

**Environment and Natural Resources Trust Fund  
2011-2012 Request for Proposals (RFP)**

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**LCCMR ID: 069-C1+2**

**Project Title:** Restoration Strategies; Ditched Peatland Scientific and Natural Areas

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**Category:** C1+2. Protection, Restoration, and Enhancement

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**Total Project Budget:** \$ \$248,712

**Proposed Project Time Period for the Funding Requested:** 2 yrs, July 2011 - June 2013

**Other Non-State Funds:** \$ 0

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**Summary:**

Evaluate hydrology and habitat of the Winter Road Lake peatland watershed protection area to determine the effects of ditch abandonment and potential restoration on this and other patterned peatlands.

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**Name:** Michele Walker

**Sponsoring Organization:** DNR

**Address:** 2115 Birchmont Beach Rd NE  
Bemidji MN 56601

**Telephone Number:** 218-308-2664

**Email:** michele.walker@state.mn.us

**Web Address:** www.dnr.state.mn.us

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**Location**

**Region:** NW

**Ecological Section:** No. Minnesota and Ontario Peatlands (212M)

**County Name:** Lake of the Woods

**City / Township:** Noyes and Hiwood Townships

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

## 2011-2012 MAIN PROPOSAL

### PROJECT TITLE: Restoration Strategies; Ditched Peatland Scientific and Natural Areas

#### I. PROJECT STATEMENT

This project will evaluate hydrology and habitat of the Winter Road Lake Peatland to determine the effects of ditch abandonment and potential restoration on this peatland and others:

- Determine detailed internal watershed boundaries and patterned peatland features using existing LiDAR data (Light Detecting and Ranging data-planned release date in July 2010);
- Establish a long-term, monitoring network for water levels, flows in the ditches, vegetation and birds;
- Examine the functional relationship of ditches to their associated drainage systems, affected properties and habitat to determine if ditch abandonment will improve the ecological health of this patterned peatland.

The Winter Road Lake Peatland Scientific and Natural Area (SNA) along with its surrounding Watershed Protection Area (WPA), is located in Lake of the Woods and Roseau counties. 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 high quality peatland was disrupted in the early 1900's by the installation of many drainage ditches and the Norris-Roosevelt Road. Roads block normal flows of water through the peatland, while drainage ditches interrupt surface flow patterns, decrease near-surface water levels and change the amounts and timing of spring runoff and other surface water flows. Resulting hydrologic and habitat changes degrade the ecological integrity of the peatland, negatively impact species of greatest conservation need (SGCN), cause flooding in the basin, and impact the human-built environment. The recently completed management plan for this SNA recommends further evaluation of the existing drainage ditch and road systems to assess opportunities for restoring peatland hydrology and habitat.

We will determine the conditions for successful ditch abandonment and investigate the appropriate ditch abandonment methods for this and similar peatland areas along with determining the potential for wetland banking credits post restoration. We will develop improved peatland management practices and monitoring guidelines for implementation in this and other peatlands statewide. Public land administrators, regulators and watershed districts will have the tools to evaluate ditch effects on hydrology and habitat, analyze the viability of the habitat for SGCNs, make changes to improve habitat, and monitor to ensure that project goals are achieved and maintained.

#### II. DESCRIPTION OF PROJECT ACTIVITIES

**Total Budget:** \$ 248,712

##### **Activity 1:** Hydrologic Assessment and Monitoring of the SNA/WPA

**Budget:** \$ 154,003

Establish and map internal watershed boundaries and conceptual water budgets using available LiDAR data. Install and maintain automated gaging sites which will measure precipitation, groundwater levels and water velocity in the adjacent ditch. Install and monitor piezometers in vegetation monitoring sites and take synoptic surface water measurements. Data will be used to evaluate existing hydrologic conditions and potential benefits and locations of ditch abandonment.

Outcome	Completion Date
1. Establish internal watershed boundaries (map) and conceptual water budgets.	9/30/2011
2. Install (by 11/31/2011) and maintain three (3) automated precipitation, groundwater and ditch gaging stations with satellite telemetry.	5/31/2013
3. Install wells at each vegetation monitoring plot for synoptic groundwater level measurements.	10/31/2011
4. Conduct annual synoptic surface water flow measurements at eight (8) sites four (4) times per year.	5/31/2013
5. Compile collected data and report the results with a determination of the peatland water budget.	5/31/2013

##### **Activity 2:** Vegetative and Avian Assessment and Monitoring of the SNA/WPA

**Budget:** \$ 20,480

Conduct vegetation evaluation and collection along with avian counts at vegetative plots twice per year to evaluate existing habitat and determine ditching effects on existing habitat.

Outcome	Completion Date
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1. Plot-based quantitative vegetation and bryophyte sampling, avian counts, and synoptic groundwater level measurements conducted at ten (10) sites to coincide with the synoptic groundwater level measurements.	10/31/2012
2. Compile collected data and report the results.	5/31/2013

**Activity 3: Peatland Hydrology and Vegetation Restoration Alternatives of the SNA/WPA**

**Budget: \$36,604**

Review and analyze data to determine potential restoration methods including ditch blocking and vegetation establishment/management. Evaluate appropriate ditch blocking design, frequency, and materials based on site conditions, desired hydrology and material availability as it relates to habitat improvement. Evaluate the need to establish, restore or manage vegetation to achieve the desired habitat (report).

Outcome	Completion Date
1. Review ditch plans, conduct ditch profiling as needed, review potential hydrologic and restoration methods.	9/30/2012
2. Analyze preliminary results, research and make preliminary recommendations for habitat improvements.	1/31/2013
3. Analyze final results, research and make final recommendations for habitat improvements in a final report.	6/30/2013

**Activity 4: Ditch Abandonment Analysis of the SNA/WPA**

**Budget: \$37,625**

Review regulatory requirements related to restoration, ditch abandonment, wetland banking and permitting. Establish the as-built ditch profile and evaluate changes since construction. Review regulatory requirements and provide technical assistance in completing the necessary documents for ditch abandonment and wetland mitigation credits (report).

Outcome	Completion Date
1. Review ditch systems and affected properties.	9/30/2012
2. Determine regulatory requirements for restoration and possible ditch abandonment.	9/30/2012
3. Prepare preliminary information and analysis necessary for potential ditch abandonment, wetland banking, permitting and other regulatory processes in a report.	6/30/2013
4. Develop technical analysis for preparing a Wetland Bank Scoping Document	6/30/2013

**III. PROJECT STRATEGY**

**A. Project Team/Partners**

**Key personnel funded by the project:** Michele Walker-MN DNR NW Regional Groundwater Specialist; Becky Marty-MN DNR NW Regional Ecologist; DNR Water Monitoring Crew; DNR unclassified Staff, Contractor for vegetation evaluation & bryophyte collection (George-Ann Maxson); Contractor for bryophyte identification (Jan Janssens); Contractor for ditch abandonment, habitat restoration and wetland banking analysis (University of MN-NRRI).

**Supporting Partners:** Lake of the Woods County Environmental Director, US Army Corps of Engineers

**B. Timeline Requirements**

The monitoring sites will need to be installed and monitored for at least two (2) years, in order to evaluate existing hydrology in the peatland. Upon completion of the second year of monitoring, the data will be compiled into a report on current hydrology and habitat along with an evaluation of possible sites for ditch abandonment and road mitigation. The data can also be used to determine the best possible method for ditch abandonment if that is needed to improve habitat.

**C. Long-Term Strategy and Future Funding Needs**

If ditch abandonment is a viable method for habitat restoration; future work may involve design and implementation of ditch abandonment. Technical analysis and engineering would be completed to apply for wetland banking credits and mitigate the negative impacts of the road. Once the ditch abandonments and road mitigations are completed, long-term monitoring of the hydrologic effectiveness of this effort and the response of vegetation and bird species to changed habitat conditions will be conducted.

**2011-2012 Detailed Project Budget**

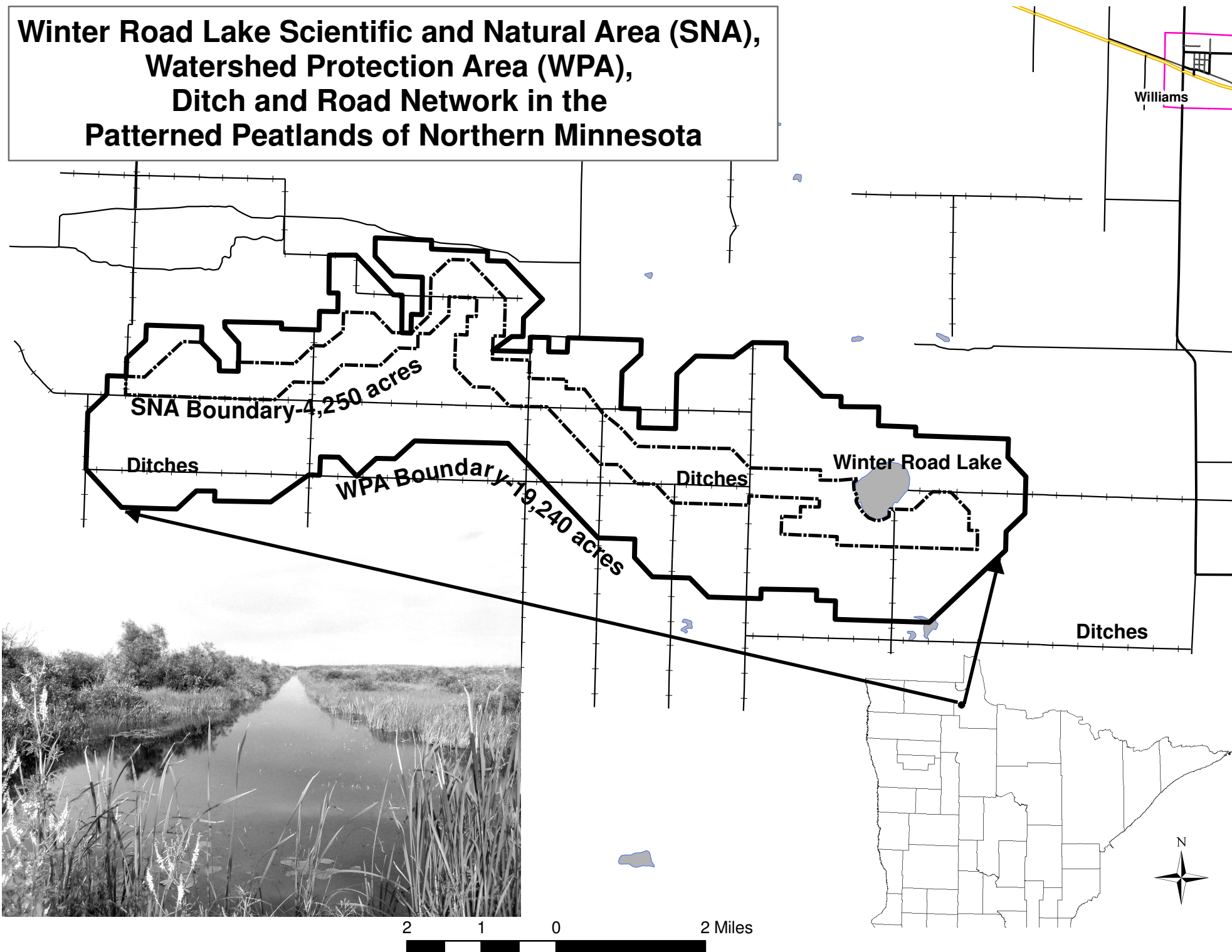
**IV. TOTAL TRUST FUND REQUEST BUDGET 2 years**

<u>BUDGET ITEM</u>	<u>AMOUNT</u>
<b>Personnel:</b> MN-DNR classified Hydrologist 3 (0.15 FTE year 1, 0.10 FTE year 2)- use LiDAR data to determine internal watershed boundaries; planning and installation of synoptic groundwater wells; data compilation and report writing; results analysis, research and recommendations regarding ditch abandonment and habitat improvement. Classified position will be backfilled with MN-DNR unclassified hydrologist in MN-DNR Monitoring Unit.	\$ 23,040
<b>Personnel:</b> MN-DNR classified Natural Resource Senior (0.05 FTE year 1, 0.05 FTE year 2)-data compilation and report writing; results analysis, research and recommendations regarding ditch abandonment and habitat improvement. Classified position will be backfilled with unclassified natural resource specialist in Ecological Services.	\$ 10,800
<b>Personnel:</b> Four (4) MN-DNR classified Hydrologist 1 (0.40 FTE year 1, 0.20 FTE year 2) -construct, install and maintain three (3) automated surface water, groundwater and precipitation gaging sites; take 8 synoptic surface water velocity measurements and 40 synoptic groundwater measurements. Positions will be backfilled with MN-DNR unclassified hydrologist in MN-DNR Monitoring Unit.	\$ 45,360
<b>Subtotal - Personnel</b>	<b>\$ 79,200</b>
<b>Contracts:</b> Vegetation and Avian Data Collection and Compilation. One contractor (George-Ann Maxson) will collect vegetative and avian data. Vegetative collection will include bryophyte and a separate contractor (Jan Janssen) will identify and compile bryophyte data.	\$ 12,200
<b>Contracts:</b> NRRI -Review and analysis of data to determine potential restoration methods including ditch blocking and vegetation establishment/management; review of regulatory requirements and technical assistance in completing the necessary documents for ditch abandonment and wetland mitigation credits	\$ 61,089
<b>Subtotal - Contracts</b>	<b>\$ 73,289</b>
<b>Equipment/Tools/Supplies:</b> Three automated stations with satellite telemetry for collecting groundwater and surface water data @ \$26365 each.	\$ 79,095
<b>Equipment/Tools/Supplies:</b> Well materials for 40 synoptic wells in each of 10 vegetation plots @ \$95/well	\$ 3,800
<b>Equipment/Tools/Supplies:</b> Ruggedized field data retrieval device for data retrieval	\$ 3,000
<b>Subtotal - Equipment</b>	<b>\$ 85,895</b>
<b>Acquisition (Fee Title or Permanent Easements): NA</b>	NA
<b>Travel:</b> DNR Hydrologist 3 (classified), DNR Natural Resources Senior (classified), Four (4) DNR Hydrologist 1 (classified) mileage, lodging, meals	\$ 10,328
<b>Subtotal - travel</b>	<b>\$ 10,328</b>
<b>Additional Budget Items:</b> NA	0
<b>TOTAL ENVIRONMENT &amp; NATURAL RESOURCES TRUST FUND \$ REQUEST</b>	<b>\$ 248,712</b>

**V. OTHER FUNDS**

<u>SOURCE OF FUNDS</u>	<u>AMOUNT</u>	<u>Status</u>
<b>Other Non-State \$ Being Applied to Project During Project Period:</b>	NA	NA
<b>Other State \$ Being Applied to Project During Project Period:</b> DNR Shared Services and Governance.	\$ 12,033	nonsecured
<b>In-kind Services During Project Period:</b>	NA	NA
<b>Remaining \$ from Current ENRTF Appropriation (if applicable):</b>	NA	NA
<b>Funding History: None</b>	NA	NA

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



## **Organization Description**

The Minnesota Department of Natural Resources (DNR)'s mission is to work with citizens to conserve and manage the state's natural resources, to provide outdoor recreation opportunities, and to provide for commercial uses of natural resources in a way that creates a sustainable quality of life. The Department consists of several divisions based on the state's natural resources, such as Fish and Wildlife, Forestry, Lands and Minerals, Parks and Trails, and Ecological Resources and Waters, as well as four regions and four support bureaus.

## **Project Manager Qualifications**

### **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.