costs (\$14,294 total) pay for activities that are directly related to and necessary for accomplishing appropriated programs/projects. Direct and necessary costs cover HR Support (\$1,856), Safety Support (\$426), Financial Support (\$5,827), Communication Support (\$1,271), IT Support (\$3,843), Planning Support (\$1,072) that are necessary to accomplishing funded programs/projects. *	\$ 14,294
TOTAL ENVIRONMENT AND NATURAL RESOURCES TRUST FUND \$ REQUEST =	\$ 460,294

*Direct and Necessary expenses include Department Support Services (Human Resources, IT Support, Safety, Financial Support, Communications Support, and Planning Support). Department Support Services are described in the agency Service Level Agreement and billed internally to divisions based on rate that have been developed for each area of service. These services are directly related to and necessary for the appropriation. Department leadership services (Commissioner's Office and Regional Directors) are not assessed. Those elements of individual projects that put little or no demand on support services such as large single-source contracts, large land acquisitions, and funds that are passed through to other entities are not assessed Direct and Necessary costs for those activities.

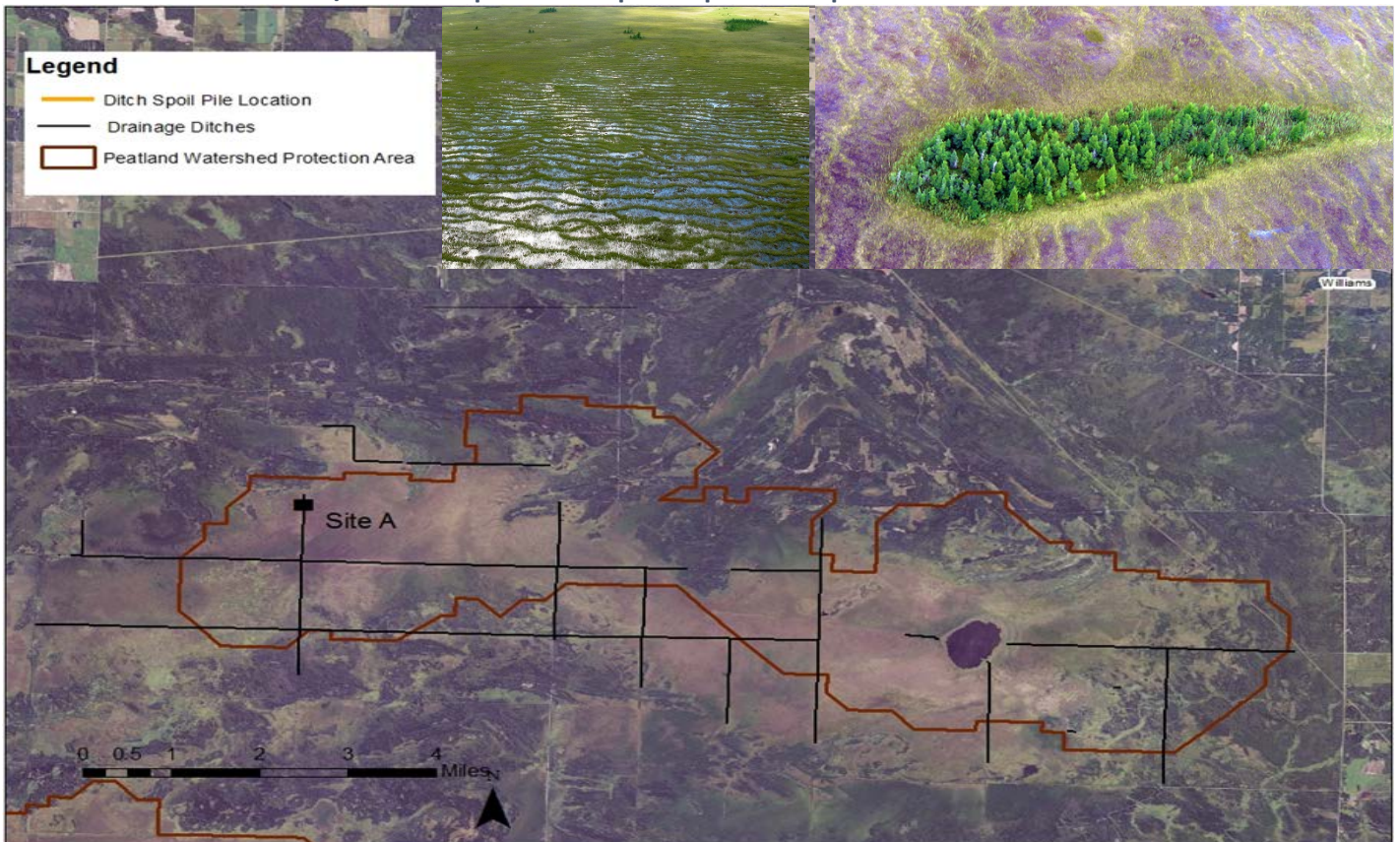
V. OTHER FUNDS

SOURCE OF FUNDS	AMOUNT	Status
Other Non-State \$ To Be Applied To Project During Project Period: N/A	N/A	N/A
Other State \$ To Be Applied To Project During Project Period:	N/A	N/A
In-kind Services To Be Applied To Project During Project Period: DNR office facilities, copiers, computer, communications; supervisor & manager time (but contributions are not tracked)	N/A	N/A
Past and Current ENRTF Appropriation: LCCMR appropriations: 2011 SNA Special Project: Developing Restoration Approaches to Ditches in Peatland SNAs Phase 1	\$ 248,712	Spent in 2015
Other Funding History: N/A	N/A	N/A

**Winter Road Lake Scientific and Natural Area (SNA),
Watershed Protection Area (WPA),
Ditch and Road Network in the
Patterned Peatlands of Northern Minnesota**



Winter Roads Peatland SNA/WPA with photo examples of patterned peatlands



PROJECT TITLE: Restoration Strategies for Ditched Peatland Scientific and Natural Areas – Phase II

Project Manager: Michele Walker

Michele Walker is a hydrogeologist (Geoscientist license #30096) in the Groundwater Unit with Minnesota DNR Division of Waters. Her program responsibilities are to provide technical analyses of the nature, distribution, appropriation and sustainability of groundwater in the northwestern counties, which include Minnesota's portion of the Red River Valley and extensive peatlands.

Michele has an MS degree in Soil Science from the University of Idaho and a BS degree in Geology from Bemidji State University. She has worked for both the Minnesota DNR and Minnesota Department of Agriculture as a hydrogeologist since 1991 and has published several peer-reviewed papers in scientific journals including the Journal of Environmental Quality and Environmental Science and Technology.

As a hydrogeologist with the State, she has worked on both groundwater quantity and groundwater quality issues. Her current position involves working on groundwater quantity concerns as they relate to water supply in the northwestern region of the State. She evaluates water supply plans for many cities in northwestern Minnesota and evaluates surface water and groundwater interaction as it relates to ground water appropriation.

In previous positions with the State, she has performed hydrologic work to protect ground- and surface water from agricultural contamination. This has included reviewing and evaluating environmental investigations and remediation at agricultural chemical cleanup sites; coordinating the work of consultants, responsible parties and other interested people; and working on innovative cleanup approaches to agricultural contamination.