

understand the peat accumulation rate over very long time frames. This will be matched and compared to previous peat core work accomplished through the Red Lake Peat Observatory.

Budget: \$63,452

Outcome	Completion Date
1. A long term (5,000 year) record of peat and carbon accumulation in peatlands	June 2012

Activity 3: Outline road map for large scale peatland restoration

DNR staff will develop a high level plan for large scale peatland restoration. Through internal service agreement the Grand Rapids Forestry Resource Assessment Program will compile and verify existing GIS and related data on ditching, road construction and other developments affecting peatland hydrology in Beltrami, Lake of the Woods and Koochiching Counties. If feasible this will include the creation of digital elevation models. Building off this data and other internal and partner experience, a road map will be developed. The road map will identify peatlands with high restoration potential, their carbon sequestration potential and then evaluate carbon offset protocols and offset market status to develop restoration financing strategies.

Budget: \$52,025

Outcome	Completion Date
1. Verified peatland ditches, roads and related hydrology geographic data set.	June 2012
2. Digital elevation model of peatlands	December 2012
3. High level Peatland restoration roadmap	June 2013

III. PROJECT STRATEGY

A. Project Team (whose getting money) Space between groups.

Mark Lindquist, DNR Biofuels Program (Commissioners Office) will provide project management and contract management. (\$19,051)

Dr. Clarence Turner, Ecologist (Forestry) will provide internal DNR technical lead on roadmap development. (No Funding)

DNR Forest Resource Assessment Program (Forestry) GIS data and analysis (\$42,500)

The Interagency Carbon Sequestration Team (DNR, MPCA, MDA, BWSR, DOT and Office of Energy Security) interagency coordination (No Funding)

Dr. Paul Glaser, The Department of Geology and Geophysics, University of Minnesota/Red Lake Peatland Observatory, will be the primary recipient of project funding, leveraging federal investments. (\$431,820)

B. Timeline Requirements

This project will require two years for procurement and installation of equipment and data collection and analysis. Once equipment is installed, longer term data sets can be developed and analyzed on two year cycles.

C. Long-Term Strategy and Future Funding Needs

The long term objective is to achieve large scale restoration of Minnesota peatlands that have been degraded by altered hydrology. The ENRTF investment in deeper understanding of peat systems will provide 1) greater capacity to pursue large scale restorations, and 2) open anticipated future funding mechanisms – carbon offset markets – to accomplish the restorations. We anticipate that a continuation of ENRTF to fund a longer data series will be sought. It is also a project objective to maximize the benefit of past and potential future federal investments in the Red Lake Peatland Observatory. The National Science Foundation has already funded two eddy flux towers as well as extensive other basic science pertaining to peatland systems. Additional funding will be pursued. A critical infusion of state cash at this time will position Minnesota for further federal investment.

2011-2012 Detailed Project Budget

INSTRUCTIONS AND TEMPLATE (1 PAGE LIMIT)

Attach budget, in MS-EXCEL format, to your "2011-2012 LCCMR Proposal Submit Form".

(1-page limit, single-sided, 10 pt. font minimum. Retain bold text and *DELETE* all instructions typed in italics.

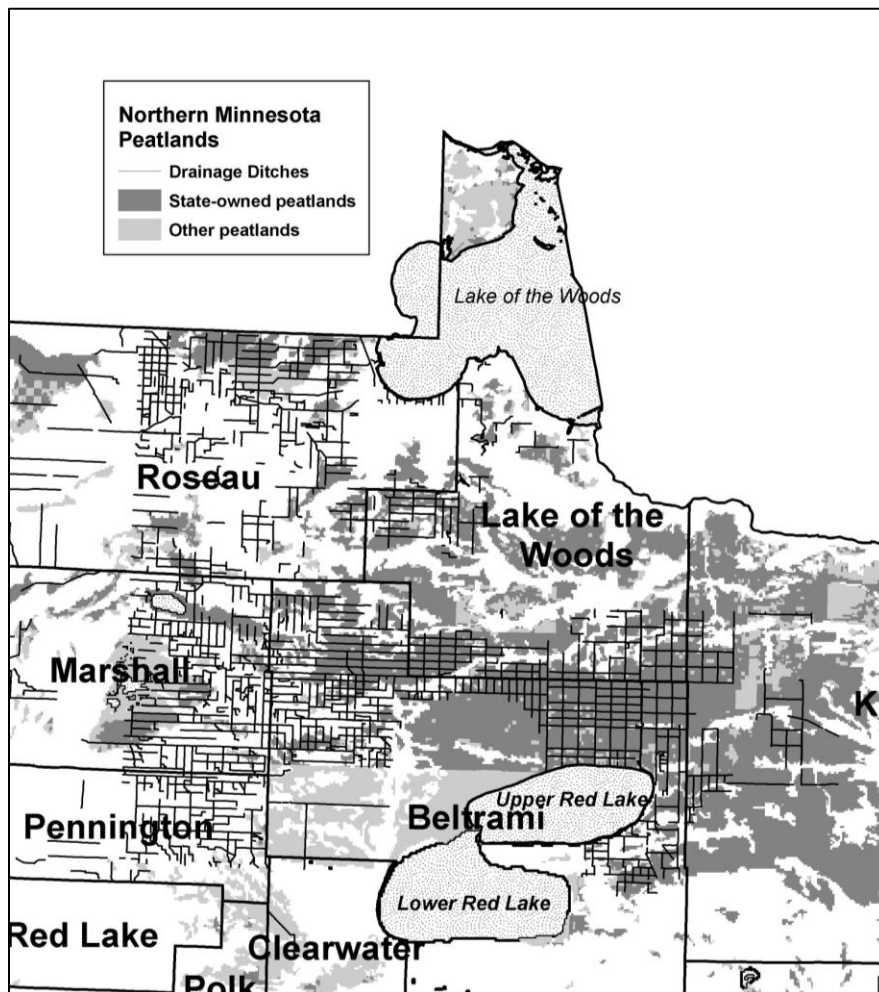
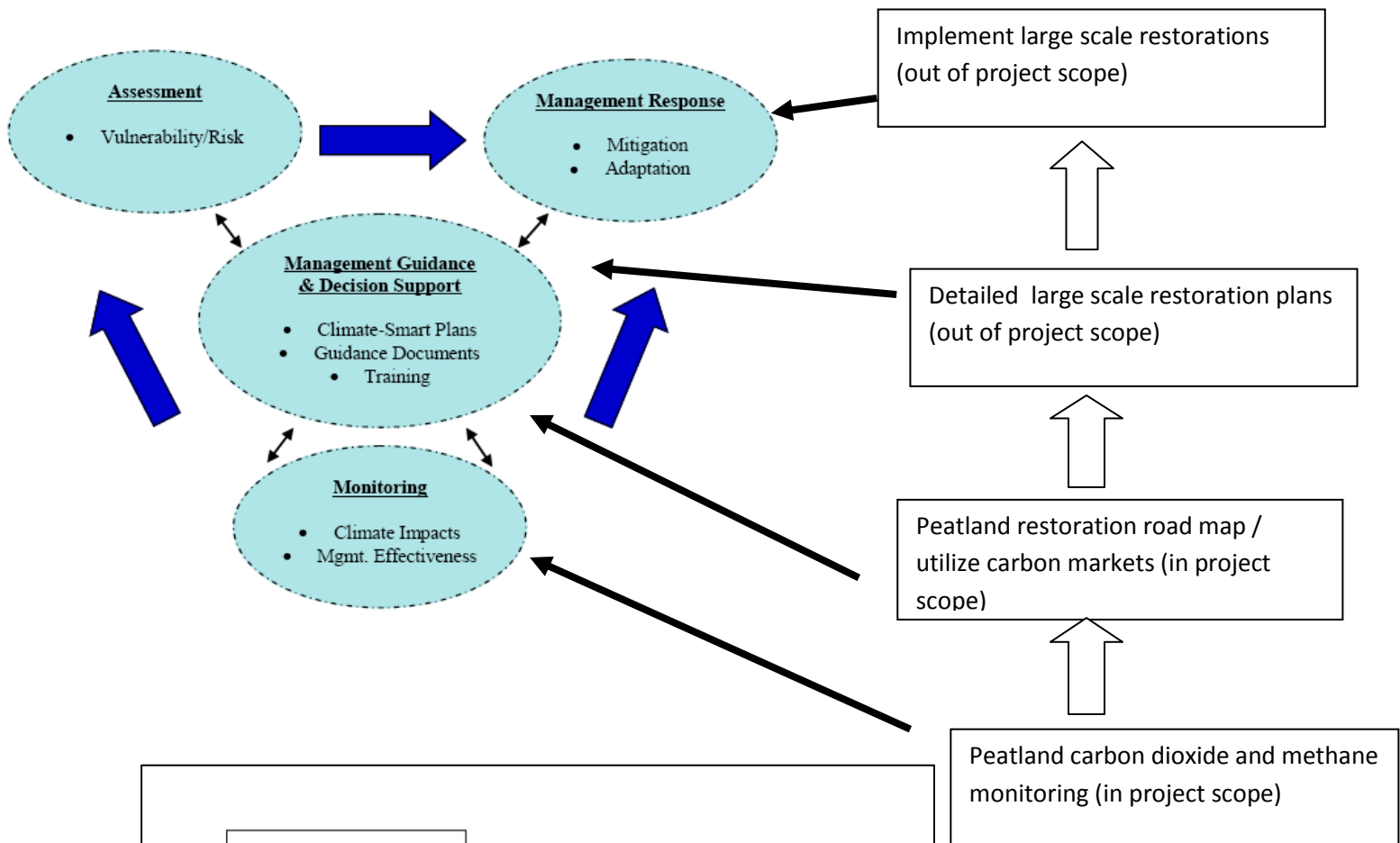
ADD OR DELETE ROWS AS NECESSARY. If a category is not applicable write "N/A", leave it blank, or delete the row.)

IV. TOTAL TRUST FUND REQUEST BUDGET [Insert # of years for project] years

<i>(1-page limit, single-sided, 10 pt. font minimum. Retain bold text and DELETE all instructions typed in italics. ADD OR DELETE ROWS AS NECESSARY. If a category is not applicable write "N/A", leave it blank, or delete the row.)</i>	AMOUNT
Salary: Mark Lindquist, DNR (classified), Project Management and Contract Management (10% time each of two years). This work is beyond normal scope of work and the Department will back fill the 10% time that would have been spent on energy management with other staff. (95,253 salary and fringe)	\$ 19,051
Contracts: University of Minnesota, Department of Geology and Geophysics (Dr. Paul Glaser, principal investigatory) The contract elements will be outlined below as separate line items.	See below
Contract (U of MN): Staffing: Dr. Paul Glaser salary and fringe 50% time for 2 years (31,000 salary per year + 32% fringe). Dr. Glaser will be responsible for procurement, installation, maintenance of eddy current flux towers, core sampling, and procurement of core sample carbon dating, as well as data analysis and reporting of GHG fluxes produced on pristine and restored peatlands.	\$ 81,840
Contract (U of MN) Equipment/Tools/Supplies: Open path eddy covariance units to measure CO2, H2O and energy flux 2 @ 37,500 (procurement, operation and maintenance by U of MN in accordance with ENRTF requirements)	\$ 75,000
Contract (U of MN) Equipment /Tools and / Supplies: Li Cor open path CH4 analyzer kit 4@ 40,000 (procurement, operation and maintenance by U of MN in accordance with ENRTF requirements)	\$ 160,000
Contract (U of MN) Equipment/Tools/Supplies: Balance of plant equipment/supplies for covariance and CH4 analyzer units (procurement, operation and maintenance by U of MN in accordance with ENRTF requirements)	\$ 10,000
Contract (U of MN): Carbon dating and lab analysis of peat cores. 100 carbon dates @\$350 + \$5,000	\$ 40,000
Contract (U of MN) Travel: Helicopter Trips to Red Lake Peatlands 12 trips @ \$5,000 (site is otherwise inaccessible)	\$ 60,000
Contract (U of MN) Travel: 12 Trips to Red Lake Peatland (Baudette) @670 /trip x .50 per mile + 12 hotels @ \$80 per night	\$ 4,980
Additional Budget Items: Internal services agreement with DNR, Grand Rapids Resource Assessment program (operates on internal fee for service contract basis) 500 hours @ \$85 per hour professional services cost.	\$ 42,500
TOTAL ENVIRONMENT & NATURAL RESOURCES TRUST FUND \$ REQUEST	\$ 493,371

V. OTHER FUNDS

SOURCE OF FUNDS	AMOUNT	Status
Other Non-State \$ National Science Foundation will continue to be sought for supporting the broader Red Lake Peatland Observatory project as opportunities arise.	TBD	Indicate: Secured or Pending
Other State \$ Being Applied to Project During Project Period: .MN DNR Clarence Turner - activity 3 \$14,250 (7.5% of \$95,000 salary and fringe for two years) Minnesota DNR Shared Services XXXX		Indicate: Secured or Pending
In-kind Services During Project Period:		
<i>Specify \$ and year of appropriation from any current ENRTF appropriation for any directly related project of the project manager or organization that remains unspent or not yet legally obligated at the time of proposal submission. Be as specific as possible. Describe the status of \$ in the right-most column.</i>	\$ -	Indicate: Unspent? Not Legally Obligated? Other?
Funding History: NSF Funding (approximately 300,000 for equipment, 75,000 for helicopter site access, and 125,000 for .5 FTE staffing over three years)	500,000	
Funding History: Legislative appropriation for U of MN study: Potential for Terrestrial Carbon Sequestration in Minnesota (legal citation)	\$ 385,000	



Project Target Area:
Beltrami, Lake of the Woods and Koochiching Counties

Project Manager Qualifications

Mark Lindquist, Biofuels Program Manager,
Commissioners Office
Minnesota Department of Natural Resources

Mr. Lindquist has nine years experience working with the Minnesota DNR and has led the Biofuels Program in the Commissioner's office since 2007. Prior to that, he was the Southern Regional Planner (1998 – 2004). He brings to bear a wide angle vision of the DNR's work and mission.

Currently housed within the Commissioner's Office, Mr. Lindquist is the lead DNR staff on issues pertaining to the intersection of natural resource, climate and energy policy. He provides leadership on legislative policy issues, interagency coordination, internal coordination as well as outreach and partnership development with the private sector.

Experience relevant to this project:

- Represented DNR on the U of MN, Minnesota Terrestrial Carbon Sequestration Initiative
- Proposed creation of and Co-leads DNR Carbon Sequestration Team
- Chair, Interagency Carbon Sequestration Team
- Contract Manager of \$385,000 contract with U of MN to complete: The Potential for Terrestrial Carbon Sequestration in Minnesota and Terrestrial Carbon Sequestration Monitoring Networks and Demonstration Sites as requested by the Legislature in 2007.

Organization Description

The Commissioners Office houses the Chief Executive Officer and direct support staff of the Department of Natural Resources. The Biofuels program was established in the Commissioner's Office in 2007 as significant new challenges and opportunities relating to biofuels, carbon sequestration and climate change confronted the natural resource managers.

Energy and Climate was identified as one of the three strategic trends confronting natural resource managers in Minnesota. Concerns about energy security, fuel prices, and climate change have led to new national and state standards for renewable energy sources. Climate change is predicted to have direct impacts on Minnesota's forests, grasslands, wetlands, lakes, and streams. Climate change can also intensify the negative effects of other factors influencing natural resources, such as the frequency and intensity of wildfires, the spread of invasive species, and the impact of fish and wildlife diseases.

The Biofuels Program provides leadership across DNR and through interagency partnerships to address carbon sequestration and renewable energy development. This includes providing additional resources for commercial activity, enhance traditional resource management through new opportunities and avoid or minimize negative impacts of renewable energy or carbon sequestration development.