



## Environment and Natural Resources Trust Fund (ENRTF) M.L. 2011 Work Plan

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**Date of Status Update:**

**Date of Next Status Update:** 12/1/2011

**Date of Work Plan Approval:** 8/11/2011

**Project Completion Date:** 6/30/2014

**Is this an amendment request?** \_\_\_\_\_

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

**Project Manager:** Michele Walker

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**Location:**

**Counties Impacted:** Lake of the Woods, Roseau

**Ecological Section Impacted:** Northern Minnesota and Ontario Peatlands (212M)

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<b>Total ENRTF Project Budget:</b>	<b>ENRTF Appropriation \$:</b>	200,000
	<b>Amount Spent \$:</b>	<u>0</u>
	<b>Balance \$:</b>	200,000

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**Legal Citation:** M.L. 2011, First Special Session, Chp. 2, Art.3, Sec. 2, Subd. 04q

**Appropriation Language:**

\$100,000 the first year and \$100,000 the second year are from the trust fund to the commissioner of natural resources to evaluate the hydrology and habitat of the Winter Road Lake peatland watershed protection area to determine the effects of ditch abandonment and examine the potential for restoration of patterned peatlands. This appropriation is available until June 30, 2014, by which time the project must be completed and final products delivered.

**I. PROJECT TITLE:** Restoration Strategies for Ditched Peatland Scientific and Natural Areas

**II. PROJECT SUMMARY:** Minnesota is home to unique boreal peatland systems called patterned peatlands. These peatlands form where water levels are near the surface and water flow through the system is slow. This allows for slower decomposition of plant tissues and thus an accumulation of peat. The hydrology of the peatland controls the accumulation of peat and resulting peatland landforms and vegetation. Alterations of the hydrology can have profound impacts on the peat, landforms and vegetation. Ditching within the ecologically significant Winter Road Peatland Scientific and Natural Area (SNA) appears to have affected the hydrology and habitat of this peatland.

To evaluate the effects of the ditching on the hydrology and habitat of the Winter Road Lake Peatland; we propose to establish a long-term monitoring network of the peatland hydrology and habitat. The monitoring network will consist of three (3) automated gaging stations which will continuously monitor groundwater levels, surface water levels in a nearby ditch, and precipitation amounts for that station. These three (3) stations will be co-located with three (3) vegetative monitoring plots to evaluate hydrology and vegetation in the same area. Seven (7) additional vegetative monitoring plots will be established in different areas of the peatland. These will be co-located with seven (7) additional synoptic (manually measured) ground water measurement sites. Eight (8) synoptic (manually measured) surface water measurement stations will be established throughout the peatland to measure surface water flows in various ditches away from the automated sites. The synoptic surface water, groundwater and vegetative measurement sites will be co-located as much as possible to facilitate concurrent ground water, surface water, and vegetative monitoring and evaluate the three subwatersheds within the peatland as established by LiDAR data (Light Detecting and Ranging data-planned release date in July 2010). The project will be conducted over 3 years with automated data to be collected the last two years of the project.

The collected data will be used to examine the functional relationship of ditches to their associated drainage systems, affected properties and habitat. The data will be used to determine if ditch abandonment will improve the ecological health of this patterned peatland.

**III. PROJECT STATUS UPDATES:**

**Project Status as of December 30, 2011:**

**Project Status as of July 30, 2012:**

**Project Status as of December 30, 2012:**

**Project Status as of July 30, 2013:**

**Project Status as of December 30, 2013:**

**Project Status as of June 30, 2014:**

**IV. PROJECT ACTIVITIES AND OUTCOMES:**

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

**Description:** 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.

**Summary Budget Information for Activity 1:**

**ENRTF Budget: \$ 144,940**  
**Amount Spent: \$ 0**  
**Balance: \$ 144,940**

**Activity Completion Date:**

<b>Outcome</b>	<b>Completion Date</b>	<b>Budget</b>
1. Establish internal watershed boundaries (map) and conceptual water budgets. Identify and evaluate potential monitoring sites.	10/31/2011	\$ 5,040
2. Install and maintain three (3) automated precipitation, groundwater and ditch gaging stations with satellite telemetry. Conduct annual synoptic surface water flow measurements at eight (8) sites four (4) times per year.	5/31/2014	\$128,253
3. Install wells at each vegetation monitoring plot for synoptic groundwater level measurements.	10/31/2014	\$ 6,247
4. Compile collected data and report the results with a determination of the peatland water budget.	5/31/2014	\$ 5,400

**Activity Status as of December 30, 2011:**

**Activity Status as of July 30, 2012:**

**Activity Status as of December 30, 2012:**

**Activity Status as of July 30, 2013:**

**Activity Status as of December 30, 2013:**

**Activity Status as of June 30, 2014:**

**Final Report Summary:**

**ACTIVITY 2:** Vegetative Assessment and Monitoring of the SNA/WPA

**Description:** Conduct vegetation evaluation and collection at vegetative transect plots twice per year to evaluate existing habitat as it relates to ditching.

**Summary Budget Information for Activity 2:**

**ENRTF Budget: \$ 13,400**  
**Amount Spent: \$ 0**  
**Balance: \$ 13,400**

**Activity Completion Date:**

<b>Outcome</b>	<b>Completion Date</b>	<b>Budget</b>
1. Conduct plot-based quantitative vegetation and bryophyte sampling at ten (10) sites two (2) times per year.	5/31/2014	\$ 13,400

**Activity Status as of December 30, 2011:**

**Activity Status as of July 30, 2012:**

**Activity Status as of December 30, 2012:**

**Activity Status as of July 30, 2013:**

**Activity Status as of December 30, 2013:**

**Activity Status as of June 30, 2014:**

**Final Report Summary:**

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

**Description:** 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). Conduct a preliminary analysis to determine the potential for wetland mitigation credits.

**Summary Budget Information for Activity 3:**

**ENRTF Budget:** \$ 41,660  
**Amount Spent:** \$ 0  
**Balance:** \$ 41,660

**Activity Completion Date:**

<b>Outcome</b>	<b>Completion Date</b>	<b>Budget</b>
<i>1. Review ditch plans, review potential hydrologic and restoration methods.</i>	9/30/2013	\$ 5,046
<i>2. Analyze preliminary results, research and make preliminary recommendations for habitat improvements.</i>	1/31/2014	\$ 9,137
<i>3. Analyze final results, research and make final recommendations for habitat improvements in a final report</i>	5/30/2014	\$21,751
<i>4. Prepare preliminary information and analysis necessary for potential ditch abandonment, wetland banking, permitting and other regulatory processes in a report.</i>	5/30/2014	\$ 5,726

**V. DISSEMINATION:**

**Description:** Update reports will be available on the DNR website at <http://www.dnr.state.mn.us/> . The final report on the current hydrology and habitat along with a preliminary evaluation of possible sites for ditch abandonment and road mitigation will also be available on the same website. Hydrologic data collected will be available on an on-going basis at: <http://www.dnr.state.mn.us/waters/csg/index.html> .

**Activity Status as of December 30, 2011:**

**Activity Status as of July 30, 2012:**

**Activity Status as of December 30, 2012:**

**Activity Status as of July 30, 2013:**

**Activity Status as of December 30, 2013:**

**Activity Status as of June 30, 2014:**

**Final Report Summary:**

**VI. PROJECT BUDGET SUMMARY:**

**A. ENRTF Budget:**

<b>Budget Category</b>	<b>\$ Amount</b>	<b>Explanation</b>
Personnel:	\$ 71,280	Wages and benefits for four Classified Hydrologist 1 (0.62 FTE) and one Classified Hydrologist 3 (0.28 FTE)
Professional/Technical Contracts:	\$ 41,180	Vegetation data collection and compilation, moss identification, Assist with review and analysis of data to determine potential restoration methods
Equipment/Tools/Supplies:	\$ 47,005	Equipment to install and maintain 3 automated monitoring stations and 40 synoptic ground water piezometers/wells.
Capital Equipment over \$3,500:	\$ 36,090	Data collection platforms and acoustic velocity meters for 3 automated monitoring stations.
Travel Expenses in MN:	\$ 4,445	One hydrologist 3 and four hydrologist 1 round trips from Bemidji/St. Paul to SNA includes mileage, lodging and meals for equipment installation, maintenance, & monitoring
<b>TOTAL ENRTF BUDGET:</b>	<b>\$200,000</b>	

**Explanation of Use of Classified Staff:**

Classified staff has the experience to install, maintain and monitor the equipment used in this project. The MN DNR will either backfill classified staff time spent on this project (Hydrologist 1-0.62FTE and Hydrologist 3-0.28FTE) with an unclassified hydrologist 1 position in the DNR Water Monitoring and Surveys Unit in St Paul or the work previously done by this position will be delayed, eliminated, or completed by the start of the project. Classified staff will only charge the project for hours spent on tasks described in the approved work plan.

**Explanation of Capital Expenditures Greater Than \$3,500:** Rental contracts prohibit the necessary modifications needed to use the data collection platforms in this monitoring situation. Renting the acoustic velocity meters for 2 years is much more expensive than buying them outright. Purchasing also ensures that connections to other equipment in the monitoring are compatible i.e. use the same data platform. In addition, all equipment will be used in the next phases of the project to evaluate restoration.

**Number of Full-time Equivalent (FTE) funded with this ENRTF appropriation:** 0.62 FTE hydrologist 1 and 0.28 FTE hydrologist 3 = 0.90 FTE.

**B. Other Funds:**

<b>Source of Funds</b>	<b>\$ Amount Proposed</b>	<b>\$ Amount Spent</b>	<b>Use of Other Funds</b>
<b>Non-state</b>			
<b>State</b>	\$ 11,224		Shared Services (operations support governance) are services that DNR relies on in order to conduct business and support the work of the department. These services are more efficient when shared.
In-kind Personnel	\$ 10,800	\$	Natural Resource Senior -data compilation, report writing, results analysis, research and recommendations regarding ditch abandonment and habitat improvement.
<b>TOTAL OTHER FUNDS:</b>	<b>\$22,024</b>	<b>\$</b>	

**VII. PROJECT STRATEGY:**

**A. Project Partners:** MN DNR Groundwater Specialist (0.28 FTE Salary, Benefits and travel=\$26,567); DNR Water Monitoring Crew (0.62 FTE Salary, Benefits and travel =\$49,158); Contractor for ditch abandonment, habitat restoration and wetland banking analysis (\$29,180). Private contractors will be used for vegetation evaluation, moss collection and identification (\$12,000). In addition, uncompensated work and/or direction will be provided by NRRI, DNR unclassified Staff as needed, Lake of the Woods County Environmental Director, MN DNR Groundwater Unit Supervisor; MN DNR NW Regional Ecologist; US Army Corps of Engineers – Regulatory Branch.

**B. Project Impact and Long-term Strategy:**

This project will help establish relationships between hydrologic and habitat conditions. The goal will be to determine if ditch abandonment will result in habitat improvement to the peatland system, assess possible ditch abandonment and road mitigation methods, and analyze implications of ditch abandonment for the ditch authority and regulatory agencies (e.g. affected properties, public benefits and utility, potential wetland credits).

This proposed work would contribute towards the development, implementation and monitoring of improved peatland management practices. Public land administrators, regulators and Watershed Districts will be able to evaluate the effects of the ditches and the hydrology on the peatland habitat, analyze the viability of the habitat for SGCNs, and make changes to improve habitat. The proposal will also provide site-specific information tools interdisciplinary area teams need to maintain or enhance the SGCN habitats and other conservation values for this and other, similar peatland areas. Another benefit will be to objectively determine if ditch abandonment can occur and the appropriate ditch abandonment method for similar peatland areas.

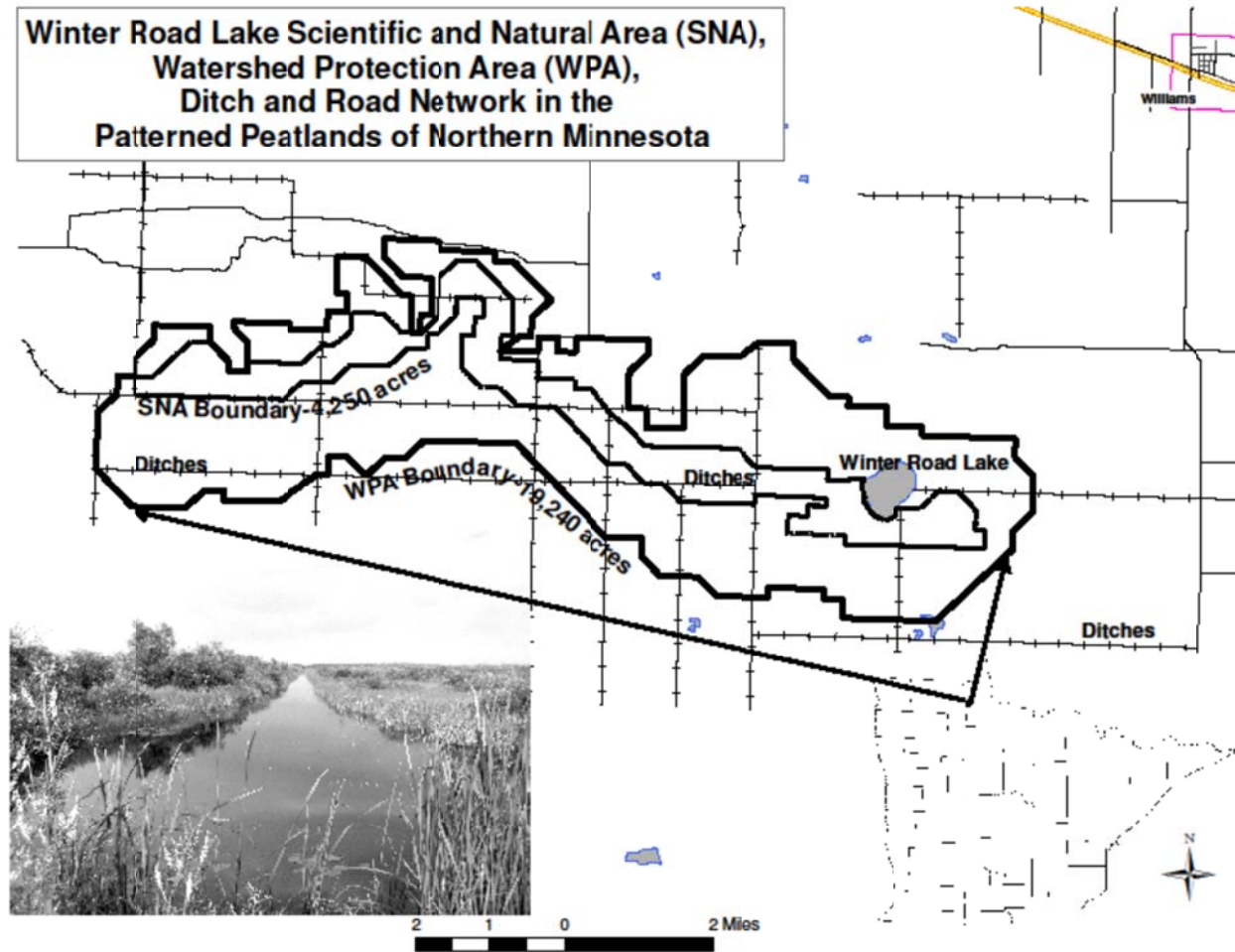
If the data shows that ditch abandonment is a viable method for habitat restoration, future work will involve determining which ditches will be abandoned followed by design and implementation of these projects. Technical analysis and engineering would be completed to determine if wetland banking restoration credits would apply. This work will also include recommendations to mitigate the negative impacts of the road.

**C. Spending History:** *Not applicable, see Budget Detail for more information.*

<b>Funding Source</b>	<b>M.L. 2005 or FY 2006-07</b>	<b>M.L. 2007 or FY 2008</b>	<b>M.L. 2008 or FY 2009</b>	<b>M.L. 2009 or FY 2010</b>	<b>M.L. 2010 or FY 2011</b>

**VIII. ACQUISITION/RESTORATION LIST: NA**

**IX. MAP(S):**



**X. RESEARCH ADDENDUM:  
Attached**

**XI. REPORTING REQUIREMENTS:**

Periodic work plan status update reports will be submitted not later than December 30, 2011, July 30, 2012, December 30, 2012, July 30, 2013, December 30, 2013, and June 30, 2014. A final report and associated products will be submitted between June 30 and August 1, 2014 as requested by the LCCMR.

**Attachment A: Budget Detail for M.L. 2011 (FY 2012-14) Environment and Natural Resources Trust Fund Projects**

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

**Legal Citation:**

**Project Manager:** Michele Walker

**M.L. 2011 (FY 2012-14) ENRTF Appropriation:** \$ 200,000

**Project Length and Completion Date:** 3 years, June 31, 2014

**Date of Update:** 06/14/11

<b>ENVIRONMENT AND NATURAL RESOURCES TRUST FUND BUDGET</b>	<b>Activity 1 Budget</b>	<b>Amount Spent</b>	<b>Balance</b>	<b>Activity 2 Budget</b>	<b>Amount Spent</b>	<b>Balance</b>	<b>Activity 3 Budget</b>	<b>Amount Spent</b>	<b>Balance</b>	<b>TOTAL BUDGET</b>	<b>TOTAL BALANCE</b>
<b>BUDGET ITEM</b>	<i>Hydrologic Assessment and Monitoring of</i>			<i>Vegetative Assessment and Monitoring of</i>			<i>Peatland Hydrology and Vegetation</i>				
<b>Personnel (Wages and Benefits)</b> Hydrologist 3, 0.09FTE year 1, 0.08 FTE year 2, 0.11 Year 3=0.28FTE; 20% benefits, 80% salary	12,240	0	12,240	1,200	0	1,200	12,480	0	12,480	25,920	25,920
<b>Personnel (Wages and Benefits)</b> Four Hydrologist 1 (varying crews throughout the project), 0.39FTE year 2, 0.23 FTE year 3 = 0.62FTE; 20% benefits, 80% salary	45,360	0	45,360	0	0	0	0	0	0	45,360	45,360
<b>Professional/Technical Contracts</b> Vegetation data collection and compilation contractor. Contractor to be selected per DNR requirements for contracting. Vegetative surveys will be conducted at ten (10) transects adjacent to the automated groundwater/surface water sites and synoptic measurement sites. 1. Transects will be sampled to capture the greatest species diversity and richness for moss and other vegetation; one sampling to occur in the early summer (mid-late June) and one in the late summer (mid-late August). Transects will be sampled twice per year of this project for a total of four (4) sampling events. 2. Data will be collected, verified and submitted electronically to MN DNR .	0	0	0	10,000	0	10,000	0	0	0	10,000	10,000
<b>Professional/Technical Contracts</b> Moss Identification contractor. Contractor to be selected per DNR requirements for contracting. A small sample of each visibly different bryophyte species will be collected by vegetation contractor and shipped to contractor for species identification. Contractor will identify each species and report the results back to MN DNR. Estimating 50 species to be identified.	0	0	0	2,000	0	2,000	0	0	0	2,000	2,000





<b>Capital equipment over \$3,500</b> Three (3) Design Analysis Water Log Series Data Collection Platforms for three (3) automated groundwater and surface water monitoring stations (\$4030 each)	12,090	0	12,090	0	0	0	0	0	0	12,090	12,090
<b>Capital equipment over \$3,500</b> Three Sontek Uplooker Acoustic Velocity Meters, one for each automated station, to measure ditch flow @ \$8000 each.	24,000	0	24,000	0	0	0	0	0	0	24,000	24,000
<b>Travel expenses in Minnesota</b> Hydrologist 3 round trip Bemidji to SNA to identify and evaluate monitoring sites and install synoptic wells. Mileage, lodging, and meals to be reimbursed per union contract.	324	0	324	324	0	324	0	0	0	647	647
<b>Travel expenses in Minnesota</b> Four (4) hydrologist 1 round trips from St. Paul to SNA for equipment installation. Mileage, lodging, and meals to be reimbursed per union contract.	1,118	0	1,118	0	0	0	0	0	0	1,118	1,118
<b>Travel expenses in Minnesota</b> Two (2) hydrologist 1 round trips from St. Paul to SNA for equipment maintenance (every 4-6 weeks for hand calibration), synoptic surface water measurements and synoptic ground water measurements. Mileage, lodging, and meals to be reimbursed per union contract.	2,680	0	2,680	0	0	0	0	0	0	2,680	2,680
<b>COLUMN TOTAL</b>	<b>\$144,617</b>	<b>\$0</b>	<b>\$144,617</b>	<b>\$13,724</b>	<b>\$0</b>	<b>\$13,724</b>	<b>\$41,660</b>	<b>\$0</b>	<b>\$41,660</b>	<b>\$200,000</b>	<b>\$200,000</b>