**LEGISLATIVE-CITIZEN COMMISSION ON MINNESOTA RESOURCES**
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Susan Thornton, Director

January 15, 2013

Governor Mark Dayton

Chair, Senate Finance Committee, Senator Richard Cohen

Chair, Senate Environment, Economic Development and Agriculture Division, Senator David Tomassoni

Chair, Senate Environment and Energy Committee, Senator John Marty

Chair, House Ways and Means Committee, Representative Lyndon Carlson

Chair, House Environment, Natural Resources and Agriculture Finance Committee, Representative Jean Wagenius

Chair, House Environment and Natural Resources Policy, Representative David Dill

Legislative Reference Library

The biennial report as required in M.S. 116P.09, Subd. 7 from the Legislative-Citizen Commission on Minnesota Resources (LCCMR) due January 15, 2013 is available on the LCCMR web site at: http://www.lccmr.leg.mn. The report is also available in a CD format or in print upon request and we would be pleased to provide it to you.

This report covers LCCMR actions from Jan. 15, 2011 (date of the previous biennial report) to January 15, 2013, including summaries of past funding accomplishments and new recommendations for funding from the Environment and Natural Resources Trust Fund.

There is $33,810,552 available for expenditure in each year of the FY14-15 biennium from the Environment and Natural Resources Trust Fund (ENRTF) –biennial total available $67,621,104. The amount available for expenditure is determined by the MN Constitution which states: "The amount appropriated each year of a biennium....may be up to 5.5% of the market value of the fund on June 30 one year before the start of the biennium". The value of the ENRTF on June 30, 2012 was $614,737,321.58.

The LCCMR is making a funding recommendation to the 2013 Legislature from the ENRTF totaling $38,160,000 ($33,810,000 is for FY14 and $4,350,000 is for FY15). The LCCMR will be making a future additional funding recommendation for FY15 totaling $29,460,000 to the 2014 Legislature. As stated in M.S. 116P, the LCCMR may make an annual or a biennial funding recommendation.

The list of recommended appropriations totaling $38,160,000 from the Environment and Natural Resources Trust Fund is provided in "Section V. Recommendations." The funding levels and the

proposed legislative bill were adopted by the LCCMR on November 28, 2012. Both actions were through affirmative votes of at least 12 of the 17 members as required by M.S. 116P.05, Subd. 2.

We look forward to presenting this information and certainly encourage questions and discussion. Thank you for the opportunity to serve the Legislature in this capacity.

Sincerely,

Susan Thornton

Susan Thornton, Director
On behalf of the LCCMR

Cc: LCCMR Members

# Legislative-Citizen Commission on Minnesota Resources

Biennial Report
January 15, 2013

**Pursuant to: M.S. 116P.09, Subd. 7**

Please return this document to the LCCMR office: Room 65 State Office Building

# Commission Members

**LCCMR Membership January 1, 2011 – January 1, 2013**

**REPRESENTATIVES**

Rep. David Dill*

Rep. Tom Hackbarth*

Rep. Denny McNamara
*2/1/2011 – 5/16/2012*

Rep. Tom Rukavina

Rep. Ron Shimanski

Rep. Paul Torkelson
*Appointed 5/16/2012*

**SENATORS**

Sen. Gary Dahms
*Appointed 9/22/2011*

Sen. Al DeKruif

Sen. Kari Dziedzic
*Appointed 6/20/2012*

Sen. Linda Higgins*
*2/7/2011 – 6/20/2012*

Sen. Bill Ingebrigtson
*2/7/2011 – 9/22/2011*

Sen. Gen Olson*

Sen. Rod Skoe

**APPOINTED NON-LEGISLATIVE MEMBERS**

Alfred Berner, Gov. appt.
*(term ends – 1/7/2013)*

Jeff Broberg*, House appt.
*(term ends – 1/6/2014)*

Tom Cook, Gov. appt.
*(term ends – 1/6/2014)*

Nancy Gibson*, Gov. appt.
*(term ends – 1/4/2016)*

John Herman, Senate appt.
*(term ends – 1/7/2013)*

Norm Moody, Gov. appt.
*(term ends – 1/7/2013)*

Elizabeth Wilkens, Gov. appt.
*(term ends – 1/6/2014)*

*Denotes Executive Committee Members

# LCCMR Staff

Susan Thornton, Director
Michael McDonough, Manager Research and Planning
Mike Banker, Communications/Outreach Manager and Project Analyst
Diana Griffith, Commission Assistant

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# Legislative-Citizen Commission on Minnesota Resources
# Biennial Report to the Legislature, M.S. 116P.09, Subd. 7
# January 15, 2013

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ENVIRONMENT AND NATURAL RESOURCES TRUST FUND

# LEGISLATIVE-CITIZEN COMMISSION ON MINNESOTA RESOURCES (LCCMR)
# 2011-12 Biennial Report Overview

**Special points of interest:**

- $51.4 million was recommended and approved to go toward 75 individual projects around the state (ML 2011-2012).
- For FY 2014-2015, $38.2 million is being recommended to the 2013 Legislature to fund 46 individual projects around the state. $29.5 million of FY 2015 funds remain available for recommendation to the 2014 Legislature.
- During 2011-2012, LCCMR provided administration and oversight for 279 individual projects, representing approximately $154 million in appropriations, in various stages of their timelines, ranging from developing work plans in preparation to begin to reaching completion and submitting final reports.
- LCCMR heard from numerous public and private sector environment and natural resources experts and visited natural resource sites in the Twin Cities metro area.

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## Overview: January 1, 2011—December 31, 2012

During the period between January 1, 2011 and December 31, 2012 the Legislative-Citizen Commission on Minnesota Resources (LCCMR):

- Submitted and received passage of one biennial funding recommendations bill to the 2011 Legislature providing $51.4 million to 75 natural resources projects around the state.
- Issued one Request for Proposal (RFP) to conduct the selection process for funding recommendations to the 2013 Legislature.
- Received, reviewed, and evaluated 169 proposals requesting a combined $155 million in response to the 2012-2013 RFP. 46 proposals were selected for recommendation.
- Finalized recommendations to the 2013 Legislature of $38.2 million to 46 projects around the state (bill introduction after December 31, 2012). These recommendations account for all of the Environment and Natural Resources Trust Fund funds available for FY 2014 and some of the funds available for FY 2015. $29.5 million of FY 2015 funds remain available for recommendation to the 2014 Legislature.
- Conducted peer review process for 13 research projects recommended to the 2013 Legislature for funding .
- Provided administration and oversight for 279 open projects, representing approximately $154 million in appropriations in various stages of their timelines, 109 of which reached completion in 2011-12, including projects begun in 2005 (1), 2006 (1), 2008 (19), 2009 (55), and 2010 (33).
- Visited several natural resources sites in the Twin Cities metro area.
- Heard from numerous natural resources experts from both the public and private sector.
- Continued support for activities protecting and enhancing Minnesota's natural resources and providing benefit over an extended period of time.

**Net capture of a moose to fit with GPS collar and take biological samples - part of an ENRTF project trying to determine what factors may be responsible for increasing moose mortality in northeastern MN. *[ML 2010: Underway]***

## LCCMR Process

The LCCMR makes funding recommendations to the MN legislature for special environment and natural resources projects, primarily from the Environment and Natural Resources Trust Fund. These recommendations are the product of a competitive, multi-step proposal and selection process.

Each funding cycle a Request for Proposal (RFP) is issued for funding priorities determined by the Commission based on its 6-year strategic plan and ongoing information gathering activities, including expert-led issue seminars and visits to natural resource sites around the state.

The RFP is open to everyone with innovative ideas for environment and natural resources projects that could provide multiple ecological and other public benefits to Minnesota.

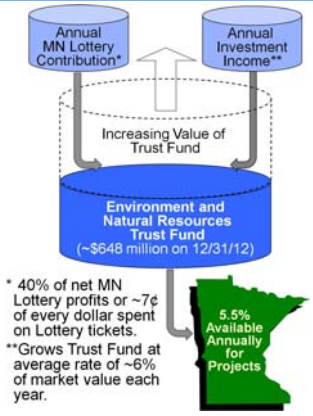
The LCCMR reviews, evaluates, and ranks all proposals submitted. A selection of the highest ranked proposals are invited to present before the LCCMR. Finally, based on the total dollars available, a subset of the proposals are chosen to recommend to the legislature for funding.

The funding recommendations go before the MN House and Senate in the form of a bill, and upon passage the bill goes to the Governor to be signed into law. Funding becomes available to projects beginning July 1 of the next fiscal year.

The LCCMR has oversight over projects funded. Projects must have a work plan approved, provide ongoing project updates, and deliver a final report upon project completion.

For the recommendations to the 2013 Legislature, a total of 169 proposals requesting a combined $155 million were received in response to the 2012-13 RFP and, from those, a total of 46 proposals were recommended for some portion of the $38.6 million being recommended.

The LCCMR is made up of 17 members: 5 Senators, 5 Representatives, 5 citizens appointed by the governor, 1 citizen appointed by the House, and 1 citizen appointed by the Senate.




## About MN's Environment and Natural Resources Trust Fund

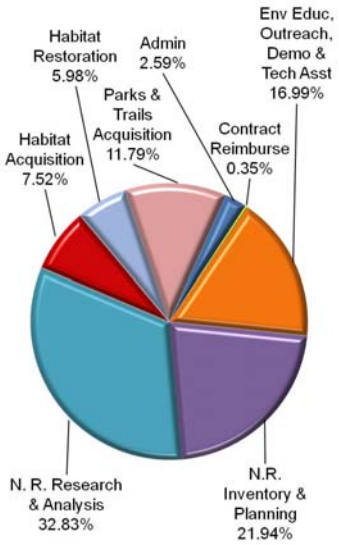
The Environment and Natural Resources Trust Fund (ENRTF) is a permanent fund in the state treasury established in the Minnesota Constitution through voter approval in 1988.

It holds assets that can be appropriated by law, "for the public purpose of protection, conservation, preservation, and enhancement of the state's air, water, land, fish, wildlife, and other natural resources."

The ENRTF was created to provide a long-term, consistent, and stable source of funding for innovative activities directed at protecting and enhancing Minnesota's environment and natural resources.

The money in the ENRTF originates from a combination of contributions and investment income. Forty percent of the net proceeds from the Minnesota State Lottery, or ~7 cents of every dollar spent playing the lottery, are contributed to the ENRTF each year. Once deposited, contributions become part of the principal balance and are invested in a combination of stocks and bonds to further grow the fund.

## ML 2013: Project Recommendations (to begin July 1, 2013)




Approximately $38.2 million is being recommended to fund 46 individual projects around the state to begin July 1, 2013.

*Natural Resource Inventory, Monitoring, Mapping, and Planning*: ~$8.4 million to obtain critical information and guide relevant decisions and efforts, including acceleration of the Biological Survey, County Geologic Atlas, Wetlands Inventory, and springshed mapping; expanded monitoring and management of state-owned lands; surveying, monitoring, and modeling of MN lakes, including Lake Superior; and detection and monitoring of invasive species.

*Terrestrial and Aquatic Habitat Acquisition*: ~$2.9 million for acquisition of an estimated 912 acres of habitat in a combination of fee title (130 acres) and conservation easements (782 acres).

*Terrestrial and Aquatic Habitat Restoration, Enhancement, and Improvement*: ~$2.3 million for restoration, enhancement, and improvement activities on ~9,289 acres and 6 miles of shoreline.

*Parks and Trails Acquisition*: ~$4.5 million for acquisition of ~287 acres in state parks, state trails, a metropolitan park, and the U of MN Landscape Arboretum.

*Natural Resource Research and Analysis*: ~$12.5 million to advance our knowledge and provide strategies and recommendations for addressing issues relating to invasive species, water quality and conservation, bioremediation, wastewater treatment, renewable energy, forestry, species protection, and conservation grazing.

*Environmental Education, Outreach, Demonstration, and Technical Assistance*: ~$6.5 million for efforts that will educate Minnesotans on topics including ecology, plants and wildlife, land protection, and outdoor recreation; demonstrate options for alternative landscape practices; and provide training and technical assistance on invasive species prevention, detection, and control and natural resource conservation and management tools, practices, and options.

*Other*: ~$1.1 million for FY 2014 -2015 LCCMR administration ($990,000) and contract agreement reimbursement services for projects by non-state entities ($135,000).

**Capture of a loon to fit with GPS collar and take measurements and biological samples - part of an ENRTF project that is trying to determine if the state's loons or white pelicans have been impacted by the 2010 Gulf oil spill. *[ML 2011: Underway]***

## ML 2011-2012: Projects Funded & Underway

**(MN Laws 2011, 1st Special Session, Chapter 2; MN Laws 2012, Chp. 264, Art.4, Sec. 3)**

Approximately $51.4 million was appropriated to fund 75 individual projects around the state.

*Natural Resource Inventory, Monitoring, Mapping, and Planning*: ~$15.6 million to obtain critical information and guide relevant decisions and efforts, including acceleration of Biological Survey; County Geologic Atlas; Statewide Soil Survey; Statewide Wetlands Inventory; springshed mapping; local conservation planning; planning and implementation of improved management for state-owned lands, invasive species, and wildlife disease; and recommended guidelines for prairie management.

*Terrestrial and Aquatic Habitat Acquisition*: ~$11.6 million for acquisition of an estimated 3,782 acres of habitat in a combination of fee title (1,295 acres) and conservation easements (2,487 acres), including donated easements.

*Terrestrial and Aquatic Habitat Restoration, Enhancement, and Improvement*: ~$2.4 million for restoration, enhancement, and improvement activities on ~4,898 acres and 4.4 miles of shoreline.

*Parks and Trails Acquisition*: ~$6.4 million for acquisition of ~1,010 acres in state and regional parks and trails.

*Parks and Trails Operations and Improvements*: ~$4.9 million for operations and infrastructure improvements in state parks and recreation areas and regional parks and trails.

*Natural Resource Research and Analysis*: ~$5.3 million to advance our knowledge and provide strategies and recommendations for addressing issues relating to species protection, ecosystem conservation, bioenergy, water quality and conservation, and invasive species.

## ML 2011: Projects Funded & Underway—Continued

*Environmental Education, Outreach, Demonstration, and Technical Assistance*: ~$4.1 million for efforts that will educate Minnesotans on topics including renewable energy and energy conservation, water quality and conservation, environmental science and ecology, and outdoor recreation; demonstrate options for energy efficiency; and provide training and technical assistance on renewable energy and natural resource conservation and management.

*Other*: ~$1.1 million for FY 2012 -2013 LCCMR administration ($946,000) and DNR contract management of projects by non-state entities ($175,000).

***The LCCMR follows a mission of providing long-term secure support for activities whose benefits to Minnesota's environment and natural resources are realized only over an extended period of time.***

## Projects Completed: January 1, 2011—December 31, 2012

Between January 1, 2011 and December 31, 2012, a total of 109 projects funded by the Environment and Natural Resources Trust Fund through the LCCMR process reached completion. This includes projects begun in 2005 (1), 2006 (1), 2008 (19), 2009 (55), and 2010 (33).

Major accomplishments resulting from the projects completed include:

- Foundational natural resource data acquired pertaining to conservation planning, shoreline protection, groundwater, watersheds, wetlands, native prairies, infrastructure planning, conservation easements, soils, alternative landscape practices, invasive species, and ecology and species distribution around the state.
- Expansion of parks, trails, and other outdoor recreation opportunities throughout the state, including nearly 300 acres added to state and regional parks and over 75 total miles of state and regional trails added or improved.
- Protection of approximately 4,780 acres of land and habitat through fee title (1,561 acres) and conservation easement (3,220 acres) acquisition.
- Habitat restoration activities performed on approximately 10,400 acres.
- Research and analysis furthering goals for biofuels, environmental planning, wildlife conservation, ballast water treatment, invasive species control, Lake Superior, sustainable farming practices, emerging water contaminants, and understanding and planning for climate change.
- Education, outreach, and technical assistance efforts on sustainable natural resource uses and practices in the areas of renewable energy and energy conservation, alternative landscape practices, invasive species, conservation programs, outdoor recreation, and water resources.

**Aerial view of the new La Salle Lake State Recreation Area in Hubbard County created in part with ENRTF funding in 2011. La Salle is the state's second deepest lake at 213 feet.** ***[ML 2011: Complete]***

## Highlights of Projects Completed or Underway: 2011-2012

**Carp Control Research & Aquatic Invasive Species Cooperative Research Center** *[ML 2008: Complete; ML 2009, ML 2012: Underway]:* Ongoing research into carp control methods and the launch of a new first-of-its-kind aquatic invasive species (AIS) research center at the U of MN to develop new tools to measure, control, and solve AIS problems statewide.

**Ballast Water Technologies** *[ML 2009: Complete; ML 2011: Underway]:* Various efforts to implement better monitoring and treatment of ballast water used in Great Lakes ships—the single greatest source of non-native and aquatic invasive species in MN.

**MN Biological Survey** *[ML 2009: Complete; ML 2011: Underway]:* Ongoing, county-by-county effort to identify significant natural areas and collect and interpret data on the distribution and ecology of plants and animals throughout MN. ML 2009 funded and ML 2011 is funding progress on the remaining 6 counties that have not been completed.

**Science and Innovation from Soudan Underground Mine State Park** *[ML 2010: Underway]:* Research into unique microorganisms discovered a 1/2 mile underground in a former iron mine turned State Park that are showing promise for applications in biocontrol of white nose bat syndrome, bioenergy, and bioremediation.

**Scientific and Natural Areas (SNA)** *[ML 2009: Complete; ML 2010, ML 2011: Underway]:* Ongoing efforts preserving MN's biodiversity and most unique natural features and resources for scientific study, public education, and outdoor recreation through land protection and restoration. ML 2009 funds established one new SNA and added acres to two others for a total of 106 acres while restoring 563 acres at 27 SNAs around the state.

**Troubled Waters: A Mississippi River Story** *[ML 2008: Complete]:* PBS documentary examining the Mississippi River watershed in relation to competing interests for food, fuel, and environment. The film won three Emmys and has since been seen around the state and country.

**MN's Declining Moose Populations** *[ML 2010, ML 2011: Underway]:* Research into declining moose populations in NE MN to determine what is responsible for the decline and what can be done to slow or prevent it.

**MN Soil Survey Completion** *[ML 2009: Complete; ML 2011: Underway]:* County-by-county analysis and mapping of the state's soils providing critical data for protecting and managing MN habitat, wetlands, and water resources. ML 2009 funded and ML 2011 is funding the completion of the survey in the last five counties for the entire state.

**State Parks and Trails Acquisition** *[ML 2009: Complete; ML 2010, ML 2011: underway]:* Ongoing efforts expanding statewide outdoor recreational opportunities. ML 2009 funded expansion of 3 parks and 2 trails. ML 2010 and 2011 are funding expansion of 6 parks and 1 trail.

**Urban Wilderness Canoe Adventures — ENRTF funded environmental education and recreation program that provides disadvantaged urban youth and families with hands-on educational and recreational experiences on the Mississippi River.** ***[ML 2010: underway]***

**New 15-acre Morton Outcrops Scientific and Natural Area established with ENRTF funds near Morton, MN in Renville County.** ***[Ml 2009: Complete]***

## About LCCMR

The LCCMR is made up of 17 members (5 Senators, 5 Representatives, 5 citizens appointed by governor, 1 citizen appointed by House, and 1 citizen appointed by Senate). The function of the LCCMR is to make funding recommendations to the Minnesota Legislature for special environment and natural resource projects, primarily from the Environment and Natural Resources Trust Fund. These projects help maintain and enhance Minnesota's environment and natural resources. The LCCMR developed from a program initiated in 1963. Since 1963, over $735 million has been appropriated to more than 1,700 projects recommended by the Commission to protect and enhance Minnesota's environment and natural resources.

### Commission Members Serving During 2011-2012

Alfred Berner—Appointed by the Governor
Jeff Broberg (Co-Vice Chair)—Appointed by the House
Tom Cook—Appointed by the Governor
Sen. Al DeKruif
Sen. Gary Dahms [09/11—12/12]
Rep. David Dill
Sen. Kari Dziedzic [06/12—12/12]
Rep. Tom Hackbarth (Co-Chair)
Nancy Gibson (Co-Chair)—Appointed by the Governor
John Herman—Appointed by the Senate
Sen. Linda Higgins (Co-Vice Chair) [01/11—06/12]
Sen Bill Ingebrigtson [01/11—09/11]
Rep. Denny McNamara [01/11—05/12]
Norman Moody—Appointed by the Governor
Sen. Gen Olson (Co-Chair)
Rep. Tom Rukavina
Rep. Ron Shimanski
Sen. Rod Skoe (Co-Vice Chair)
Rep. Paul Torkelson [05/12—12/12]
Elizabeth Wilkens—Appointed by the Governor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Mike Banker—Communications/Outreach Manager & Project Analyst
Diana Griffith—Commission Assistant

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## Information Gathering: Jan 1, 2011—Dec 31, 2012

**In-stream testing of a sonic and air bubble based fish barrier for deterring carp at the St. Anthony Falls Laboratory; the barrier was developed with ENRTF funding—LCCMR site visit, 09/27/11 *[ML 2009: Underway]***

In 2011-12, the LCCMR engaged in several activities that informed its priorities for the projects it recommended for funding to the 2013 MN Legislature.

Natural resources sites in the Twin Cities Metro Area were visited including:

- A 2011 visit to the St. Anthony Falls Laboratory to view the Outdoor Stream Lab and the in-stream testing of a sonic bubble barrier developed with ENRTF funding to address the movement of carp.
- A 2011 visit to the southwest metro area to examine issues pertaining to aquatic invasive species management; metropolitan parks; wetland, shoreland, and prairie restoration; land acquisition; scientific and natural areas; groundwater-surface water interactions; county geological atlases; and more.

In addition to the presentations heard on site visits and 65 interactive presentations the LCCMR chose to hear from project proposers responding to the RFPs during this period, the LCCMR also heard several presentations and expert-led issue seminars on topics including:

- Minnesota air quality
- Aquatic and terrestrial invasive species
- Minnesota climate data and implications
- Minnesota drainage law
- Ballast water treatment
- Lake and stream water quality
- Updates from current projects

**Members of LCCMR hearing from DNR staff at Seminary Fen Scientific and Natural Area near Chaska in Carver County, MN—LCCMR site visit, 09/28/11**

## 2013-2014 Request for Proposal (RFP)

The LCCMR expects to issue its 2013-2014 Request for Proposal (RFP) for funding in Feb/March 2013.

This is for funding from the Environment and Natural Resources Trust Fund beginning July 1, 2014 .

For FY 2014, approximately $29.5 million is expected to remain available for project recommendations to the 2014 MN Legislature.

The RFP will be available at http://www.lccmr.leg.mn.

**New ENRTF-funded 103-acre addition to the MN Valley National Wildlife Refuge in the St. Lawrence Unit near Jordan, MN in Scott County. *[ML 2010: Complete]***

# I. Strategic Plan / RFP

*"a copy of the current strategic plan…"*

A. Six Year Strategic Plan – Adopted January 16, 2009 and Reviewed November 17, 2011 and June 5, 2012

B. Request for Proposal (RFP)

- Funding Priorities adopted December 7, 2011 for FY2014
- Application Process

# LEGISLATIVE-CITIZEN COMMISSION

# ON

# MINNESOTA RESOURCES
# (LCCMR)

## Six-Year Strategic Plan for the Environment and Natural Resources Trust Fund

Adopted
January 16, 2009
Reviewed November 17, 2011 and June 5, 2012

Sen. Ellen Anderson, Al Berner, Jeff Broberg, Rep. Lyndon Carlson, Sen. Satveer Chaudhary, Sen. Dennis Frederickson, Nancy Gibson, John Herman, John Hunt, Mary Mueller, Rep. Tom Rukavina, Sen. Pat Pariseau, Sen. Jim Vickerman, Rep. Jean Wagenius

**Legislative-Citizen Commission on Minnesota Resources**
100 Rev. Dr. Martin Luther King Jr. Blvd.
Room 65 State Office Building
St. Paul, MN 55155

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# I. Trust Fund Vision and Mission Statements

## Trust Fund Vision Statement

All Minnesotans have an obligation to use and manage our natural resources in a manner that promotes wise stewardship and enhancement of the state's resources for ourselves and for future generations. The Trust Fund is a perpetual fund that provides a legacy from one generation of Minnesotans to the many generations to follow. It shall be used to preserve, protect, restore and enhance both the bountiful and the threatened natural resources that are the collective heritage of every Minnesotan. It shall also be used to nurture a sense of responsibility by all and to further our understanding of Minnesota's resource base and the consequences of human interaction with the environment.

## Trust Fund Mission Statement

The mission of the Trust Fund is to ensure a long-term secure source of funding for environmental and natural resource activities whose benefits are realized only over an extended period of time.

## Future Funding Focus Areas

In implementing the Six-Year Strategic Plan, the Commission will identify annual focus areas for funding through the RFP process. In selecting the areas of funding focus, the LCCMR will maintain a continuing awareness of issues identified by the Statewide Conservation and Preservation Plan developed by the University of Minnesota, Institute on the Environment, public input, the Commission's evaluation of natural resource issues, and major funding initiatives identified by the MN legislature.

# II. Background

MN Constitution Art. XI, Sec.14
Environment and Natural Resources Fund

A permanent environment and natural resources trust fund is established in the state treasury. Loans may be made of up to five percent of the principal of the fund for water system improvements as provided by law. The assets of the fund shall be appropriated by law for the public purpose of protection, conservation, preservation, and enhancement of the state's air, water, land, fish, wildlife, and other natural resources. The amount appropriated each year of a biennium, commencing on July 1 in each odd-numbered year and ending on and including

June 30 in the next odd-numbered year, may be up to 5-1/2 percent of the market value of the fund on June 30 one year before the start of the biennium. Not less than 40 percent of the net proceeds from any state-operated lottery must be credited to the fund until the year 2025. [Adopted, November 8, 1988; Amended, November 6, 1990; November 3, 1998]

Minnesota Statutes 2008, Chapter 116P.02

**116P.02 Definitions**

Subd. 5. **Natural resources.** "Natural resources" includes the outdoor recreation system under section 86A.04 and regional recreation open space systems as defined under section 473.351, subdivision 1.

Minnesota Statutes 2008, Chapter 86A

**86A.04 COMPOSITION OF SYSTEM**

The outdoor recreation system shall consist of all state parks; state recreation areas; state trails established pursuant to sections 84.029, subdivision 2, 85.015, 85.0155, and 85.0156; state scientific and natural areas; state wilderness areas; state forests; state wildlife management areas; state aquatic management areas; state water access sites, which include all lands and facilities established by the commissioner of natural resources or the commissioner of transportation to provide public access to water; state wild, scenic, and recreational rivers; state historic sites; state rest areas, which include all facilities established by the commissioner of transportation for the safety, rest, comfort and use of the highway traveler, and shall include all existing facilities designated as rest areas and waysides by the commissioner of transportation; and any other units not listed in this section that are classified under section 86A.05. Each individual state park, state recreation area, and so forth is called a "unit."

Minnesota Statutes 2008, Chapter 473

**473.351 METROPOLITAN AREA REGIONAL PARKS FUNDING**
Subd. 1.Definitions.

(d) "Regional recreation open space systems" means those parks that have been designated by the Metropolitan Council under section 473.145.

Minnesota Statutes 2008, Chapter 116P.08

**116P.08 Trust fund expenditures; exceptions; plans**

Subd. 1. **Expenditures.** Money in the trust fund may be spent only for:

(1) the reinvest in Minnesota program as provided in section 84.95, subdivision 2;

(2) research that contributes to increasing the effectiveness of protecting or managing the state's environment or natural resources;

(3) collection and analysis of information that assists in developing the state's environmental and natural resources policies;

(4) enhancement of public education, awareness, and understanding necessary for the protection, conservation, restoration, and enhancement of air, land, water, forests, fish, wildlife, and other natural resources;

(5) capital projects for the preservation and protection of unique natural resources;

(6) activities that preserve or enhance fish, wildlife, land, air, water, and other natural resources that otherwise may be substantially impaired or destroyed in any area of the state;

(7) administrative and investment expenses incurred by the State Board of Investment in investing deposits to the trust fund; and

(8) administrative expenses subject to the limits in section 116P.09.

Subd. 2. **Exceptions.** Money from the trust fund may not be spent for:

(1) purposes of environmental compensation and liability under chapter 115B and response actions under chapter 115C;

(2) purposes of municipal water pollution control under the authority of chapters 115 and 116;

(3) costs associated with the decommissioning of nuclear power plants;

(4) hazardous waste disposal facilities;

(5) solid waste disposal facilities; or

(6) projects or purposes inconsistent with the strategic plan.

# III. Six-year Strategic Plan for the Environment and Natural Resources Trust Fund

## A. PROCESS FOR DEVELOPMENT OF THE SIX-YEAR STRATEGIC PLAN -- as required in M.S. 116P.08, Subd. 3

The Six-Year Strategic Plan is to guide the work and process used by the LCCMR in making recommendations for Trust Fund expenditures. Specifically, the Six-Year Strategic Plan, as required by statute, is to provide short and long-term goals and strategies for the Trust Fund expenditures, require measurable outcomes for the expenditures, and identify areas of emphasis for funding.

In developing the Six-Year Strategic Plan, the LCCMR used the Statewide Conservation and Preservation Plan, developed with financial support from the Environment and Natural Resources Trust Fund by the University of Minnesota Institute on the Environment, along with information gathered during 2007 and 2008 natural resource presentations and site visits. The LCCMR continues to request information from technical experts, citizens, agencies, local units of government, private, and nonprofit organizations to assist it in identifying the most pressing natural resources issues facing Minnesota and the opportunities to address them.

The LCCMR will continue to use the Statewide Conservation and Preservation Plan as a guide in developing Requests for Proposals (RFPs).

## B. SUMMARY OF KEY NATURAL RESOURCE ISSUES AND STRATEGIC FRAMEWORK USED TO IDENTIFY STRATEGIC PLAN GOALS

**Summary of Key Natural Resource Issues identified in the Preliminary Statewide Conservation and Preservation Plan are:**

- Land and water habitat fragmentation, degradation, loss and conversion
- Land use practices
- Transportation
- Energy Production and Use
- Toxic contaminants
- Impacts on resource consumption
- Invasive species

These are the issues that, if addressed, would protect and conserve Minnesota's natural resources of air, water, land, wildlife, fish and outdoor recreation to the greatest degree.

The Statewide Conservation and Preservation Plan focuses on the first four key natural resource issues. The remaining three issues are not included in the plan due to budget and time factors and will be given consideration in future plan updates.

**Five Areas of the Strategic Framework in the Statewide Conservation and Preservation Plan are:**

- Integrated Planning
- Critical Land Protection
- Land and Water Restoration and Protection

- Sustainability Practices
- Economic Incentives for Sustainability

The recommendations in the Statewide Conservation and Preservation Plan were organized into the Strategic Framework and provide a comprehensive and integrated environmental strategic plan.

The recommendations within the Strategic Framework are designed to conserve and protect Minnesota's six statutorily defined natural resources in a comprehensive approach, while being mindful of demographic change, public health, the state's economy, and climate change.

Future elements of a Statewide Conservation and Preservation Plan will include additional in-depth review of natural resource issues such as toxic contaminants, invasive species, groundwater and surface water sustainability, mining, and emerging natural resource issues.

## C. GOALS - SIX-YEAR STRATEGIC PLAN

The strategic framework laid out in the Statewide Conservation and Preservation Plan provides an integrated approach to resource conservation and protection. The following goals address one or more of the strategic framework areas.

### Land and Water Protection

- Protect and conserve land and water (surface and ground) resources that are important for overall ecosystem integrity.

    - Provide protection to fragile or unique natural resources, such as prairies, shorelands, trout streams, groundwater resources, surface water flows, wetlands, fens, and aquatic habitat where further development or neglect could cause irreparable harm or loss.
    - Protect land resources such as large contiguous tracts of forests, prairies that are threatened by fragmentation, high quality natural areas such as those listed in the county biological survey, and important habitat areas.
    - Protect and promote habitat, native species, and water quality through land protection, acquisition, and land use practices.
    - Protect and promote habitat, native species, and water quality through protection from invasive species.

- Protect and promote habitat, native species, and water quality through reduction and elimination of harmful environmental contaminants.

**Research, Planning, and Demonstration**

- Improve natural resource data management, conservation, and use statewide through the acquisition, management, and distribution of critical natural resource data by funding efforts to generate natural resource "foundation documents" to increase accuracy, efficiency, and ease of access to the data (including maps, inventories, and surveys).
- Address emerging issues and provide critical information to assist in our understanding and wise management of natural resources.
- Support research, planning, and/or demonstration projects that protect and conserve sensitive lands and surface and ground water resources, and ecologic integrity.
- Support evaluation of climate change impacts and reduction strategies.
- Support community-based conservation planning.

**Encourage Participation in Outdoor Recreation, Hunting and Fishing**

- Promote interest and participation in angling, hunting, outdoor recreation, and environmental and natural resource education. Partnerships to accomplish this goal are encouraged.
- Acquire, enhance, construct, manage, and maintain a variety of accessible outdoor recreation opportunities throughout the state.

**Public Education and Information**

- Provide public dissemination of important natural resource information so that we have informed citizens able to assist public and private planners and resource managers in managing our natural resources.

- Promote environmental literacy of Minnesota's students and citizens so that they can apply informed decision-making processes to maintain a sustainable lifestyle.

**Selection Criteria**

- Review projects based on the following criteria: meeting priority goals, leverage, technical standards, capabilities to manage projects, multiple benefits, and the likelihood of meaningful results.

## D. STRATEGIES - SIX-YEAR STRATEGIC PLAN

**Priority will be given to projects providing benefits to multiple natural resources or to projects providing multiple benefits:**

- Identify, protect, and enhance strategic land areas that make the largest contribution to multiple benefits for conservation and increase the management of those lands to enhance the conservation, quality, and diversity of natural resources.

- Establish statewide highest value habitat corridors using consistent conservation biology methodology and criteria for habitat, water quality and quantity, and native species.

- Acquire the most recent and accurate baseline natural resource data on a regular basis – data such as topography, parcel and land cover, soil and geological survey, and ground water quality and quantity.

- Identify and manage lands suited for human activity by using best management conservation practices to minimize the negative effects on natural resources.

- Increase understanding of potential effects of climate change on resources and develop strategies for reducing the impact of climate change on natural resources.

- Increase understanding of effects of contaminants on natural resources, including ground water, and develop strategies for reducing contamination.

- Increase public understanding of the need for better conservation, preservation, and restoration of Minnesota's habitats and landscapes.

- Develop strategies for delivery of environmental education to Minnesota students and residents at school, home, work, and play.

- Develop strategies to prevent introductions and reduce spread of aquatic and terrestrial invasive species and restore or reestablish terrestrial or aquatic habitats impacted by invasive species.

- Develop land use strategies for sustainable, renewable energy production (electricity and fuels) that protect, enhance and restore native species, water quality, habitat, and prairies.

- Evaluate renewable energy options in Minnesota, including energy conservation, based on greenhouse gas and other emissions reductions, surface and ground water use, effects on the economy, and use by the electric and transportation sectors.

## E. OUTCOMES

- Funding recommendations are consistent with and accelerate implementation of the Statewide Conservation and Preservation Plan and other related natural resource plans or recommendations, including

    - Forest Resource Council Guidelines
    - Minnesota Governor's Council on Geographic Information
    - Minnesota Department of Natural Resources plans
        - Scientific and Natural Areas Program Long Range Plan
        - Prairie Pothole Joint Venture Implementation Plan
        - Aquatic Management Area Acquisition Plan
        - Wildlife Strategic Plan
        - State Comprehensive Outdoor Recreation Plan

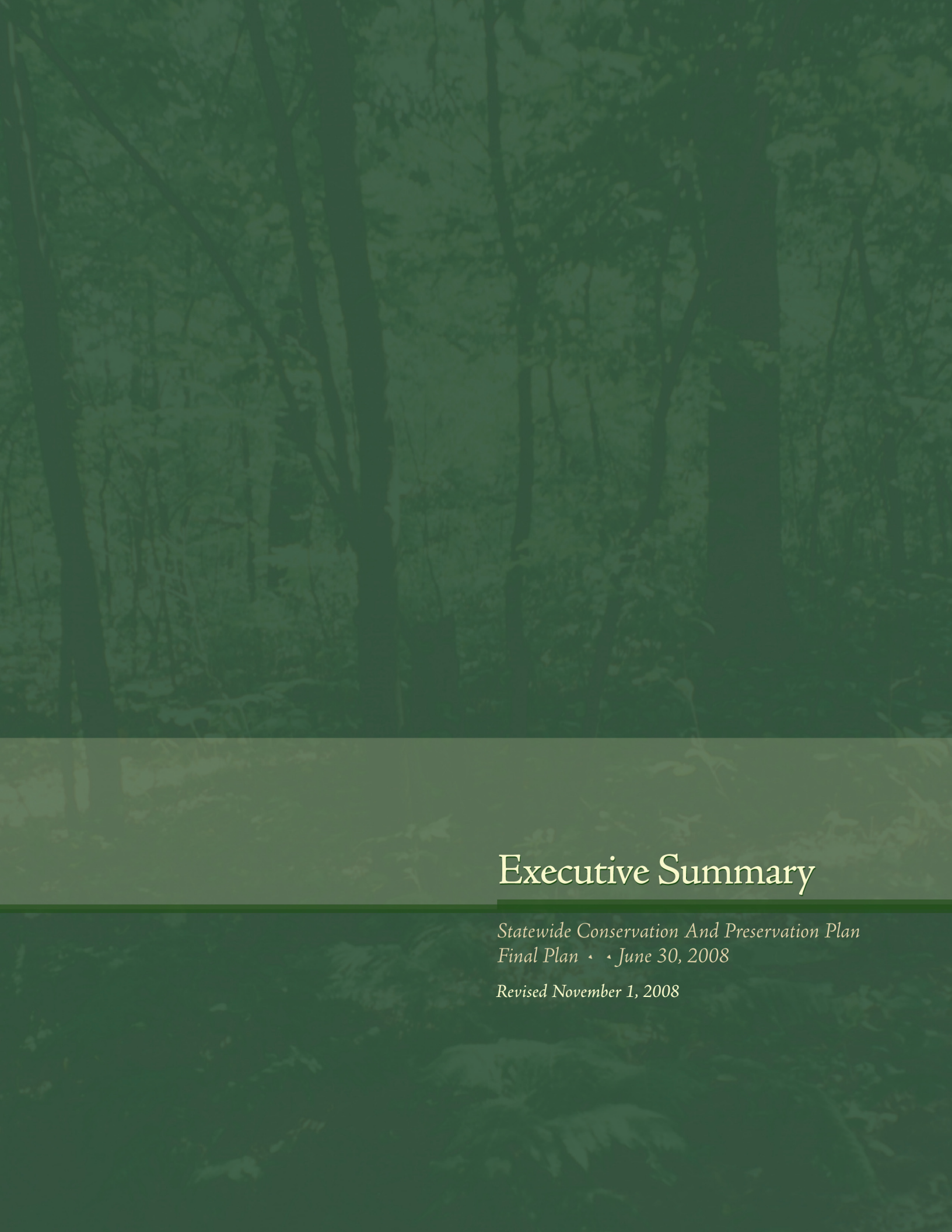
  - Minnesota Pollution Control Agency GreenPrint for Minnesota: State Plan for Environmental Education
  - Minnesota Climate Change Advisory Group final report
  - Minnesota Invasive Species Advisory Council priorities
  - Metropolitan Council 2030 Regional Park Policy Plan

- Complete acquisition of baseline natural resource data, including the County Biological Survey, Soil Survey, wetlands inventory, restorable wetlands inventory, and the geologic atlas by 2020.
- Funding recommendations in the aggregate include work in all ecoregions, as defined by the Minnesota Department of Natural Resources.
- To the extent possible, funding recommendations support the creation and continuation of “green jobs” in Minnesota.

## Appendix A

# Statewide Conservation and Preservation Plan:

# Executive Summary and Short Description of Recommendations



# Executive Summary

*Statewide Conservation And Preservation Plan*
*Final Plan • • June 30, 2008*

*Revised November 1, 2008*

# Executive Summary

The remarkable place known as Minnesota is situated at the convergence of the Great Lakes, the Great Rivers, and the Great Plains. The citizens of Minnesota cherish and take pride in the abundant and varied natural resources of this place. We also value our quality of life and our standard of living, and desire the same for our children. All of these values and desires are intricately connected: continued economic prosperity depends on a healthy and sustainable environment, and vice versa. To foster the conditions we value, we must balance long-term plans for conserving and protecting our priceless natural resources with those for ensuring a healthy public and healthy economy. This document, the Minnesota Statewide Conservation and Preservation Plan (SCPP), lays out a deliberate strategy for doing so in a unified, integrated fashion, that employed an interdisciplinary approach with multiple perspectives and expertise.

The Environmental and Natural Resources Trust Fund funded a unique partnership among the University of Minnesota and the consulting firms of Bonestroo and CR Planning to evaluate the state's natural resources, identify key issues affecting those resources, and make recommendations for improving and protecting them. More than 125 experts, including University scientists and public and private natural resource planners and professionals, participated in the 18-month effort.

The team addressed Minnesota's Constitutionally identified natural resources of air, water, land, wildlife, fish, and outdoor recreation in two distinct phases. In the first phase of the project, the project team assessed the past and present condition of each of these six natural resources. They identified and described (where possible) the drivers of change immediately impacting them, and identified key issues that could be addressed to protect and conserve them in an integrated fashion. This information was published as the Preliminary Plan (http://www.lccmr.leg.mn). In the second phase of the project, the team addressed the key issues in depth, developing recommendations that would positively impact as many natural resources as possible while taking into account demographic change, public health, economic sustainability, and climate change. These recommendations then were synthesized into a framework with five strategic areas. Recommendations were identified as being either policy and action recommendations (those that could be put into effect directly by the legislature) or recommendations that add to our knowledge infrastructure (research needs, data gathering and monitoring needs, or educational activities). This framework and its recommendations were published as the Final Plan (http://www.lccmr.leg.mn). The steps and outcomes for the entire project are shown in Figure 1.

***Preliminary Plan.*** Initially the team identified drivers of change that negatively impact each natural resource. These included both proximate drivers, those that are closest to and have the most direct impact on the resource (e.g., nutrient loading impacting water quality) and higher-order drivers, which are those that are further removed from the resource and impact the resource through other drivers of change (e.g., shoreline development causing the nutrient loading that impacts water quality). The team mapped these relationships among each other, noting that many drivers of change impact multiple resources and a given resource is impacted by multiple drivers of change. Finally, the team used a matrix prioritization process to objectively identify the key issues that, if addressed, would benefit the greatest number of natural resources to the greatest degree. The seven key areas identified were:

- Land and water habitat fragmentation, degradation, loss, and conversion

- Land use practices
- Transportation
- Energy production and use
- Toxic contaminants
- Impacts on resource consumption
- Invasive species

Each of these key issues is more fully described in the Preliminary Plan.

***Final Plan.*** A subset of these issues was chosen for investigation in the second phase of the project. The key issues for which recommendations are made in this report are:

- Land and water habitat fragmentation, degradation, loss, and conversion
- Land use practices
- Transportation
- Energy production and use, and mercury as a toxic contaminant related to energy production

Figure 2 shows the action or policy recommendations for each of the key issues, arranged according to the degree of integrated benefits across all values associated with natural resources. The knowledge infrastructure and mercury recommendations were not evaluated by this process, and are not included in this figure. This gives an overall snapshot of how much integrated value a given recommendation has. For example, the first recommendation under the key issue of habitat has significant impact across the majority of the resource values, and has little impact on air quality and human health. This figure also identifies which recommendations benefit a given resource value the most. For example, habitat and land use–forestry recommendations have the most impact on biodiversity.

The Final Plan is organized in such a way as to take the reader through the project evolution in great detail. Following this Executive Summary and an Introduction section, the overall Strategic Framework is presented and described (also see below) to provide a context for the series of sections that follow, in which each of the key issues is described in detail. The section on land and water Habitat Recommendations contains a unique approach to priority mapping that combines geo-spatial data on a series of stress indicators that culminate in maps showing areas of the state with highest water and land habitat quality superimposed with areas of highest ecological stress. These maps help decision makers and natural resource managers prioritize which parts of the state to protect, conserve, or restore in order to best address our water and habitat natural resources. The Land Use Recommendations section is organized around three main types of land use, including urban/community land use practice, agricultural land use practice, and forest land use practice. Recommendations focus on water management, crop management, low impact development, and adoption of best practices for all types of land use. This is followed by a section on Transportation Recommendations, which stresses how transportation development choices are interwoven with land use choices, and have multiple impacts on water quality, habitat fragmentation, energy use, and air quality. This section also recognizes the current inefficiencies in permitting for transportation projects. The next section on Energy Recommendations focuses specifically on the strategies for renewable energy and conservation practices that will reduce dependence on fossil fuels and promote environmental co-benefits. It also links these recommendations directly to promoting a health economy. This section also addresses how decreases in fossil fuel use might change mercury emissions in the state, and how changes in these emissions translate to changes in concentrations of this toxic chemical in fish as a result.

The Final Plan contains nine appendices. The first contains a list of the recommendations that resulted from the Preliminary Plan; the second contains a list of the project participants and their affiliations; the third is a detailed report on the mercury assessment referenced in the Energy Recommendations section; the fourth is a summary of a study that predicts the future impacts of climate change on biodiversity in

Minnesota; the fifth is a cost benefit analysis of 7 of the major recommendations; the sixth is the result of an expert panel discussion of the value and investment prioritization of the action and policy recommendations; the seventh is a summary of the public engagement and outreach efforts and a summary of the public comments; the eighth is a list of the sources used in preparing the Plan; and the ninth is a short description of each of the recommendations in the Final Plan.

## The Strategic Framework

The collection of recommendations was organized into a comprehensive framework, the Strategic Framework for Integrated Resource Conservation and Preservation, as shown in Figure 3. The five strategic areas of the framework identified at the top of the five boxes, are:

- Integrated Planning
- Critical Land Protection
- Land and Water Restoration and Protection
- Sustainability Practices
- Economic Incentives for Sustainability

Recommendations for each of these strategic areas are listed within a given box. Action or policy recommendations are at the top, with recommendations having the broadest impact across multiple resources listed first, followed by those that are more targeted or specific in their scope. Recommendations for building the knowledge infrastructure for that strategic area are at the bottom of the box. All of these recommendations are described in detail in the Final Plan.

This framework is a comprehensive and integrated environmental strategic plan. The recommendations taken together provide a holistic look, and are not meant to be viewed in isolation or to be acted on in a piecemeal fashion. Each of the strategic areas is summarized below.

## Strategic Areas

### *Integrated Planning*

Natural resource management is interwoven within a larger fabric of economic health, complex regulatory frameworks, human health, and changing demographics and climate. No one agency can address this comprehensively, nor can it be done in individual agency stovepipes. In addition, there are multijurisdictional responsibilities on the geographic scale, from communities to small units of government to soil and watershed districts to statewide agencies.

Planning, whether for transportation, energy, community development, water resources, agriculture, or forestry, should be integrated across all agencies and across the multijurisdictional scale. Doing so can make planning more efficient by removing redundancies. Our strongest, most effective federal environmental laws require cross-agency review or partnership, and this approach should be embraced on the state level for holistic natural resource protection.

Our recommendations address land use practices, transportation policy, and energy production and use policy as related to natural resource protection. For example, we specifically recommend the development of a state land use, development, and investment guide to align investment objectives across social, environmental, and economic sectors. We recommend that the state embrace a conservation-based community planning approach. Enhanced cross-consultation in governance and planning for transportation, land development, and energy projects is essential for protecting and conserving our natural resources.

## *Critical Land Protection*

Be it farmland, wetlands, greenways in urban areas, or forestland, a clear and comprehensive strategy must be developed that establishes long-term and short-term protection and acquisition priorities. An array of perspectives should inform this strategy, integrating needs for biodiversity protection, critical agricultural land protection, ecological services, recreational opportunities, and opportunities for climate change adaptation and/or mitigation.

This strategy should build on the excellent work already accomplished by the DNR critical habitat studies, the Metro and Outstate Conservation Corridors initiatives, and the work of many nonprofit land-protection organizations.

Our recommendations in this strategic area focus on the protection by easement or acquisition of critical stream and lake shorelines, priority land habitats, and large blocks of forestland.

## *Land and Water Restoration and Protection*

This strategic area addresses both the restoration of critical land and water habitat and the protection of strategic land and water habitat that has not yet been degraded. It not only addresses the inherent and intrinsic direct benefits of habitat restoration and protection, but also emphasizes the benefits of such strategy for strengthening biodiversity and enhancing resilience to climate change. The recommendations in this area reinforce and strengthen Minnesota cultural values, ethics, appreciation of outdoor recreation, and economic health.

The recommendations include specific actions to restore shallow lakes, wetlands and wetland associated watersheds, and the habitats contained within lakes and rivers, as well as actions to protect critical landscapes.

## *Sustainability Practices*

A healthy environment requires a healthy economy, and a sustainable economy requires a sustainable environment. To reach both goals requires promoting, facilitating, encouraging, and regulating practices that will lead to a sustainable environment and economy. These sustainable practices must cross multiple fronts - sustainable agriculture, sustainable forestry, sustainable water resources, and sustainable economy and standard of living - all in the context of energy production, shifting demographics, and climate change.

Specific recommendations promote the sustainable management of forestlands and action to keep water on the landscape. These include reviewing drainage policy and actions to move water more slowly across and through the landscape to return to more natural conditions to reduce flooding, improving water quality, and improving biological diversity through habitat protection.

## *Economic Incentives for Sustainability*

Moving toward sustainable practice requires specific incentives to move the state and its citizens and stakeholders in a transformative direction. These are broad-scale ideas for achieving a sustainable economy specifically through natural resource policies: Energy policy, agricultural policy, forestry policy, and transportation policy can be used to grow and nurture Minnesota's economic future. For example, the team recommends the development and implementation of incentive programs to develop renewable energy programs and to promote a successful transition of Minnesota's vehicle fleet to electric power.

Minnesotans share a vision for a healthy and sustainable future. This framework of strategic recommendations is a collective roadmap for moving forward to achieve this future. We hope that the citizens, resource managers, and policy-makers of the state embrace this opportunity to deliberately protect and conserve Minnesota's remarkable natural resources before they are futher degraded or lost.

*Figure 1. Process and outcomes of the Statewide Conservation and Preservation Plan*

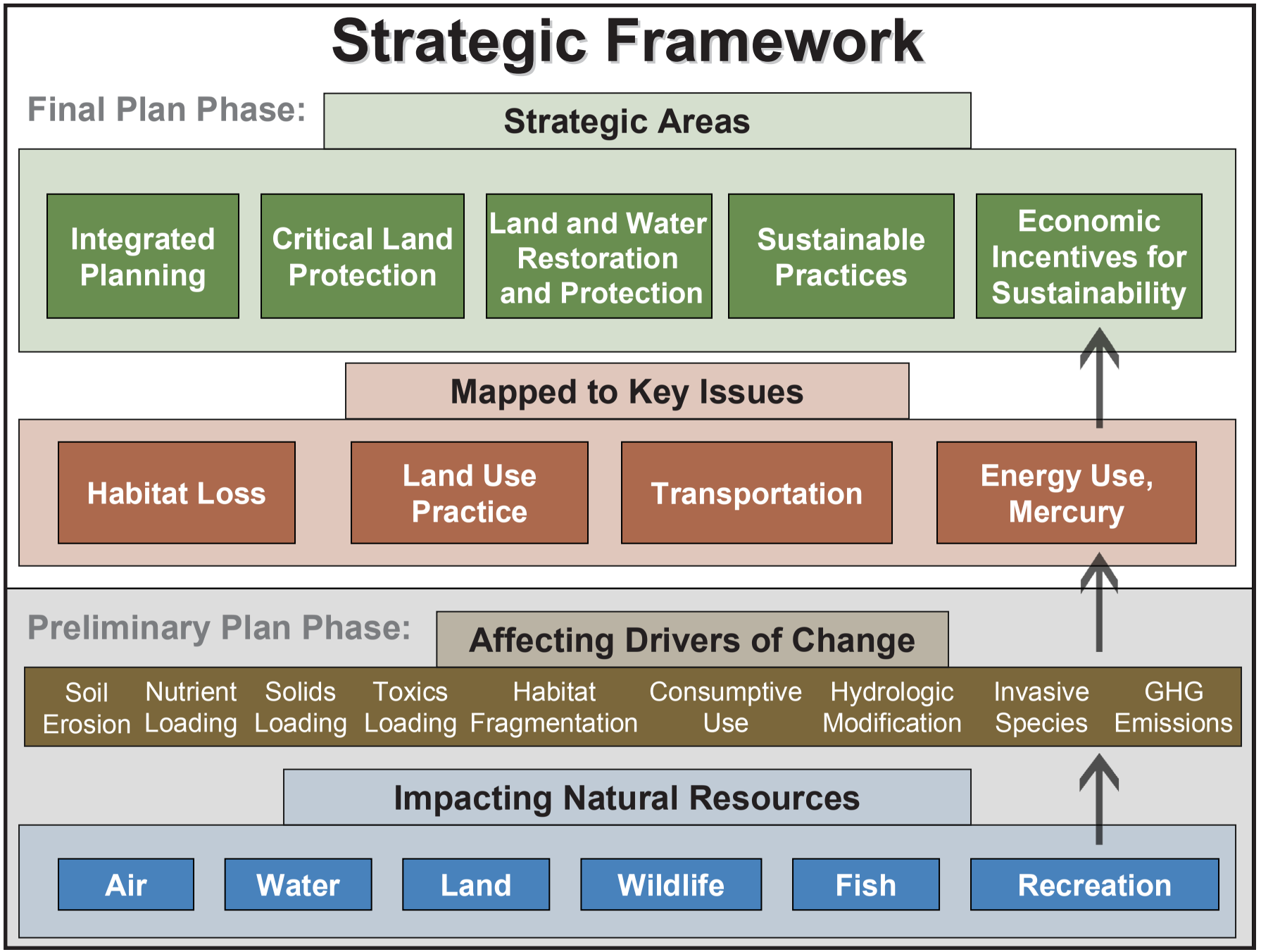


*Figure 2. Natural resource values assessment of policy and action recommendations*

# Natural Resource Values Assessment of Recommendations

**LEGEND:** ● = Critical Impact ◑ = Significant Impact ○ = Negligible Impact

| | Number | Recommendation | Air Quality | Water Quality/Quantity | Terrestrial Habitat Quality | Soil/Land Quality | Human Health | Biodiversity | Community Health | Aquatic Economic Health | Recreational/Cultural/ Spiritual/Aesthetic Value | Climate Change Mitigation/Adaptation | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| HABITAT | H2 | Protect critical shoreland of streams and lakes | ○ | ● | ● | ● | ○ | ● | ● | ● | ● | ● | |
| | H1 | Protect priority land habitats | ○ | ● | ● | ● | ○ | ● | ● | ◑ | ● | ● | |
| | H4 | Restore and protect shallow lakes | ○ | ● | ● | ◑ | ○ | ● | ● | ● | ● | ◑ | |
| | H5 | Restore land, wetlands and wetland-associated watersheds | ○ | ● | ◑ | ◑ | ◑ | ● | ● | ◑ | ● | ● | |
| | H6 | Protect and restore critical in-water habitat of lakes and streams | ○ | ● | ◑ | ◑ | ◑ | ● | ● | ◑ | ● | ● | |
| | H7 | Keep water on the landscape | ○ | ● | ◑ | ● | ○ | ● | ● | ◑ | ◑ | ● | |
| | H8 | Review and analyze drainage policy (ditch laws) | ○ | ● | ◑ | ● | ○ | ◑ | ● | ◑ | ◑ | ● | |
| | H3 | Improve connectivity and access to recreation | ○ | ○ | ◑ | ○ | ● | ◑ | ○ | ● | ● | ○ | |
| LAND USE | LU1 | Fund and implement a state Land Use Development and Investment Guide | ◑ | ◑ | ◑ | ◑ | ◑ | ◑ | ◑ | ◑ | ◑ | ◑ | |
| | LU2 | Support local and regional conservation-based community planning | ◑ | ◑ | ◑ | ◑ | ◑ | ◑ | ◑ | ◑ | ◑ | ◑ | |
| | LU3 | Ensure protection of water resources in urban areas | ○ | ◑ | ○ | ◑ | ○ | ◑ | ◑ | ◑ | ◑ | ◑ | |
| | LU4/E4 | Transition renewable fuel feedstocks to perennial crops | ○ | ◑ | ◑ | ◑ | ○ | ◑ | ◑ | ◑ | ◑ | ◑ | |
| | LU5 | Reduce streambank erosion through reduction in peak flows | ○ | ◑ | ◑ | ◑ | ○ | ◑ | ◑ | ◑ | ◑ | ◑ | |
| | LU6 | Reduce upland and gully erosion through soil conservation practices | ○ | ◑ | ◑ | ◑ | ○ | ◑ | ◑ | ◑ | ◑ | ◑ | |
| | LU8 | Protect large blocks of forest land | ○ | ◑ | ◑ | ◑ | ○ | ◑ | ◑ | ◑ | ◑ | ◑ | |
| | LU10 | Support and expand sustainable practices on working forested lands | ○ | ◑ | ◑ | ◑ | ○ | ◑ | ◑ | ◑ | ◑ | ◑ | |
| TRANSPORTATION | T1 | Align transportation planning across all agencies; streamline and integrate environmental transportation project review | ● | ◑ | ◑ | ◑ | ● | ◑ | ◑ | ● | ● | ● | |
| | T2 | Reduce per capita vehicle miles of travel | ◑ | ◑ | ◑ | ○ | ◑ | ○ | ○ | ◑ | ◑ | ● | |
| | T3 | Develop and implement transportation polices that minimize impacts on natural resources | ○ | ● | ◑ | ○ | ○ | ◑ | ● | ◑ | ◑ | ◑ | |
| ENERGY | E1 | Develop coordinated laws, policies and procedures across state agencies | ◑ | ● | ● | ● | ◑ | ◑ | ● | ● | ◑ | ● | |
| | E13 | Invest in research and policies for "green payment" program | ○ | ● | ● | ● | ○ | ● | ● | ○ | ◑ | ● | |
| | E17 | Promote policies and incentives that encourage C-neutral businesses, homes, communities and other institutions | ● | ◑ | ◑ | ◑ | ◑ | ◑ | ◑ | ● | ◑ | ● | |
| | E2 | Invest in farm and forest preservation to prevent fragmentation due to development | ○ | ◑ | ● | ● | ○ | ◑ | ◑ | ◑ | ◑ | ◑ | |
| | E18 | Implement policies and incentives to lower energy use of housing stock | ◑ | ◑ | ○ | ○ | ● | ○ | ◑ | ● | ◑ | ● | |
| | E16 | Provide incentives to transition a portion of Minnesota's vehicle fleet to electrical power and renewable electricity production | ● | ◑ | ○ | ○ | ● | ○ | ○ | ◑ | ○ | ● | |
| | E21 | Develop standards and incentives for energy capture from municipal sanitary and solid waste, and minimize landfill options | ◑ | ◑ | ○ | ○ | ◑ | ○ | ◑ | ◑ | ◑ | ◑ | |
| | E19 | Promote policies and strategies to implement smart meter and smart grid technologies | ◑ | ○ | ○ | ○ | ◑ | ○ | ○ | ● | ◑ | ● | |
| | E14 | Investigate opportunities to provide tax incentives for individual renewable energy investors | ◑ | ◑ | ○ | ○ | ◑ | ○ | ○ | ◑ | ○ | ● | |
| | E20 | Develop incentives to encourage widespread adoption of passive solar and shallow geothermal heat pumps in new construction | ◑ | ◑ | ○ | ○ | ◑ | ○ | ○ | ◑ | ○ | ● | |
| | E15 | Invest in efforts to develop community-based energy platforms | ○ | ◑ | ○ | ○ | ○ | ○ | ○ | ● | ◑ | ◑ | |

Note: Policy and action recommendations are grouped by topic (Habitat, Land Use, etc.) and then ordered starting with those recommendation having the broadest impact across multiple resource values followed by those having more targeted impact.

# Strategic Framework For Integrated Resource

| INTEGRATED PLANNING IP | | CRITICAL LAND PROTECTION LP | | LAND AND WATER RESTORATION AND PROTECTION RP | |
|---|---|---|---|---|---|
| **Rec. No.** | **Broad Policy and Action Recommendations** | **Rec. No.** | **Broad Policy and Action Recommendations** | **Rec. No.** | **Broad Policy and Action Recommendations** |
| **E1** | Develop coordinated laws, policies and procedures across state agencies | **H2** | Protect critical shorelands of streams and lakes | **H4** | Restore and protect shallow lakes |
| **LU1** | Fund and implement a state Land Use Development and Investment Guide | **H1** | Protect priority land habitats | **H5** | Restore land, wetlands, and wetland-associated watersheds |
| **LU2** | Support local and regional conservation-based community planning | **LU8** | Protect large blocks of forest land | **H6** | Protect and restore critical in-water habitat of lakes and streams |
| **T1** | Align transportation planning across all agencies; streamline and integrate environmental transportation project review | | | | |
| **E23** | Develop mercury reduction strategies for out-of-state sources | | | | |
| **Rec. No.** | **Targeted Policy and Action Recommendations** | **Rec. No.** | **Targeted Policy and Action Recommendations** | **Rec. No.** | **Targeted Policy and Action Recommendations** |
| **LU3** | Ensure protection of water resources in urban areas | **E2** | Invest in farm and forest preservation to prevent fragmentation due to development | **LU5** | Reduce streambank erosion through reduction in peak flows |
| **T3** | Develop and implement transportation polices that minimize impacts on natural resources | **H3** | Improve connectivity and access to recreation | **LU6** | Reduce upland and gully erosion through soil conservation practices |
| | | | | | |
| | | | | | |
| **Rec. No.** | **Knowledge Infrastructure Recommendations** | **Rec. No.** | **Knowledge Infrastructure Recommendations** | **Rec. No.** | **Knowledge Infrastructure Recommendations** |
| **LU2C** | Provide communities with the tools and technical assistance for conservation-based planning | **H9** | Invest in overall research on land and aquatic habitats | **H10** | Invest in research on near-shore aquatic habitat vulnerability |
| **E24** | Continue state enforcement programs to reduce mercury contamination of the environment | **T3A** | Develop research programs in habitat fragmentation | **H11** | Improve understanding of groundwater resources |
| **LU3B** | Simplify modeling for TMDLs | **LU9** | Assess tools for forest land protection | **LU5A** | Invest in research that quantifies the relationship between artificial drainage and stream flows |
| **LU3C** | Monitor TMDL BMP implementation | | | **H12** | Improve understanding of watershed responses to multiple drivers of change |
| **LU2D** | Invest in databases and tools needed to support land use and conservation decisions | | | **E11** | Invest in research and enact policies to protect existing prairies from genetic contamination |
| **LU2A** | Fund demonstration projects for conservation-based community planning | | | **LU10E** | Develop and test new management policies to test ecosystem resilience |
| | | | | **H13** | Encourage conservation education and training programs for all MN citizens |
| | | | | **E12** | Invest in efforts to develop sufficient seed stocks for large scale plantings of perennial crops |
| | | | | **LU3D** | Expand water quality media campaign |

*Figure 3. Strategic framework for integrated resource conservation and preservation*

# Conservation And Preservation

## SUSTAINABLE PRACTICES SP

## ECONOMIC INCENTIVES FOR SUSTAINABILITY ES

| Rec. No. | Broad Policy and Action Recommendations | | | | |
|---|---|---|---|---|---|
| LU10 | Support and expand sustainable practices on working forested lands | | | | |
| H7 | Keep water on the landscape | | | | |
| H8 | Review and analyze drainage policy (ditch laws) | | | | |
| T2 | Reduce per capita vehicle miles of travel | | | | |
| | | | | | |
| **Rec. No.** | **Targeted Policy and Action Recommendations** | **Rec. No.** | **Targeted Policy and Action Recommendations** | **Rec. No.** | **Targeted Policy and Action Recommendations** |
| E13 | Invest in research and policies for "green payment" program | E19 | Promote policies and strategies to implement smart meter and smart grid technologies | E16 | Provide incentives to transition a portion of Minnesota's vehicle fleet to electrical power and renewable electricity production |
| E17 | Promote policies and incentives that encourage C-neutral businesses, homes, communities, and other institutions | E20 | Develop incentives to encourage widespread adoption of passive solar and shallow geothermal heat pumps in new construction | E21 | Develop standards and incentives for energy capture from municipal sanitary and solid waste, and minimize landfill options |
| LU4/E4 | Transition renewable fuel feedstocks to perennial crops | E15 | Invest in efforts to develop community-based energy platforms | E14 | Investigate opportunities to provide tax incentives for individual renewable energy investors |
| E18 | Implement policies and incentives to lower energy use of housing stock | | | | |
| **Rec. No.** | **Knowledge Infrastructure Recommendations** | **Rec. No.** | **Knowledge Infrastructure Recommendations** | **Rec. No.** | **Knowledge Infrastructure Recommendations** |
| E3 | Invest in perennial biofuel crop research and demonstration projects on a landscape scale | E22 | Invest in public education focusing on benefits and strategies for energy conservation | | |
| E6 | Invest in research to determine removal rates of corn stover and to establish incentives and BMPs | E25 | Develop public education on actions that individuals and communities can take to reduce mercury contamination of the environment | | |
| E7 | Invest in research to review thermal flow maps | LU7 | Invest in statewide high resolution digital elevation data, watershed delineation, maps of artificial drainage network, and other data to support decision making | | |
| E8 | Invest in applied research to reduce energy and water consumption and emissions in ethanol plants | LU10B | Educate landowners and forest managers on BMPs to protect working forests | | |
| E9 | Invest in research to determine the life cycle impacts of renewable energy production systems | | | | |
| E10 | Invest in research and demonstration projects to develop, and incentives to promote, combination electricity production projects | | | | |
| T3B | Reduce non-point source pollution to surface and ground waters from transportation infrastructure | | | | |
| LU4A | Invest in research on parameters that control successful perennial feedstocks | | | | |
| E5 | Invest in data collection to support energy production assessment | | | | |

Note: Recommendations having the broadest impact across multiple resources are listed first in each column followed by those having more targeted impact, and supported by knowledge infrastructure recommendations.

The following icons are used throughout the plan to quickly identify recommendations by type:


**Integrated Planning Recommendations**


**Critical Land Protection Recommendations**


**Land and Water Restoration and Protection Recommendations**


**Sustainable Practices Recommendations**


**Economic Incentives for Sustainability**

# Appendix IX

*Short Descriptions of Recommendations*

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## Habitat Recommendations

### *Land Protection*

**Habitat Recommendation 1: Protect priority land habitats** **LP**

***Description of recommended action.*** The SCPP has identified many critical land habitats throughout the state based on an integrated approach that considers such issues as SGCN, outdoor recreation such as hunting and fishing, protection of water quality, and threats to these resources (Figure H7). Critical land habitats were identified through a combination of existing government, UM, and selected private data sets. These data sets were spatially explicit and, with rare exception, statewide (Table H1). The criteria for critical habitat identification were developed by a group of public and private stakeholders and optimized to provide the most benefit to the most constituents.

These areas have been prioritized for conservation and preservation. A variety of public and private mechanisms are available to protect these areas, including acquisition, conservation easements, and restoration/remediation of impacted habitats. Public education will play an important role in protecting priority land habitats, and coordination among public, nonprofit, and private entities to protect critical habitats will be increasingly paramount.

The SCPP outlines important land habitats that benefit wildlife, fish, water quality, and outdoor recreation in the context of threats to these important natural resources. The SCPP allows considerable flexibility for conservation of lands and appropriate protection of economic activity such as logging or other compatible uses. Conservation and protection of these land areas will require multiple mechanisms and a coordinated effort among local, county, regional, state, and national public agencies; nonprofits; and private entities. Of particular importance are rare land features and areas such as native prairie and savanna that have been converted to other land uses. This is among the reasons that SOBS received a relatively high weight in the integrated analysis (Table H1).

The state must further strengthen its leadership to coordinate and stimulate efforts for the protection of these critical land areas among current and potential partners. This activity would include identification of relevant landowners; identification of the most cost-effective measures for protection, restoration, and education on the importance of the area; and development of a comprehensive plan to ensure the economic, environmental, and social benefits of protection.

The integrated mapping analyses provide a basis for and opportunity to develop regionally specific strategies for conservation and preservation of Minnesota's critical habitats, using the suite of policy and incentive options from voluntary implementation of BMPs to permanent land acquisition. Implicit within this recommendation is continued support for ongoing programs such as acquisition of the 54,000 acres of private land within state parks. Acquisition of these lands should remain a high priority because they reduce fragmentation and help to maintain large, intact ecosystems.

**Habitat Recommendation 2: Protect critical shorelands of streams and lakes** **L P**

***Description of recommended action.*** A holistic approach is needed for shoreline protection that integrates acquisition with diverse private-land protection strategies such as conservation tax credits, trading of conservation tax credits, BMPs, shoreland regulations and incentives, zoning ordinances, conservation development, and technical guidance for shoreland owners. Fully funded acquisition programs are essential, but not sufficient to protect large enough areas of shoreland to ensure water quality and habitat protection, and thus sustain healthy lake, river, and stream ecosystems. It is doubly important to protect these aquatic habitats at a large scale to make them more resilient to the significant warming and altered precipitation projected for Minnesota over the next century (Appendix IV). Therefore, the state needs a diversity of economic incentives and other tools for private landowners.

***2A. Acquire high-priority shorelands***

The highest priority shorelands within each of Minnesota's 22 ecological subsections should be permanently protected through acquisition. This is one essential component of a multistrategy approach to preserving the clean water legacy that Minnesota's citizens and visitors are used to experiencing. Acquisition may protect critical shoreland habitats from degradation; assure public access for fishing, hunting, wildlife viewing, and natural resource management, which is especially important given the continuing loss of access to natural shores; and provide areas for education and research. Suggestions for prioritizing shoreland acquisition appear in several recent reports, including DNR's 2008 aquatic management area (AMA) acquisition plan, the DNR long-range duck recovery plan, and a 2008 report identifying lake conservation priorities for The Nature Conservancy (TNC).

***2B. Protect private shorelands via economic incentives and other tools***

Minnesota should greatly increase the use of economic incentives and other tools for private landowners to protect shorelines and other sensitive land along lakes, especially along shallow lakes and shallow bays of deep lakes, and streams and rivers throughout Minnesota. This is also needed for riparian buffers around sinkholes in agricultural lands in southeastern Minnesota (see further discussion under habitat recommendation 7).

Protection of private shorelands should combine various tools, such as tax credits, conservation easements for shoreland protection and restoration, BMPs, technical guidance to shoreland owners, shoreland regulations, and zoning ordinances. It is especially important to scale up and combine these tools, for example, by providing technical guidance to landowners on how to implement BMPs on shorelands put under a tradeable conservation tax credit.

Tax credits could dramatically catalyze private shoreland protection. The idea is to provide state income tax credit for conservation easements. In their simplest form, conservation tax credits are applied to perpetual conservation easements or donations of fee-title land. Perpetual conservation easements could be donated to the state or legal land trusts. A further innovation is to allow trade of conservation tax credits among taxpayers: Landowners with

low state tax liability could sell their credits to landowners with higher tax liability, thereby giving landowners with low tax liability an incentive to become interested in making land conservation donations. Although conservation tax credits were initially conceived as a protection strategy for shallow lake habitats in agricultural areas, this approach could expand to protecting a broader array of shorelands (streams, rivers, lakes, wetlands) throughout the state.

**Habitat Recommendation 3: Improve connectivity and access to outdoor recreation** **L P**

Outdoor recreation was not one of the three focal issues chosen for the final SCPP; however, the State Comprehensive Outdoor Recreation Plan (SCORP) has already provided a comprehensive plan and the SCPP preliminary plan provided recommendations for research to support quality outdoor recreation in the future (see Appendix I). To complement these recommendations, the habitat team offers an additional recommendation regarding the important connection between habitat conservation and recreation and considering the distribution of historical and cultural resources in the state.

***Description of recommended action.*** Land use patterns are changing in Minnesota. Lakeshore development is increasing, urban areas are expanding, and forests are being divided into small, privately owned parcels. These changes and others are affecting outdoor recreation. Land needs to be acquired, protected, and restored to provide Minnesotans and visitors an outdoor system where they can recreate.

Action should be taken to improve connectivity of and access to outdoor recreation areas (parks, natural areas, wildlife management areas, etc., Figure H30) and document the connectivity and experience opportunities through a statewide recreation system. Such connectivity would require enhancing connections among state, federal, and local government lands and facilities. Prioritization for acquisition, protection, and restoration of the natural resource base that supports outdoor recreation should focus on large, contiguous land areas suitable for: natural resource–based outdoor recreation; shorelands; threatened habitat areas with opportunities to improve connectivity of underserved areas; and rapidly growing areas or areas where land use changes may limit future outdoor recreation opportunities.

The trends in recreational use and changes in land use patterns all support this recommendation. These primary drivers include land use conversion patterns and changes in population demographics in areas such as the Twin Cities metropolitan area and locations with lakes, rivers, and forests. Participation in hunting and fishing continues to decline, while nonconsumptive activities such as wildlife watching and hiking remain stable or are growing. Increasing human population is projected to lead to an estimated rise in state park visitors, from 8.6 million in 1998 to 9.2 million by 2025. If energy costs continue to increase, there will be a growing demand for outdoor opportunities that limit the need to travel great distances for recreation.

**Habitat Recommendation 4: Restore and protect shallow lakes** **R P**

***Description of recommended action.*** Minnesota should accelerate efforts to restore and improve shallow-lake habitat (including shallow bays of deep lakes) in priority watersheds in order to reduce the number of lakes in a turbid-water state, and to restore some of the 1,000-plus drained shallow lakes in the state. Active management of Swan, Christina, and Thief Lakes shows that many shallow lakes with poor water quality and little habitat can be restored through active management.

Sensitive shallow lakes frequently winterkill (fish); are subject to mixing from wind, surface use, and large fish (carp); and typically exist in either a turbid- or clear-water state. Unfortunately, most shallow lakes in the prairie and forest-prairie transi-

tion zones of Minnesota are in the turbid-water state. This is due to the combination of increased flows of water and nutrients into them from intensively drained and cultivated landscapes that surround them, and abundant populations of invasive fish (e.g., carp and black bullhead) that result from increased connectivity (i.e., ditches) and persist due to lack of natural winterkill. Some shallow lakes are so turbid that they are listed as impaired by the MPCA. Dense human housing development and inappropriate surface uses are also increasing threats to shallow lakes.

Funding is needed to purchase conservation easements around shallow lakes to restore their lakesheds (small wetlands and grass buffers) and prevent development. Funding is also needed to install fish barriers to keep out invasive species such as carp. Finally, funding is needed for water control structures that state agency managers can use to conduct temporary drawdowns to consolidate and aerate sediments, induce natural winterkill of fish, and rejuvenate aquatic plants. The level of development and management of the landscapes around shallow lakes necessitates active in-lake management in order to maintain water quality and good habitat.

**Habitat Recommendation 5: Restore land, wetlands, and wetland-associated watersheds** **R P**

***Description of recommended action.*** Minnesota must invest in prioritized areas to restore degraded and rare land features, wetlands (especially many that have been drained and converted), and watersheds associated with wetlands. This will provide benefits for wildlife, SGCN, water quality, and important ecological processes. This is especially imperative in the prairie and prairie-forest transition zones of the state. Restoration should consider the need to encourage landowners to restore these lands and compensate them above and beyond the fair market value of the land, since most sites are not for sale and high crop prices inhibit conversion of land from agriculture to other uses. Consideration must also be given to using easements on private lands to achieve habitat restoration goals. It is imperative to recognize the huge loss of native prairie and small wetlands in the prairie region of Minnesota (99% and 90%, respectively). Wildlife does not require restored lands to be in public ownership to benefit from them as critical habitat. Restoration, however, is not only needed in the prairie regions, though it is of high priority there. Other land uses such as savanna and forests are also in need of attention. For instance, riparian forests need restoring, and regeneration of oak, white cedar, and white pine requires attention. Similarly, restoration of wetlands alone cannot restore their appropriate structure and function; restoration efforts must also consider the watersheds that drain into wetlands.

**Habitat Recommendation 6: Protect and restore critical in-water habitat of lakes and streams** **R P**

***Description of recommended action.*** Accelerate and expand the relatively small current efforts to restore critical habitat for aquatic communities in near-shore areas of lakes, in-stream areas of rivers and streams, and deep-water lakes with exceptional water quality.

***6A. Restore habitat structure within lakes***

We recommend developing a program to restore the natural features of lakeshore habitats (shoreland, shoreline, and near-shore areas). The program would add woody habitat where it has been removed, and restore emergent and floating vegetation where it has been lost. The program would also work with lake-home owners and lake associations to achieve restoration goals.

Increasing development pressure along lakeshores has negative impacts on these species and water quality—and Minnesota's lakeshores are being developed at a rapid rate. The shallow areas in large lakes are crucial to fish, wildlife, and water quality.

An estimated 20% to 28% of the near-shore emergent and floating-leaf coverage has been lost due to development in bass and walleye lakes. On average, there is a 66% reduction in aquatic vegetation coverage with shoreland development. These declines in aquatic vegetation coincide with lower fish production and reduced water quality in lakes. Woody habitat losses are also occurring in Minnesota lakes but have not been quantified. Many fish depend on aquatic vegetation, woody habitat, and shorelines to provide spawning habitat, cover, and refuge from predators. Downed trees provide important in-lake structure, habitat, food, and shelter for fishes, frogs, turtles, water birds, and mammals. This woody habitat is also important for aquatic invertebrates such as snails and bryozoans. Turtles need to bask on deadfalls or floating logs. Near-shore downed trees also blunt waves and ice action that scour the lake bed. Because trees often grow slowly and their density has been reduced due to past shoreline alterations, this important habitat element in Minnesota lakes may not be replenished without substantial efforts.

***6B. Protect and restore in-stream habitats***

A priority for rivers, particularly the Mississippi River, is to reduce the negative effects of recreational boat traffic, especially from medium to large cruisers, on sensitive shoreline habitats. Stream-bank erosion from recreational boat wakes adds large sediment loads, which increases water turbidity and disrupts the growth of beneficial aquatic plants and reproduction of native mussels and some fish. Other habitat impacts include breakage of aquatic plants; impingement and various disturbances of fish and wildlife; and dislodging of woody debris that normally provides important cover and food production for fish, as well as habitat structure for turtles and birds. Systemic solutions include enforcing no-wake zones or no-wake periods in sensitive habitats, which requires revision of local, state, or federal surface water use regulations; and design of more river-friendly boats, which requires engineering research and development. Past education efforts and voluntary no-wake zones have not worked.

A priority for former prairie zones of Minnesota is to reverse the negative effects of stream channelization on in-stream habitats for fish and other aquatic organisms. Channelization has changed the hydrology of streams, which has then made them wider and more deeply incised. In many locations, negative effects of stream channelization have been exacerbated by removal of riparian vegetation and wetlands, and altered upland land use. Several approaches can be implemented to protect and restore in-stream habitats. Riparian vegetation can be restored to stabilize stream banks (several state and federal programs, such as RIM, CRP, CREP and CSP, can provide financial assistance). Two-stage channels (Figures H33 and H34) can be constructed where streams have been channelized to provide a flood plain to dissipate stream energy and allow the channel to remeander, which will provide more diverse habitat for aquatic organisms. Restoring wetlands and altering upland vegetation (state and federal programs provide financial assistance) will hold water on the landscape or allow for increased infiltration, both of which can help mitigate the altered hydrology of streams.

Minnesota has hundreds of low-head dams and culverts that restrict movement of aquatic organisms. Inappropriately sized culverts also may contribute to localized flooding. Removal of dams and installing culverts with increased capacity would improve connectivity of aquatic systems. An alternative approach to removal of low-head dams is to provide for fish passage through the dam (e.g., recent construction providing passage for lake sturgeon in the Wild Rice River). Opportunities to remove higher dams or alter them to provide fish passage should also be explored.

***6C. Protect deep-water lakes with exceptional water quality***

Clear lakes with large, oxygen-rich deep-water zones provide critical habitat for native cold-water fish such as cisco, lake whitefish, and lake trout in

Minnesota. In the summer, lakes stratify into three layers; an uppermost epilimnion, which is warmest and oxygen poor; a middle thermocline; and the lowest hypolimnion, which is coldest and oxygen rich. During warm summers, cold-water fish find refuge in the cold hypolimnion if it has sufficient oxygen. Only lakes with the most exceptional water quality maintain enough oxygen in the hypolimnion for cold-water fish to thrive. Climate warming and poor land use in Minnesota pose imminent threats to oxygen levels in these deep-water zones. First, increased duration of stratification from climate warming decreases their oxygen content late in the summer. Second, oxygen concentrations are reduced by poor land use when decaying organic matter from algae and plants, stimulated by high nutrient loading, consumes oxygen in deep water. Both of these threats have the potential to severely limit habitat for cold-water fish in Minnesota.

Deep lakes with exceptional water quality will represent important sanctuaries for cold-water fish as the climate warms in Minnesota. However, future deterioration of water quality would greatly jeopardize the ability of these lakes to provide that refuge. These potential refuge lakes are being identified by the DNR and the UM. Many of these lakes are the "crown jewels" of Minnesota and deserve special status in addition to their value as refuges from climate change. Examples include Ten Mile Lake in Cass County, Big Trout Lake in Crow Wing County, Big Sand Lake in Hubbard County, and Trout and Wabana Lakes in Itasca County. Also, these types of lakes are not completely limited to forested ecoregions. Big Watab Lake, located in agricultural Stearns County, and Square Lake, located in the Twin Cities metropolitan area, also represent lakes with excellent oxygen resources in the hypolimnion.

Once identified, lake watershed protection efforts should be initiated with a special commitment. These protection efforts could include land purchase, easement protection, and BMP implementation. Many are already "high-profile" lakes with active and dedicated lake associations and local users. Implementation of high-intensity watershed and shoreland protection efforts would largely be welcomed. Protection of these lakes may actually be cost effective (high value for modest investment). Many are characterized by small, forested watersheds and protection efforts can be targeted at relatively few parcels with great cost efficiency.

## *Sustainable Practice*

**Habitat Recommendation 7: Keep water on the landscape** **S P**

***Description of recommended action.*** Retaining water on the landscape over broader areas and for longer periods is critical for improving water quality, reducing flooding, maintaining habitat for wildlife and game species, and enhancing biological diversity. The intent of this recommendation is to have water move more slowly across and through the landscape to return to more natural conditions. This need is acute in agricultural and urban landscapes of Minnesota. We suggest three strategies that complement other landscape-focused recommendations in this plan:

- Perennial vegetation
- Storm water controls
- Riparian buffers

**Habitat Recommendation 8: Review and analyze drainage policy** **S P**

***Description of recommended action.*** The state should invest in a comprehensive review and analysis of laws relating to drainage, including Minnesota Statutes Chapter 103E, and recommend changes to the legislature that would remove barriers and facilitate the restoration of critical wetlands in order to improve water quality and aquatic habitats.

## *Knowledge Infrastructure*

### Habitat Recommendation 9: Overall research on land and aquatic habitats

LP

***Description of recommended action.*** The SCPP has developed and implemented a mechanism to integrate a portfolio of spatial data layers summarizing important natural resources and environmental threats in Minnesota. These data layers quantify the loss of native biodiversity, distribution of important outdoor resources (e.g., fish and wildlife populations), impairments to aquatic resources, degradation of critical ecological processes (e.g., nutrient cycling, predator-prey interactions), and locations of biologically significant and large, intact natural ecosystems. The spatial data layers were also examined in relation to where housing development was most likely to occur in the future, locations of road networks, current and future agricultural-bioenergy activity, and land ownership (Figures H2–H16).

Research is essential to improve understanding of the risk of extinction of Minnesota's native biological diversity; continuing availability of quality outdoor recreation; and confidence in the ability to protect aquatic resources in the face of risks such as climate change, invasive species, and expanding human population. Information on important historical and cultural resources should also be researched and incorporated into decision making on conservation, protection, or restoration efforts.

The state of Minnesota should continue to appropriate funds for improving understanding of fish and wildlife populations, native biological diversity, and water quality, and mitigating the stressors that affect them.

### Habitat Recommendation 10: Research on near-shore habitat vulnerability

RP

***Description of recommended action.*** There is a need to increase understanding of near-shore habitat vulnerability. This would be best accomplished through research on the human behaviors that degrade and destroy near-shore habitat, as well as pilot policies or programs that preserve or restore near-shore fish and wildlife habitat. Research can also address historic and cultural resources associated with near-shore habitat.

### Habitat Recommendation 11: Improve understanding of ground water resources

RP

***Description of recommended action.*** Ground water is an indispensable natural resource for human activities and human health. Partly because ground water is a hidden resource, Minnesota has not yet adequately answered critical questions about it. We need to understand how much ground water we have, where we can find it, its quality, how it moves, where it is recharged, where it discharges, and how much we can safely tap, both seasonally and long term.

The state needs to make a major, sustained investment in the collection and assessment of information about ground water and its connection to surface waters. We need to fill information gaps at the site-specific scale and the scale of entire hydrologic systems, including aquifers and watersheds. Given the relatively complex hydrology in our state, Minnesota may be decades away from acquiring sufficient information to inform site-specific decisions about ground-water usage throughout the state. Filling critical information gaps at both scales is essential for achieving sustainable management of ground water that meets the needs of humans and habitats.

The overall goal of this recommendation is to develop a large-scale, hydrologic-system framework for understanding how today's decisions may affect

tomorrow's needs. This systems approach will offer insights into the more strategic questions that are beyond the reach of the current site-by-site focus of decision-making for ground-water use. A systems approach will make it possible to answer questions about (1) how much water can be committed to human activities without adversely affecting ecosystems, (2) how much growth a specific region can sustain based upon its water budget, and (3) how land use changes and climate change may shift the whole equation.

**Habitat Recommendation 12: Improve understanding of watersheds' response to multiple drivers of change** **R P**

***Description of recommended action.*** Effective water quality protection and restoration will require additional monitoring, research, and evaluation of aquatic and land responses to land use, climate, and other changes. While much is known within various spatial and temporal scales, interactions and responses across scales are not well understood. Research is needed to build the capacity of resource managers to understand and evaluate the multitude of factors that affect these resources across the state.

To accomplish this recommendation, investment is needed for research across many watershed scales to improve understanding of pollutants, pollution sources, movement across the watershed (e.g., hydrology), and physical, chemical, and biological responses. There have been significant advances in monitoring methods and technologies, plus increased funding (e.g., through the Clean Water Legacy Act). The use of biological monitoring has become better integrated with water quality. The next step to achieve a better understanding of watershed systems and an assessment of their health is to gain a more holistic and comprehensive understanding of how a water body and its watershed function. This would result in more effective protection, restoration, and conservation for both land and aquatic habitats.

A formal physical watershed evaluation monitoring effort is also needed to assess habitat and underlying geomorphic conditions as a component of Clean Water Legacy monitoring and assessment activities. Greater use of geographic information system (GIS) data layers and analysis tools is essential as data layers become more detailed and analytical techniques improve. The DNR Watershed Assessment Tool should be improved to enable the identification of priority habitat investment areas. Use of tools such as the U.S. Environmental Protection Agency (USEPA) Watershed Assessment of River Stability and Sediment Supply (WARSSS) procedures should be supported for developing and completing physical channel, bank, and watershed condition monitoring and evaluation.

The state lacks the basic information needed to understand how multiple drivers of change affect Minnesota's watersheds. The state should conduct a rapid assessment to gather baseline information on the physical, biological, and chemical conditions of streams important to understanding these effects.

Attention is also needed in the evaluation of the potential impacts of climate change on land and aquatic habitats. State-level studies are needed to improve projections of how climate change will alter habitats, the distributions of species, and the stressors that affect both. Studies are also needed to inform strategies that will support adaptation of biodiversity to a changed climate (see Appendix IV).

**Habitat Recommendation 13: Habitat and landscape conservation and training programs for all citizens** **R P**

***Description of recommended action.*** The state should invest in education to improve public understanding of the need for better conservation, protection, and restoration of Minnesota's habitats and landscapes. Expanded education, information, and training efforts are needed to bring focus to the complexity of land, water, and land-water interactions in

a landscape context. These efforts must be directed to all citizens from K–12 educational levels to higher education, and the general public. A broad range of teaching and information sharing materials has been developed. Means of delivering the materials, goals for communicating them, and ways to measure success need yet to be developed.

As people have migrated to cities over the past 50 years, awareness of natural resources has declined. To attain a more informed constituency, whether as interested citizens or as professionals doing natural resources work, investment is needed. Technical information and transfer of that information is needed for people to grow an awareness of natural resources, and appreciation for monitoring, assessment, and data evaluation.

## Land Use Recommendations

### *Community Land Use*

**Land Use Recommendation 1: Fund and implement a state land use, development, and investment guide**


***Description of recommended action.*** The state spends billions of dollars each year on infrastructure, local government and business assistance, and regulation in order to safeguard the environment, help business and communities thrive, and improve the quality of life in Minnesota. However, there is no system or guide in place to provide an overview of how these funds are spent across agencies, to track how these dollars come together on the land and in communities, and to determine whether investments in one sector put those in another at risk.

In addition, while most land use decisions are made at the local level, state-level vision and leadership are needed on many natural resource issues. The state needs to clearly define its interests and use its resources to engage others in securing those interests for the long term. Therefore the preparation and implementation of a state land use, development, and investment guide should be funded. The guide would provide a way to define, quantify, and unify state goals and investment objectives across social, economic and environmental sectors. It would offer the opportunity to reconcile conflicting goals and preserve Minnesota's natural resources. This is more important than ever, given the intense competition for land and resources and the chronic scarcity of state funds coupled with the uncertainties introduced by climate change.

**Land Use Recommendation 2: Support local and regional conservation-based community planning**


***Description of recommended action.*** The objective of this recommendation is to promote land use planning that advances the permanent protection and restoration of Minnesota's natural resources, important agricultural areas, and open space by supporting conservation-based planning in local and regional communities. The recommendation contains four elements:

- Demonstration (pilot projects)
- Incentives
- Tools and technical assistance
- Investment in base data

This strategy builds on the broader vision, goals, and criteria established under land use recommendation 1—the state land use, development, and investment guide—and refines it for local and regional use. Local governments and conservation organizations can be key agents in implementing the SCPP and local stewardship significantly expands the state's capacity to protect and restore natural areas. Supporting local and regional communities in conservation-based planning will help communities establish long-term goals that are consistent with the state's goals, and allow communities to implement those goals as development occurs.

In order to support conservation-based planning in local and regional communities, four elements are needed: Demonstration, incentives, tools and technical assistance, and base data. The following subrecommendations describe each of these elements.

***2A. Demonstrate conservation-based planning through pilot projects***

Pilot projects that embody all the elements of good conservation-based planning, as outlined above, would help create an understanding among local and regional communities of the processes involved, identify barriers, and demonstrate benefits. The projects would also generate feedback on adapting strategies for optimal function and effect. Different approaches may be appropriate in different parts of the state, depending on the issues of concern to a particular community or region. Therefore, funding for three types of pilot projects is recommended.

- Conservation-based planning in a variety of local communities
- Conservation-based planning along a rapidly developing transportation corridor (involving multiple communities)
- Conservation-based planning resulting in an AUAR-certified comprehensive plan

***2B. Provide incentives to local governments and conservation organizations for conservation-based planning***

Recent trends in decreasing federal and state natural area grant programs and decreases in general state aid to local governments have undermined local planning and stewardship capacity, even as growth pressures on natural resources have increased. Financial incentives are needed to engage local partners in planning and implementation that meets local and statewide conservation goals.

- Provide financial assistance to communities to undertake conservation-based planning
- Provide financial assistance to communities to support implementation of conservation-based plans

***2C. Provide tools and technical assistance for conservation-based planning***

To develop conservation-based plans, communities must have access to appropriate tools and technical assistance. These include:

- Carbon calculator for communities
- Improve agricultural land preservation tools
- Develop and deliver outreach materials
- Establish a Minnesota natural resources and development partnership
- Invest in building state assistance capabilities

***2D. Invest in generating base data and information necessary to support conservation-based planning***

Accurate information about the type and quality of natural resources is essential for making sound planning decisions. Improved planning that uses land cover and other types of natural resources information can identify areas in need of restoration, areas for protection, areas for landscape connectivity, and areas more suitable to development that minimize or avoid environmental degradation and loss. Nearly all of these proposed land use recommendations require accurate, reliable, and standardized information about the type, location, and quality of existing resources as well as an understanding of general land cover type. However, this information is currently severely lacking in the majority of the state, particularly in critical areas.

- Develop appropriate MLCCS data in areas vulnerable to near-term development or conversion of land cover
- Update statewide land-cover databases and remote sensing capabilities

**Land Use Recommendation 3: Ensure protection of water resources in urban areas by evaluating and improving current programs**

IP

***Description of recommended action.*** Changes to surface water runoff due to new development and redevelopment have significant impacts on most of the major drivers of change of Minnesota's natural resources. The state of Minnesota has a set of powerful surface water regulatory programs that are largely directed at controlling land use change and development practices to improve and protect water quality. These programs are supported and driven by federal and state statutes and rules, and include:

- Impaired waters and Total Maximum Daily Loads (TMDLs)
- National Pollutant Discharge Elimination System (NPDES) storm-water permitting
  - Municipal separate storm sewer systems (MS4)
  - Construction sites
  - Industrial sites
- Nondegradation for all waters
- Shoreland management

***3A. Credit system for storm-water and LID BMPs***

For a limited number of storm-water BMPs, such as storm-water National Urban Runoff Program (NURP) ponds, a strong system of credits is integrated into the storm-water regulatory framework at multiple levels. This system of credits needs to be extended to a much wider range of BMPs, including low-impact development (LID) practices, conservation design, and nonstructural BMPs.

NURP developed a system that was very effective in supporting the design and installation of storm-water ponds.

The result of this effort was the universal adoption and acceptance of storm-water ponds across all sectors. Designers working on projects could use the design guidelines to include storm-water ponds in their projects in order to meet permit and design standards from multiple reviewing and approving government entities.

This system needs to be extended to a wide range of relatively new BMPs. Many of the design standards are currently incorporated into the Minnesota Stormwater Manual. What is missing is a credit system for implementing the BMPs. A well-defined and strongly-supported credit system is needed to motivate developers, builders, and local government units (LGUs) to include these practices in their projects.

This credit system must apply to multiple levels of the landscape. In a manner similar to NURP ponds, the credit system should apply to individual sites and construction projects. The credit system should also function at the regional and statewide levels. The Lake Pepin TMDL, for example, will probably call for a significant phosphorus reduction across the 60% of the lake's watershed in Minnesota. An effective credit system should function at this level to enable cities to determine whether their storm-water BMP programs are sufficient to meet the waste load allocation from the TMDL.

***3B. Simple modeling protocols for TMDL compliance***

TMDL studies produce waste-load allocations and load allocations for pollutants. These allocations result in a responsibility for implementation of restoration measures by cities, other LGUs, and other landowners. In the case of municipal wastewater treatment plants and cities covered under the NPDES MS4 storm-water program, these responsibilities take the form of permit requirements.

This simple modeling system would consist of a load estimating model based on land use and loading rates combined with a total load reduction model based on load removal rates and volume reduction rates appropriate for a wide range of BMP systems. This simple model could be used by all cities

and other landowners with relatively low technical knowledge and manageable input requirements.

***3C. TMDL BMP implementation monitoring***

Draft and implement a program of detailed BMP monitoring in selected representative watersheds with TMDL studies and implementation plans. In addition to monitoring the water body itself, this program would involve monitoring throughout the watershed to determine the effectiveness of BMP systems implemented by various entities and types of entities (agriculture, silviculture, cities, storm-water, wastewater, etc). It would also involve detailed in-stream or in-lake monitoring to better understand processes in the water bodies themselves, as well as contributions from the landscape and municipal infrastructure.

This monitoring program may include some BMP implementation monitoring – simply counting and documenting the extent of the implementation of BMP systems across the landscape. The main focus, though, will be water-quality monitoring to directly measure the impact and effectiveness of BMPs by measuring water-quality parameters at discharge points and in water bodies near or adjacent to the BMP systems.

This scale of monitoring would provide an important accountability framework for all parties involved in implementing BMPs and meeting water-quality standards (cities, watershed organizations, agriculture, etc.). This type of monitoring program has also been referred to as "sentinel watershed" or "representative watershed" monitoring.

The equipment to perform this monitoring, if purchased using state funds, should be owned by the state. This will significantly expand the state's monitoring capacity.

***3D. Water quality media campaign***

Further develop and expand the reach of Minnesota Water—Let's Keep It Clean!, a storm-water pollution prevention campaign produced by a coalition of cities, nonprofits, agencies, watersheds, and others working to develop pollution prevention resources for the Twin Cities metropolitan area.

This campaign is designed to enhance public education and awareness of storm-water pollution prevention strategies by disseminating messages in mass media and providing educational materials for educators and municipal staff through the www.cleanwatermn.org Web site.

## *Agricultural Land Use*

**Land Use Recommendation 4: As much as possible, transition renewable fuel feedstocks to perennial crops** **S P**

Perennial species protect the soil from erosion throughout the year and reduce the volume of early-season water runoff (related to stream-bank erosion) because of a longer annual duration of evapotranspiration and increased infiltration. Additionally, the use of perennial cellulosic crops as feedstock for biofuels can significantly reduce life-cycle GHG emissions relative to grain-based ethanol production systems. Because an appropriate selection of perennials is less sensitive to risks such as temporary flooding and drought, and presents less risk of erosion and nutrient runoff, it can complement annual food and feed crops by occupying the more vulnerable land areas, stabilizing incomes and protecting the environment.

Conservation and protection of water quality and soils are strongly influenced by land cover. Perennial species protect the soil from erosion throughout the year and reduce the volume of water runoff (related to stream-bank erosion) because of a longer annual duration of evapotranspiration and increased infiltration. Additionally, the use of perennial crops as

feedstock for biofuels can significantly reduce life-cycle GHG emissions relative to grain-based ethanol production systems.

***4A. Invest in research on parameters that control successful perennial feedstocks***

***Description of recommended action.*** Invest in research to determine ecoregion and site-specific suitability and management of perennial species for use as feedstock for biofuels and other products. Minnesota agro-ecoregions (Figure L9) differ significantly in suitability for perennial species that can serve as feedstocks for biofuels and other products. Growing season length and temperature, precipitation, and soil characteristics are important determinants of species suitability. Research is necessary to help producers select site-specific perennial species for use as cellulosic feedstocks.

***4B. Investigate policy changes on fuel feedstock transition***

***Description of recommended action.*** Investigate, analyze, and adopt policy that will gradually transition biofuel feedstocks produced for the Minnesota ethanol mandate to perennial crops. The transition should be matched to availability of processing technology and requirements for infrastructure development.

**Land Use Recommendation 5: Reduce stream-bank erosion through reductions in peak flows** **R P**

Reductions in peak and total flows by modification of drainage systems, and constructing and restoring wetlands and riparian areas in strategic locations, will reduce attendant stream-bank and near-channel erosion, a major source of sediment in the Minnesota River basin. While agricultural drainage is necessary, research-based modifications such as shallower tile placement can reduce downstream impacts. With placement guided by more accurate digital elevation data, strategically located water storage would lessen the impact of both surface and subsurface drainage systems on stream channels and reduce nutrients in water. Some water storage areas could be occupied by biomass crops not sensitive to temporary flooding.

***5A. Invest in research that quantifies the relationship between artificial drainage and stream flows***

***Description of recommended action.*** Invest in research to determine the quantitative relationship among trends in precipitation, artificial drainage systems, and stream hydrology.

Determination of the quantitative relationship among trends in precipitation, artificial drainage systems, land cover, and stream hydrology would allow more precise targeting of mitigation strategies, since the relationships are complex and strategies will be site specific.

***5B. Investigate policy changes for goals for peak flow reductions***

***Description of recommended action.*** Set research-based goals for peak-flow reductions through hydrologic detention, wetland and riparian zone restoration, and other measures.

***5C. Invest in targeted water detention***

***Description of recommended action.*** Invest in strategically targeted programs for reduction of peak flows through increased water detention in agricultural drainage systems, including wetland construction and restoration, in-ditch storage, and conservation drainage.

Targeted drainage water detention will reduce peak flows and attendant stream-bank erosion. It will also reduce sediment and nutrient contributions from uplands through sediment deposition and denitrification. Hydrologic detention measures should

complement programs and policies to reduce flows through more perennial crops and buffers.

***5D. Investigate policy changes for peak flow reduction***

***Description of recommended action.*** Investigate, analyze, and adopt science-based policy that strengthens mitigation of peak flows from artificial drainage systems.

**Land Use Recommendation 6: Reduce upland and gully erosion through soil conservation practices** **R P**

Education, targeted incentives, and practice-flexible, outcome-based soil and water conservation plans where needed would reduce soil erosion from fields and areas of concentrated flows. The result would be reduced sediment and phosphorus delivery to water and protection of soil productivity. Certified crop consultants already deliver conservation-related services (nutrient and pest management) and can provide other field-based services in support of soil conservation to augment services provided by the USDA, NRCS and Soil and Water Conservation Districts (SWCDs).

Soil erosion from sloping fields, especially those near unbuffered streams, is a significant source of sediment and associated phosphorus. Current federal Farm Bill and energy policies and incentives are increasing row-crop production (Figure L8), especially on the sloping soils of southeastern Minnesota, where a high proportion of land has been in pasture and perennial crops. The increased width of tillage, planting, and spraying implements makes maintenance of erosion-control structures such as terraces and grassed waterways more difficult and less likely. The increased prevalence of corn following corn for ethanol production increases the prevalence of intense tillage to reduce crop-residue effects on corn early growth and yields. The percentage of cropland operated by renters, many of them with short-term leases and cash rents, exceeds 40% (2002 Census of Agriculture), lessening the incentive for long-term soil stewardship. Reductions in upland and gully erosion will require stronger incentives and standards for soil conservation if the trends above continue.

***6A. Invest in soil conservation practices***

***Description of recommended action.*** Invest in education and incentive programs, leveraging federal, state, and local resources when possible, that target landowners in critical sediment source areas.

Landscape areas differ in potential to deliver sediment and nutrients to water, based on proximity, slope, and other factors. Education and incentive programs that target high-contributing areas will achieve more mitigation per dollar invested than nontargeted programs (Figure L5).

***6B. Investigate policy changes to reduce upland and gulley erosion***

***Description of recommended action.*** Investigate the feasibility of developing or amending policy, such as water quality rules, to phase in outcome-driven, practice-flexible soil and water conservation plans for all farms with potential to deliver sediment and nutrients to water bodies. The phase-in priority could begin with farms in watersheds with sediment and phosphorus-related impairments.

**Land Use Recommendation 7: Enable improved design and targeting of conservation through improved and timely data collection and distribution** **S P**

Determination of sediment source areas, targeting of conservation practices, determination of effectiveness of practices, and installation of conservation structures all require adequate resource data. These include high-resolution digital elevation data, land cover, crop residue coverage, and conservation practice effectiveness monitoring.

***7A. Invest in data collection***

***Description of recommended action.*** Invest in the following basic information to support soil and water protection:

- Statewide high-resolution digital elevation data (LIDAR) and associated high-resolution watershed delineation
- Statewide updated land-cover data
- Maps of the artificial drainage network
- A long-term program monitoring the effectiveness of BMPs on critical source areas
- An annual crop residue survey (following planting) of sloping lands near streams
- A periodic detailed survey of benchmark sampling sites to determine trends in soil erosion, as was carried out previously by the NRCS for the National Resources Inventory
- Periodic remote sensing by aircraft and/or satellite for land cover and other attributes

## *Forestry Land Use*

**Land Use Recommendation 8: Protect large blocks of forested land** **L P**

***Description of recommended action.*** The objective of this recommendation is to identify, prioritize, and promote protection of large blocks of forested land, focused on areas that are adjacent to large publicly held blocks and that are at risk of parcelization, conversion, and fragmentation.

***8A. Identify forestlands for protection***

Research is needed to indicate the location and characteristics of land that should be targeted for protection. Specifically, research is needed to:

- Provide a detailed map of land parcelization trends in Minnesota
- Identify targeted blocks of threatened land near large blocks of publicly held land

***8B. Prioritize forest lands for protection***

Prioritization should be based on proximity to large blocks of already protected land (both public and private) to maximize the resiliency of the forests, and should include a specific focus on protecting working forests so that forest products can continue to support regional economies of Minnesota. Protection should focus on at-risk and high-priority lands (generally 100 acres or more) in both the Laurentian mixed forests and eastern broadleaf forests.

***8C. Support and promote permanent protection of forest lands***

Permanent protection of forestlands through fee title acquisition or conservation easements will need to be supported and promoted to landowners through financial incentives, education, and technical assistance.

**Land Use Recommendation 9: Assess tools for forest land protection** **L P**

***Description of recommended action.*** This recommendation is focused on identifying, examining, and monitoring the impacts of diverse tools in order to assess their effectiveness for forest land protection.

The state can make a spectrum of investments to protect forestland. Some directly support permanent protection of forestland, such as fee title acquisitions, conservation easements, and tax policies. Others, such as cost share, forest certification, and forest stewardship planning, support forestland protection indirectly by supporting sustainable management practices.

Each tool has a role in protecting Minnesota's forests, and the choice of tools depends on many factors, including site-specific conditions and cost effectiveness. Protection tools have been successful in protecting critical forest lands in Minnesota, but a comprehensive assessment of their appropriateness in various settings is lacking.

**Land Use Recommendation10: Support and expand sustainable practices on working forested lands** SP

***Description of recommended action.*** The objective of this recommendation is to promote and implement sustainable forest practices in working forests in Minnesota. This strategy builds on the accomplishments of the MFRC voluntary guidelines. Strategies include education, financial incentives to landowners, research and demonstration, and direct investment in specific management strategies.

***10A. Educate consumers on benefits of certified wood to increase the demand for sustainably raised timber in Minnesota***

***10B. Educate landowners and forest managers on best management practices to protect working forests***

***10C. Promote collective/cooperative management of forestlands at a landscape level in order to increase the multiple benefits of forests (timber, air quality, carbon sinks, water quality, etc.)***

***10D. Provide incentives for sustainable forestry practices***

***10E. Develop and test new management practices to improve ecosystem resilience***

Invest in research and demonstration areas that identify, examine, and monitor the impact of management scenarios on ecosystem resilience and increase understanding of the impact of climate change and other key drivers on forested ecosystems.

***10F. Support the use of fire to increase forest health and biodiversity***

Use of fire is supported by management strategies currently being developed by DNR for newly updated Ecological Classification System (ECS) plant community classifications.

## Transportation Recommendations

**Transportation Recommendation 1: Align transportation planning across state agencies and integrate development and review across state, regional, metropolitan and county/local transportation, land use and conservation programs** IP

***1A. Institute interagency alignment of planning to coordinate transportation with other state planning cycles***

The state should coordinate cyclical statewide plans across state agencies (e.g., MnDOT, Minnesota Pollution Control Agency [MPCA], DNR) and provide environmental data coordination and analysis, including determination of vulnerable ecological areas by resource, cumulative impact analysis and projection, performance standards and best practices research, and recommendations for land acquisition. MnDOT would continue to have the role of responsible governing unit (RGU) for surface transportation projects.

If implemented, integration would provide incentive for feedback systems through monitoring and strategic research programs, organize and align early review of projects, and promote nonstructural and structural practices and performance measures.

***1B. Integrate streamlined statewide environmental transportation project review with other statewide and cross-jurisdictional planning, design, budgeting, and review programs***

Adopt environmental interagency stakeholder involvement (streamlining) project planning protocols through coordination across state, metropolitan, and county/local transportation, land use, and conservation decision-making responsibilities.

Modify the highway project development process (HPDP) to create a cross-consultative regional

and local forum and an environmental team to lead federal- and state-mandated impact assessment. MnDOT and the EQB would create the forum and teams with participation of other review agencies, including MPCA, DNR, the Minnesota State Historic Preservation Office (SHPO), and metropolitan and county units.

***Description of recommended action.*** A coordinated statewide interagency planning process around transportation and other statewide initiatives will enhance efficiencies and coherence of funding and other efforts with resource conservation objectives.

Once a project is approved in the annual review process associated with the STIP, the purpose and need statements that formed their environmental assessment parameters will have been set. Since these projects have already been prioritized at the MnDOT district level through the regional ATP using the STIP projection of costs of minimization/mitigation, they would be potential candidates for streamlined environmental review. When streamlined environmental assessment occurs, EQB and MnDOT (and in the cases of transit corridors, the Metropolitan Council and/or the counties that are the joint RGUs for the project) are responsible to align all interagency environmental processes and to set and coordinate project performance standards and best practices and develop monitoring. This process will have local coordination based on analysis and cross-consultation via a new ETAT process.

**Transportation Recommendation 2: Reduce per capita vehicle miles of travel (VMT), through compact mixed-use development and multi- and intermodal transportation systems**


***Description of recommended action.*** The principal means by which VMT can currently be reduced are through reducing growth in lane miles and increasing intermodal and multimodal (including nonmotorized) transportation access and use. In the context of an automobile and truck fleet that cannot turn over (i.e. be replaced by more efficient vehicles and new fuels) in less than a decade regardless of other conditions, current efforts should concentrate on supporting planning and design of compact, mixed-use urban and suburban development and corresponding intermodal and multimodal transportation networks. Existing and proposed MnDOT plans and processes (e.g., interregional corridor plan, ATP, ETAT) should be used as foundations for support of compact urban and suburban development.

***2A. Use alternative transportation planning and design processes and tools to support compact mixed-use development***

Incorporate expanded transportation demand modeling (TDM) and Access Management modeling and other related strategies in statewide and local planning and project design to enhance local multimodal and passenger intermodal access that supports compact mixed-use development and resource conservation. For example, expanded Transportation Demand Management (TDM) analysis of MnDOT interregional corridor commutesheds, (i.e., areas of service at peak across modes) could suggest alternatives to usual applications of the functional classification standards. It is also important to have uniformity among expanded TDM requirements across neighboring communities so cities that implement expanded transit and nonmotorized TDM are not penalized budgetarily for their efforts by placing themselves at a disadvantage compared to civil divisions that do not implement TDM.

***2B. Provide incentives for compact mixed-use development***

Encourage and prioritize qualified transit and nonmotorized system fiscal investments in the STIP for regions that integrate local resource planning and performance-standard based design for compact development (Figure T6). Incorporate economic and employment development into resource protection.

For example, focus these approaches on the Twin Cities metropolitan area and other employment and service centers.

***2C. Augment and communicate information on practices and performance of compact mixed-use development and transportation***

Conduct interdisciplinary research (e.g., case studies) to correlate VMT changes with types, locations and scales of development in relation to transportation demand and planning for systems and modes. Establish databases on VMT-related statistics for resource-sensitive roadway network design and for patterns, intensities and combinations of land uses in multimodal and passenger intermodal development. EQB could provide research coordination of state agencies (e.g., MnDOT, MPCA); counties and localities (including minor civil divisions), educational institutions, and nonprofit stakeholders and foundations. Use this information to develop planning and design toolkits for the state, counties, metropolitan and local communities, developers, and citizens that include performance standards scorecards of structural and nonstructural approaches to VMT minimization/mitigation (e.g., based on models of per capita/per household VMT by land use configuration).

**Transportation Recommendation 3: Develop and implement sustainable transportation research, design, planning, construction practices, regulations, and competitive incentive funding that minimize impacts on natural resources, especially habitat fragmentation and nonpoint source water pollution**



***Description of recommended action.*** This recommendation seeks to minimize, adapt, and mitigate habitat fragmentation and nonpoint source pollution from surface transportation (and related land uses) through research and design linkages via EQB, MPCA, and other stakeholders with MnDOT, and through expanded regulation and funding incentives for innovative project approaches and increased environmental innovation on roadway design standards.

***3A. Develop research programs on habitat fragmentation and planning, design, and construction techniques for adaptation, minimization, mitigation, and restoration***

Roads fragment habitat. Some species are more or less impacted by road network configuration, width, pavement and shoulder treatments, bridging, and sizes and types of culverts. Species are generally also benefited by vegetated edge design and management and grade-separated crossings such as bridges or culverts. While there is a body of existing research around the academic efforts of Richard Forman, Daniel Sperling, and others, the main foci of environmental mitigation of habitat loss are still largely practice-based. See, for example, the FHWA CSS Web site (http://www.fhwa.dot.gov/context/index.cfm). For cases, see http://www.contextsensitivesolutions.org/.

Research is needed to explain land-cover and species relationships to local and regional impacts of road functional classification changes (widening and/or curbing), new routes, bridges, culverts, and other projects. Further research is needed to document effectiveness of innovative techniques including hybridizations of the functional classification, CSD/CSS, and innovative crossings of water.

***3B. Develop research and design linkages of nonpoint source pollution to surface and ground waters from right-of-way and adjacent land uses that would improve performance of roadway-based infrastructure in relation to hydrological resource resilience and overall stability***

In this state, water is always close, whether on the surface or in the ground. The cumulative and spatial impacts of transportation and associated land use development on water quality and aquatic habitat

are only beginning to be understood (Figure T7). Research is needed to develop a finer understanding of the spatial and biophysical dynamics and metrics of transportation-induced contamination of water, especially surface water, but in areas of high permeability, also ground water. Research on fate to ground and surface waters by land cover, land use, and soil types is needed to improve statewide storm-water performance standards for sediments and contaminants TMDLs. These standards could inform review of all transportation projects for NPDES permits as recommended here. The research would identify issues and model and test hypothetical conservation planning, design, implementation, and management practices across scales.

***3C. Implement a standard baseline of habitat fragmentation and nonpoint discharge review for all projects that increase impervious highway roadway or drainage infrastructure surface in Minnesota***

Require all new roadway projects or functional classification upgrade projects on existing roads to secure NPDES permits.

This recommendation could link project development more closely to comprehensive habitat data and impact analysis via the connection between the MnDOT statement of project purpose and need and environmental review. The statement of purpose and need provides the basis for developing a range of reasonable alternatives and, ultimately, identification of the preferred alternative. It also sets budgetary frameworks. If properly described, it also limits the range of alternatives that may be considered reasonable, prudent, and practicable in compliance with Council on Environmental Quality (CEQ) regulations, Section 4(f) of the Executive Order on Wetlands and Floodplains, and the Section 404(b)(1) guidelines. Further, it demonstrates the problems that will result if the no-build alternative is selected (http://www.dot.state.mn.us/tecsup/xyz/plu/hpdp/book1/2b/class1/purpose-need.html).

***3D. Pilot incentive program grants for habitat and water-quality conservation design and construction innovations in transportation projects***

The state should consider creating a grant program which would offer grants to MnDOT, counties, and local governments for transportation projects that demonstrate new or catalytic conservation approaches to road and related drainage design, development or (re)construction (Figure T8).

# Energy Recommendations

## *Goal A*

Promote alternative energy production strategies that balance or optimize production of food, feed, fiber, energy and other products with protection or improvement of environmental quality, including:

- water quality and water resource supply
- wildlife habitat
- greenhouse gas emissions
- soil quality and critical landscapes

**Energy Recommendation 1: Develop coordinated laws, policies, and procedures for governmental entities to assess renewable energy production impacts on the environment**

IP

Develop laws, policies, and procedures for governmental entities to assess and manage the cumulative impacts on the environment of proposed and established energy production facilities, focusing on both individual and combined impacts. Information from this effort should be used to develop a biennial report to the legislature that informs the direction of the statewide conservation planning strategy.

***Description of recommended action.*** Minnesota Statutes 116D.10-.11, require state agencies and the governor to prepare a biennial report to the legislature on efforts to address Minnesota's energy and environmental policies, programs, and needs. This requirement provides an ongoing vehicle within state government for internalizing, integrating, and tracking implementation of recommendations developed by the SCPP. Further, while the SCPP lays much of the foundation for future strategy reports, these reports will need to address other issues and describe how SCPP recommendations fit with them. For example, biofuel production initiatives are one component of a proposed package for meeting state greenhouse gas emission reduction goals. In addition, they are potentially a significant vehicle for addressing impaired waters. The biennial strategy report must ensure that these efforts complement one another (along with other state goals, such as enhancement of wildlife habitat) and that they are kept on track. This report would integrate information coming out of the permitting process for individual biofuel plants to paint a statewide picture of how energy production in Minnesota impacts state resources.

Two actions are needed. First, the law should be amended to explicitly reference the SCPP and to streamline requirements. Second, strategic investments are required to build state capability to develop biennial assessments and track progress across issues. A third package of actions, those investments needed to follow up on other conservation strategy recommendations, will contribute to the foundation upon which biennial assessments will be based.

**Energy Recommendation 2: Invest in farm and forest preservation efforts to prevent fragmentation due to development guided by productivity and environmental vulnerability research**


***Description of recommended action.*** Farm and forest fragmentation is a serious threat to wildlife habitat and ecosystem biodiversity. Expansion of urban and agricultural areas often produces fragmentation of forests, and urban expansion reduces the land resource available for producing food, feed, fiber, and fuel. Strategies and policies are needed to protect farms and forests, and prevent fragmentation. The 2008 legislature provided a $53,000 grant to the Minnesota Forest Resources Council (MFRC) to match $150,000 in funding from the Blandin Foundation and Iron Range Resources for a study of forest parcelization and development, an assessment of available policy responses, and policy recommendations to the 2010 legislature. The 2007 legislature provided a $40,000 grant to the UM Institute on the Environment that built on earlier MFRC research to assess potential impacts of parcelization and development on wildlife habitat and biodiversity in northern Minnesota. The state should consider recommendations from these studies relative to potential changes in policy or law, and relative to potentially funding specific proposals to prevent forest and farmland fragmentation due to development.

**Energy Recommendation 3: Invest in perennial biofuel and energy crop research and demonstration projects on a landscape scale**


Invest in research and demonstration projects on a landscape scale to evaluate management and harvest techniques and yield potentials for various perennial biofuel crops (including monocultures of perennial grasses or woody biomass and polycultures) on different soils and agroecoregions throughout the state.

***Description of recommended action.*** Based on nationwide analyses of potential biomass resources done by the U.S. Department of Energy (DOE) and USDA, energy crops are expected to play a major role in development of biomass resources for next-generation biofuels or carbon-neutral electrical generation. Coordinated research and policy experimentation should be carried out to develop and refine renewable energy production systems based on diversified biomass farming that emphasizes perennial

biomass crops. This initiative has great potential to improve environmental quality and support economic revitalization in rural Minnesota, while providing large amounts of biomass for renewable energy and bio-products. Developed properly, diversified biomass farming can help support current production agriculture while enhancing rural economic opportunities, producing locally grown renewable energy, and addressing important statewide water quality and environmental issues. In order to make energy crops a practical reality in the state, work is needed to improve yields through genetics and through identification of the optimal sites and BMPs for these crops. The state should support demonstration projects that bracket the various parts of the state so both yield and environmental questions associated with perennial crop production for given state locations can be ascertained in a timely manner. Existing data generated by the MFRC on forestry issues and county-based agricultural production data developed by the Center for Energy and Environment may be used to determine biomass availability. Opportunities and limitations associated with use of these resources should be identified. The effects of various assumptions about environmental impacts and biomass availability should be analyzed.

To move forward on commercial-scale pilot renewable-energy projects based on diversified biomass farming, it will be necessary to take a comprehensive approach to establish a bio-refining system that integrates production, processing, feedstock conversion/refining, and end-use market applications including but not restricted to energy production.

**Energy Recommendation 4: Develop policies and incentives to encourage perennial crop production for biofuels in critical environmental areas** S P

Invest in research and develop policies and financial incentives to encourage perennial crop production for biofuels on expiring CRP lands and other environmentally sensitive or low-productivity lands. These research efforts, policies, and incentives should result in a balance between profitability and productivity on one hand, and benefits to the environment and wildlife habitat on the other hand.

***Description of recommended action.*** The state should develop firm policies that would encourage the growth of energy crops on conservation lands and marginal farmlands and also reflect environmental and ecological needs for animal habitat and water resource conservation. There is currently an economic incentive for producers to plant productive expiring CRP land with row crops and small grains. Currently, there do not appear to be economic incentives for farmers or growers to grow perennial energy crops on these expiring environmentally sensitive lands. Policies and incentives are needed to encourage perennial biofuel crops on the most productive expiring CRP lands. Managers of low-productivity CRP lands should be encouraged to re-enroll them in conservation programs.

**Energy Recommendation 5: Invest in data collection to support the assessment process** S P

Invest in data collection to support the assessment process described in energy and mercury recommendation 1.

Data collection is needed in the following areas:

- Water quality
- Water resource sustainability (surface and ground water)
- Wildlife habitat and biodiversity
- Invasive species
- Land use changes
- Soil compaction, cover, and residue levels
- Infrastructure and storage needs for alternative fuel strategies
- GHG emissions

***Description of recommended action.*** Minnesota needs a comprehensive approach to monitoring the cumulative impact of its energy production on the state environment. Data collection to support the monitoring and assessment of energy production should cover every step of the production process, and has the potential to inform the biennial report described in energy recommendation 1. Currently, many of the data needs listed above are incomplete or lacking entirely. Minnesota should fund data collection in these categories in locations around the state.

**Energy Recommendation 6: Invest in research to determine sustainable removal rates of corn stover and to establish incentives and Best Management Practices (BMPs)**


Invest in research to determine sustainable removal rates of corn stover for animal feed and biofuel production, and to establish incentives and BMPs for mitigating the adverse impacts of corn stover removal on soil carbon and erosion.

***Description of recommended action.*** There is currently a debate among researchers and practitioners regarding how much corn stover may be removed from a field for biofuel or animal feed processing without significant negative impacts on soil carbon and erosion rates. Since the corn stover biofuel industry is close to being operational, the answer to this question in the Minnesota context is needed as soon as possible. If negative impacts of corn stover removal may be mitigated through farmer-installed BMPs (riparian buffer strips or cover crops), the state should encourage adoption of these BMPs.

**Energy Recommendation 7: Invest in research to review thermal flow maps for Minnesota**


Invest in research to review current thermal flow maps for Minnesota to assess their validity/accuracy, and if necessary develop improved thermal flow maps, with the goal of informing geothermal power development in Minnesota

***Description of recommended action.*** As a first step, the existing heat flow map for the state that was produced some years ago should be critiqued by experts from the Minnesota Geological Survey and their counterparts at the NRRI. Recent investigations of the current map seem to indicate that the existing projections for heat flow may be significantly underestimated due to the sampling technique used in the original data collection effort. Other countries at similar or higher latitudes, most notably Germany and Denmark, are adopting deep geothermal energy systems in order to produce necessary electrical power while reducing GHG emissions. A critical tool for assessing the viability of deploying this environmentally friendly energy technology is a thermal flow map for the state that relates the depth of the resource to the expected energy capture that may be possible.

**Energy Recommendation 8: Invest in applied research to reduce energy and water consumption and green house gas emissions in present and future ethanol plants, and enact policies to encourage implementation of these conservation technologies**


***Description of recommended action.*** Minnesota should invest in applied research and demonstration projects that reduce water consumption, energy use, and $CO_2$ emissions at corn-based ethanol plants.

**Energy Recommendation 9: Invest in research to determine the life cycle impacts of renewable energy production systems**


Invest in research to determine the life-cycle impacts of renewable energy production systems on the rural economy, greenhouse gas emissions, water sustainability, water quality, carbon sequestration, gene flow

risks, and wildlife populations at landscape and regional scales while building on previous studies. This research should be used to direct the development of the renewable energy industry in Minnesota, including the storage and infrastructure needs associated with alternative fuels.

***Description of recommended action.*** This recommendation is compatible with energy recommendations 1 and 5 in that it aims to estimate the cumulative impact of Minnesota's renewable energy development through data collection and analysis. Basically, the recommendation is that energy policy and incentives at the state level take a systems view, accounting for the resource benefits and impacts associated with each stage of energy production, transport, consumption, and associated waste processing. Research will be needed for legislators, citizens, and industry to make informed decisions about these benefits and impacts. Language to this effect should be added to legislation relevant to alternative energy development.

**Energy Recommendation 10: Invest in research and demonstration projects to develop, and incentives to promote, combined wind power/biomass, wind power/ natural gas, and biomass/coal co-firing electricity projects**


***Description of recommended action.*** Integration of various energy production techniques that can help optimize the energy production system is an important opportunity for local communities, medium-size commercial and industrial users, and institutions in the state. As shown with the energy modeling work at the UM Morris, campus, a combined wind and biomass energy system allows overall optimization of energy production and the potential of almost complete energy self-sufficiency for the institution. The adoption of combined systems allows energy storage, peak loading, and stable energy generation issues to be addressed in a holistic fashion. For rural applications where biomass availability is high and wind conditions are favorable, systems can be envisioned where a wind turbine system is coupled with a biomass gasification system to enhance the storage of off-peak power through generation of hydrogen and oxygen using water electrolysis. The produced gases then can be utilized to help facilitate improved gasifier operations. The stored oxygen can be used to displace air in the gasifier combustion process, and the hydrogen can be added to the producer gas to enhance its chemical potential to produce a syngas for natural gas replacement or additional power generation. The enhanced syngas can also be utilized to produce liquid fuels for use locally. Additionally, wind power/natural gas and biomass/coal electrical generation projects should be demonstrated that will allow GHG reductions while stabilizing electrical generation capacity in the state.

**Energy Recommendation 11: Invest in research and enact policies to protect existing native prairies from genetic contamination by buffering them with neighboring plantings of perennial energy crops**


***Description of recommended action.*** In developing Minnesota's perennial biofuel industry (see energy recommendation 3), varieties may be selected for widespread planting that are not native to Minnesota, or that have been genetically modified from native plants. These biofuel plantings have the potential to genetically contaminate the state's native prairie remnants if they are close to these ecosystems. Research should be undertaken on the potential for this contamination, and policies should be developed to prevent it through mandated buffer plantings.

**Energy Recommendation 12: Invest in efforts to develop sufficient seed or seedling stocks for large-scale plantings of native prairie grasses and other perennial crops**


***Description of recommended action.*** If perennial crops are to become a significant component of biofuel production in Minnesota, sufficient genetic stock for large-scale plantings will be necessary.

## *Goal B*

Promote a healthy economy, including strategies that promote local ownership of alternative energy production and processing infrastructure, where appropriate.

**Energy Recommendation 13: Invest in research and policies regarding "green payments"** SP

Invest in research and policies on implementation strategies and optimal pricing schemes for green payments. These payments may be applied to perennial energy crop production on expiring CRP land, in impaired watersheds, on environmentally sensitive or low-productivity land, on DNR working lands, and on annual cropland. Multiple tiered payments for water quality, carbon, wildlife, fuel production, and other benefits may be considered, and special attention should be paid to helping producers through the transition period for perennial energy crop production. Knowledge and insights gained from previous multifunctional fuelshed experiments (at Waseca, Madelia, and UM Morris, for example) should be applied.

***Description of recommended action.*** This recommendation fits well with energy recommendation 2. If adopted together, these two recommendations would strengthen the state's efforts to protect environmentally sensitive land from intensive production, while providing benefits to farmers, local communities, natural resources, and wildlife. A green payment program should be informed by the most up-to-date scientific information on how biofuel production strategies impact natural resources. Farmers should be encouraged to plant perennial energy crops appropriate to their region (see energy recommendation 1).

**Energy Recommendation 14: Investigate opportunities to provide tax incentives for individual investors in renewable energy (e.g., individuals who wish to install solar panels)** ES

***Description of recommended action.*** The state should make it easy and cost effective for individual homeowners or businesses to get their electricity from solar, geothermal, or wind power sources they install themselves. The specific financial mechanism needed to accomplish this goal should be developed in consultations between economists, policy makers, and citizen stakeholders. Other states (such as Massachusetts) have programs that might serve as an example.

**Energy Recommendation 15: Invest in efforts to develop, and research to support, community-based energy platforms for producing electricity, transportation fuels, fertilizer, and other products that are locally/cooperatively owned** SP

***Description of recommended action.*** Many renewable energy sources (e.g., wind, biomass, and solar power) are located in the rural parts of the state. The localized development of alternative energy systems that can be placed at the source or nearby the source of the biomass materials will reduce the problems associated with logistical movement of unconsolidated biomass and reduce the transportation costs for biomass energy conversion. At the same time, the production and use of energy and energy products on a local basis will reduce infrastructure costs associated with power and fuels distribution. Both factors should allow localized development of smaller scale alternative energy systems that will benefit the local rural communities and add valued products to their economies. The state should encourage the development of these localized alternative energy systems by adoption of policies and incentives to facilitate their adoption. In addition, research and demonstration for systems that can facilitate the implementation of

this localized energy solution should be supported. Part of this support will involve transferring the lessons learned from successful community-based energy platforms (e.g., at UM, Morris; and Madelia, Coleraine Minerals Laboratory) to other communities interested in developing their own renewable energy platforms. The integration of local waste streams into energy production mechanisms is a key part of this recommendation.

## *Goal C*

Promote efforts to improve energy conservation and energy efficiency among individuals, businesses, communities, and institutions.

**Energy Recommendation 16: Provide incentives to transition a portion of Minnesota's vehicle fleet to electrical power, while simultaneously increasing renewable electricity production for transportation**

ES

***Description of recommended action.*** Powering Minnesota's current transportation fleet solely with biofuels or fossil fuels is not feasible in the long term. Fueling our vehicles predominantly with ethanol would place enormous pressure on the state's land resources, and would take land out of food production and conservation. Gasoline -powered vehicles contribute substantially to global climate change, and the rising price of gasoline creates an economic burden for Minnesota residents and businesses. Therefore, a state goal should be to transition the vehicle fleet away from dependence on both fossil fuels and biofuels. Powering vehicles with electricity derived from renewable sources makes sense from an ecological and sustainability standpoint, but is not yet economically viable. Several automakers have announced plans to sell electric vehicles within the next two years. However, the up-front cost for these vehicles will likely be more than for a conventional gas-powered vehicle. Minnesota should therefore provide appropriate incentives to encourage state residents and businesses to purchase electric vehicles, with the goal of creating a robust electric vehicle sector in the state. The use of electric vehicles for commuting to work and while shopping locally in metropolitan environments where the commuting distances are relatively short should especially be encouraged.

These vehicles will require more capacity in the electricity sector, which should be provided with renewable sources (wind, solar, and geothermal). Some of this excess capacity may be mitigated by encouraging electric vehicle owners to charge their vehicles during off-peak hours (i.e., at night).

**Energy Recommendation 17: Promote policies and incentives that encourage carbon-neutral businesses, homes, communities, and other institutions with an emphasis on learning from institutions already working toward this goal (e.g., UM, Morris)**

SP

***Description of recommended action.*** Energy conservation and renewable fuel goals should be advanced simultaneously in Minnesota. Much more could be done to encourage businesses, homes, communities, and other institutions in Minnesota to dramatically reduce their carbon footprint through energy conservation and low-carbon fuel use. This recommendation fits well with energy recommendation 14—providing incentives for individuals to take advantage of solar, wind, and geothermal technologies would help them to become carbon neutral. Most likely, achieving carbon neutrality will require a portfolio of energy technologies and lowered energy consumption like that seen at UM, Morris (wind, biomass, etc.). Policies and incentives should be targeted to help individuals, businesses, communities, and institutions develop renewable energy portfolios appropriate for their situation.

**Energy Recommendation 18: Implement policies and incentives to lower energy use of housing stock while monitoring the performance of improvements and calling on the utility industry to join in the effort** SP

***Description of recommended action.*** The envisioned housing improvements should consist of locally manufactured building material resources, especially those that use industry byproducts as their primary production feedstock. It is further recommended that the state develop specific policies and incentives to greatly improve construction practices for new residential homes. This can be accomplished by employing regional, sustainable building materials, and promoting the application of breakthrough systems approaches to new housing construction in an effort to drive down residential energy consumption. The UM has developed new technologies that present alternative means and methods for achieving vastly improved energy code compliance; these technologies should be further investigated to overcome implementation barriers.

**Energy Recommendation 19: Promote policies and strategies to implement smart meter and smart grid technologies** SP

***Description of recommended action.*** Smart meter and smart grid technology is the next generation of electrical distribution technology. It provides for more local management and control of the energy used in the region and on site.

- The use of both smart meter and grid technology requires a series of advancements and changes in the current distribution practices. On a national level, there should be a uniform interconnection standard that would allow for a more robust mix of distributed and central-based power generation.
- At a state level, guidelines should be established for purchase of backup and supplemental power so that distributed combined heat and power (CHP) plants are not put at an economic disadvantage when negotiating with investor-owned utilities.
- At a state level, investor-owned and electric cooperatives should be encouraged to move to smart grid technology and economic studies should be carried out to determine the benefit of incorporating distributed generation into the state's transmission grid.

**Energy Recommendation 20: Develop incentives to encourage the widespread adoption of passive solar and shallow geothermal heat pump systems in new residential and commercial building construction; invest in research to develop improved technology for storing renewable energy** SP

***Description of recommended action.*** It is recommended that policies be adopted to encourage the widespread adoption of passive solar and shallow geothermal heat pump systems in new residential and commercial construction. Furthermore, it is recommended that incentives be developed to allow more widespread adoption of these technologies in existing structures where it is deemed to be a practical method for reducing water and habitat heating and cooling requirements. Utilities should be asked to incorporate specific programs to encourage structure owners to adopt these technologies in order to help meet the state's conservation goal as noted in existing Minnesota statutes.

**Energy Recommendation 21: Develop standards and incentives for energy capture from municipal sanitary and solid waste, and minimize landfill options for MSW** ES

***Description of recommended action.*** A state mandate should be established that requires the capture of energy units from municipal solid waste (MSW) or municipal sanitary waste generated in the state. Appropriate statutory actions should be taken to establish targets for MSW use and minimization of landfill options for this waste material.

**Energy Recommendation 22: Invest in public education focusing on benefits and strategies for energy conservation targeted toward individual Minnesota residents and businesses** SP

***Description of recommended action.*** Individual action is critical in reducing state energy demand, which will lower GHG emissions and reduce pressure on the land resource to provide alternative fuels. Specific examples of actions that should be encouraged may be found in the MCCAG recommendations. These include bicycle/pedestrian/public transit commuting, slower highway driving speeds, and purchasing energy-efficient appliances. There is a need to educate the public about lifestyle choices to reduce their energy consumption, particularly related to homes and transportation. Advertising and communications experts should be brought into this effort to disseminate the carbon reduction message in a creative way that reaches the broadest segment of the population possible.

## *Goal D (see related Appendix III)*

Promote regulations, policies, incentives, and strategies to achieve significant reductions in mercury deposition in Minnesota.

**Energy Recommendation 23: Develop mercury reduction strategies for out-of-state sources** IP

Minnesota state agencies should work closely with the U.S. Environmental Protection Agency (USEPA) to develop mercury reduction strategies and assessment tools for the state, with the goal of meeting federal Clean Air Act and Clean Water Act standards. A mercury-reduction strategy should be developed that includes reduction of in-state demand for coal-powered electricity, and addresses mercury deposited in Minnesota from out-of-state sources.

***Description of recommended action.*** Development of the national program that regulates mercury emissions from existing and future sources is very important in addressing the overwhelming contribution by sources from outside of Minnesota to the Minnesota environment (e.g., Minnesota water bodies). A federal mercury emissions program would minimize competitive disadvantage that regulations on the state levels potentially could create. Coordinated and joint efforts between the state agencies and the EPA would strengthen existing laws and reduce environmental loads of mercury.

**Energy Recommendation 24: Continue state enforcement programs to reduce mercury loads** IP

The MPCA should be provided with adequate resources to continue to enforce/support existing mercury regulations and programs that lead to reduced emissions of mercury in Minnesota through market restrictions, pollution control techniques, and disposal requirements.

***Description of recommended action.*** Existing regulations reduce product-sector emissions. The MPCA works closely with and provides education to the industry sectors on mercury reduction strategies and new control technologies. The voluntary/enforcement programs have been successful in reducing mercury air and water emissions.

**Energy Recommendation 25: Develop public education on actions that individuals and communities can take to reduce mercury loads** SP

Minnesota should develop a strong public education and outreach effort focusing on the health risks associated with mercury pollution and on techniques for reducing mercury loads (including energy conservation and proper disposal of light bulbs) in the environment.

***Description of recommended action.*** Currently there are a number of state-sponsored and community-based public education and outreach programs addressing mercury emissions. They are specific to certain industries (e.g., energy producing facilities), activities (e.g., disposal of light bulbs) or public health advisories (e.g., mercury fish concentrations). Although beneficial, the programs are often inaccessible by many Minnesota citizens because they are not greatly publicized. Creation of a single, large, well-coordinated interagency public-outreach and education program could potentially address many issues more effectively and efficiently. Promotion and recognition of a single program may be easier to achieve.

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C R Planning
Community Resources

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## B. Request for Proposal (RFP)

- **Funding Priorities adopted December 7, 2011 for FY2014**
- **Application Process**

The LCCMR identifies funding priorities based on its Six Year Strategic Plan and publishes an Environment and Natural Resources Trust Fund Request for Proposals (RFP). A summary of the 2012-2013 RFP (for FY 2014) funding priorities, project criteria, and background information is included here.

## 2012-2013 RFP Funding Priorities (for FY 2014)

Projects were sought that provide multiple ecological and other public benefits, are consistent with the LCCMR Six-Year Strategic Plan for the Environment and Natural Resources Trust Fund (http://www.lccmr.leg.mn/StrategicPlan/2009/LCCMR_Strategic_Plan.pdf), and address at least one of the adopted funding priorities detailed below. Funding priorities were directly from Minnesota Statute 116P.08, Subd. 1, which pertains to allowable expenditures for the Environment and Natural Resources Trust Fund. Projects should be innovative and must accelerate or supplement, not supplant, existing efforts.

**Proposals must address one of the six funding priorities detailed below; proposals may respond to more than one priority.**

1. The Reinvest in Minnesota program as provided in M.S. 84.95, Subd. 2.
2. Research that contributes to increasing the effectiveness of protecting or managing the state's environment or natural resources.
3. Collection and analysis of information that assists in developing the state's environmental and natural resources policies.
4. Enhancement of public education, awareness, and understanding necessary for the protection, conservation, restoration, and enhancement of air, land, water, forests, fish, wildlife, and other natural resources.
5. Capital projects for the preservation and protection of unique natural resources.
6. Activities that preserve or enhance fish, wildlife, land, air, water, and other natural resources that otherwise may be substantially impaired or destroyed in any area of the state.

NOTE: Per M.S. 116P.02, Subd. 5: "'Natural resources' includes the outdoor recreation system under section 86A.04 [i.e., state recreation system] and regional recreation open space systems as defined under section 473.351, subdivision 1 [i.e., metropolitan regional park system]."

**UPDATE (02/15/12):** On February 10, 2012, the LCCMR took action to provide additional guidance to applicants seeking funds through the RFP. In considering proposals received in response to the RFP and making funding recommendations to the 2013 legislature, the LCCMR intends to place a strong emphasis on invasive species, particularly Asian carp species and other aquatic invasive species. LCCMR will allocate a significant portion of the funds available for efforts that will effectively assist in the prevention, reduction, or control of invasive species within the state. This additional guidance does not change the funding priorities previously listed in the RFP issued in December and is only intended to inform potential proposers about one area of planned emphasis.

# PROJECT REQUIREMENTS AND EVALUATION CRITERIA for 2012-2013 RFP

**Project Requirements**

- Expenditures must strictly adhere to Article XI, Section 14 of the Minnesota Constitution and M.S. 116P.08, the laws governing the Environment and Natural Resources Trust Fund (pg. 12).
- Funds requested are generally expected to be expended and activities completed within 36 months or less. If additional time is needed, please explain in the "Timeline Requirements" section (section III-B) of the main proposal.
- Fee-title and conservation easement acquisition projects have the following additional requirements:
    1. First priority must be given to lands with high quality natural resources that provide multiple benefits and that provide natural buffers to water resources;
    2. Targeted lands must be identified in an adopted state, regional, or local natural resource plan;
    3. Conservation easements must be perpetual and include stewardship provisions to perpetually monitor and enforce the conditions of the conservation easements;
    4. Explanation must be provided for how a restoration/enhancement or management plan for the site will be developed, implemented, and funded (through this funding request or other funds);
    5. A list must be provided that identifies proposed acquisitions by parcel name; acquisition type (fee-title or conservation easement); county; ecological significance; estimated number of acres and, if applicable, shoreline miles; and proposed title/easement holder. A template is available at www.lccmr.leg.mn.
- Restoration projects should refer to the Minnesota Board of Water and Soil Resources "Native Vegetation Establishment and Enhancement Guidelines" - http://www.bwsr.state.mn.us/native_vegetation/seeding_guidelines.pdf - for guidance.
- All projects are subject to additional requirements including accessibility, data availability, land acquisition requirements, energy conservation and sustainability guidelines, and recyclable material requirements. Information located at www.lccmr.leg.mn titled "Additional Proposal Requirements".

**Evaluation Criteria**

All Environment and Natural Resources Trust Fund proposals should strive to maximize efficiency and return on investment for the proposed expenditures. Additionally the following criteria, as applicable, will be considered in evaluating proposals (additional explanation of evaluation criteria is available at www.lccmr.leg.mn titled "Additional Explanation of Evaluation Criteria"):

1. **FUNDING PRIORITIES:** Responds to RFP funding priorities and LCCMR Six-Year Strategic Plan for the Environment and Natural Resources Trust Fund articulated and adopted by the LCCMR.
2. **MULTIPLE BENEFITS:** Delivers multiple benefits to Minnesota's environment and natural resources.
3. **OUTCOMES:** Identifies clear objectives likely to result in measurable, demonstrated, and meaningful outcomes.
4. **KNOWLEDGE BASE:** Contributes to the knowledge base or disseminates information that will benefit other related efforts.
5. **EXTENT OF IMPACTS:** Results in broad, long-term impacts of statewide or regional significance.
6. **INNOVATION:** Employs or demonstrates innovative approaches to more effectively and efficiently solve specific environment and natural resources issues.
7. **SCIENTIFIC/TECHNICAL BASIS:** Reflects current scientific and technical knowledge, standards, and best practices.
8. **URGENCY:** Addresses an issue for which immediate future action is necessary and urgent to avoid undesirable consequences.
9. **CAPACITY AND READINESS:** Demonstrates capacity and readiness for efforts to be managed and completed in a timely, accountable, and effective manner.
10. **LEVERAGE:** Leverages collaborative partnerships and additional efforts, resources, and non-state funds.
11. **RESULTING ADDITIONAL EMPLOYMENT:** Employs a significant number of additional or new employees or students in natural resources jobs that are direct to the funding request.

## BACKGROUND INFORMATION

### ELECTRONIC SUBMISSION REQUESTED

**SUBMIT PROPOSAL:**
WEB-BASED SUBMISSION
Go to: www.lccmr.leg.mn

Save a copy of your submission for your records. **All submitted proposals and budgets will be posted on the web upon receipt for the public to view.**

If unable to use the web-based proposal submit form, please contact LCCMR staff.

**ELIGIBILITY**
The spirit and intent of the LCCMR is to provide access to EVERYONE who has innovative ideas for environment and natural resource projects that could provide multiple ecological and other public benefits to Minnesota, are consistent with the LCCMR's Six-Year Strategic Plan for the Environment and Natural Resources Trust Fund (http://www.lccmr.leg.mn/documents/strategic_plan/2009/lccmr_strategic_plan.pdf), and address the adopted funding priorities described in this RFP.

**LCCMR staff are available to assist in proposal development.** Lobbying or professional grant-writing experience is not necessary for success.

**ELIGIBLE EXPENSES:**
For a complete list of eligible and non-eligible expenses see http://www.lccmr.leg.mn/pm_info/2013/2013_eligible_ineligible_costs.pdf.

**PROPOSAL ASSISTANCE:**
LCCMR staff are available to assist proposers, answer questions, or review and provide feedback on drafts of proposals. **Proposers are encouraged to submit proposal drafts to help ensure proposals are focused, clear, and contain all necessary information.** Drafts must be received by Monday, April 2, 2012, to allow adequate time for staff review. Early submission of drafts is recommended to receive the most detailed guidance.

If you have questions or would like proposal assistance, contact LCCMR staff:
Phone: (651) 296-2406
Fax: (651) 296-1321
Email: lccmr@lccmr.leg.mn
Address:

Legislative-Citizen Commission
on MN Resources
Room 65, State Office Building
100 Rev Dr Martin Luther King Jr Blvd
St. Paul, MN 55155

# II. Projects Funded Preceding Biennium

*"a description of each project receiving money from the trust fund during the preceding biennium;"*

- The following documents are short abstracts for projects funded during the FY2012-2013 biennium.
- Research projects have been marked as such in the description.
- Full work plans are available at the LCCMR, Room 65, State Office Building. The abstracts are current as of 12/31/2012.
- Legal Citations
  - M.L. 2012, Chapter 264, Art. 4, Sec. 3
  - M.L. 2011, First Special Session, Chp. 2, Art. 3, Sec. 2

# FY 2012-13 ENVIRONMENT AND NATURAL RESOURCES TRUST FUND APPROPRIATIONS
## M.L. 2011, 1st Special Session, Ch. 2, Art. 3

### Process for M.L. 2011 Appropriations

*For Minnesota's FY 2012-13 biennium (July 1, 2011 - June 30, 2013), approximately $25.3 million was available each year (Total = $50,656,000) for funding from the Environment and Natural Resources Trust Fund and a total of $750,000 from the Land and Water Conservation Account (LAWCON). In response to the 2011-12 Request for Proposal (RFP) due April 9, 2010, 241 proposals requesting a total of approximately $163.8 million were received. After full consideration of all proposals received through a competitive, multi-step process, on 07/14/10 the LCCMR selected 92 projects to be included in 87 appropriation recommendations to the 2011 Minnesota Legislature. The Legislature adopted 61 of the recommendations, including 52 without any changes and 9 at a decreased or increased dollar amount; dropped 26 of the recommendations; and added 8 additional appropriations for a total of 69 total appropriations. All 69 appropriations were signed into law by the Governor on 07/20/11.*

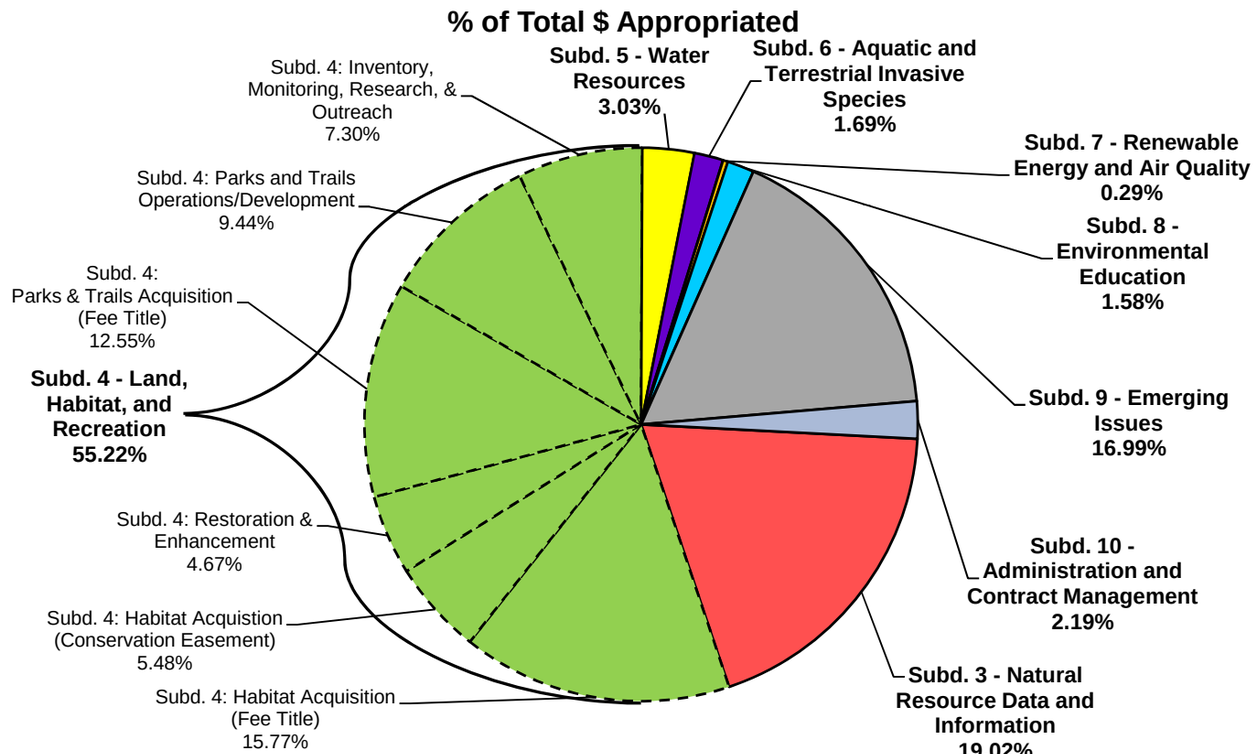
| | |
|---|---|
| January 12, 2010 | 2011-2012 Funding Priorities Determined and RFP Adopted |
| January 22, 2010 | 2011-2012 RFP Issued |
| April 9, 2010 | 2011-2012 RFP Proposal Deadline<br>(Received 241 Proposals totaling $161,926,985) |
| June 3 & 9, 2010 | Discussion of 2011-2012 Proposals Received and Selection of Proposals for Presentations |
| June 21, 22, 23, 28, 29, & 30, 2010 | 2011-2012 Proposal Presentations (6 Days) |
| July 13-14, 2010 | 2010 Allocations Recommendations (2 Days) |
| July 21, 2010 | Site Visits and Issue Seminars - Joint with Lessard-Sams Outdoor Heritage Council & Clean Water Council<br>(Central Minnesota Minnesota River Valley) |
| August 11-12, 2010<br>[CANCELLED due to weather/To be rescheduled] | Site Visits and Issue Seminars<br>(Southwest Minnesota) |
| August-November 2010 | Research Projects Recommended Undergo Peer Review |
| September 28, 2010<br>[CANCELLED due to flooding/To be rescheduled] | Site Visits and Issue Seminars - Joint with Lessard-Sams Outdoor Heritage Council (Southwest Metro) |
| September 29, 2010 | Site Visits and Issue Seminars<br>(Metro Area Mississippi River Corridor) |
| November 18 & December 8, 2010 | M.L. 2011 Appropriation Language Review & Adoption |
| February 21, 28 & March 7, 14, 2011 | Meetings to Discuss Legislative Changes to Recommended Appropriations |
| July 1, 2011 | Projects can begin - appropriations retroactive to July 1 following M.L., 1st Special Session on July 19-20, 2011 |

### Summary of Appropriations by Subdivision in Appropriation Language

| Issue Area Priority | $ Appropriated | # Appropriations* |
|---|---|---|
| Subd. 3 - Natural Resource Data and Information | $9,775,000 | 17 |
| Subd. 4 - Land, Habitat, and Recreation | $28,384,000 | 32 |
| Subd. 5 - Water Resources | $1,557,000 | 6 |
| Subd. 6 - Aquatic and Terrestrial Invasive Species | $870,000 | 3 |
| Subd. 7 - Renewable Energy and Air Quality | $150,000 | 1 |
| Subd. 8 - Environmental Education | $811,000 | 3 |
| Subd. 9 - Emerging Issues | $8,735,000 | 4 |
| Subd. 10 - Administration and Contract Management | $1,124,000 | 3 |
| **Total =** | **$51,406,000** | **69** |

**Notes:**

*****Some appropriations include multiple projects with multiple partners of different affiliations receiving funds. The total number of individual projects within the 69 appropriations is 74.



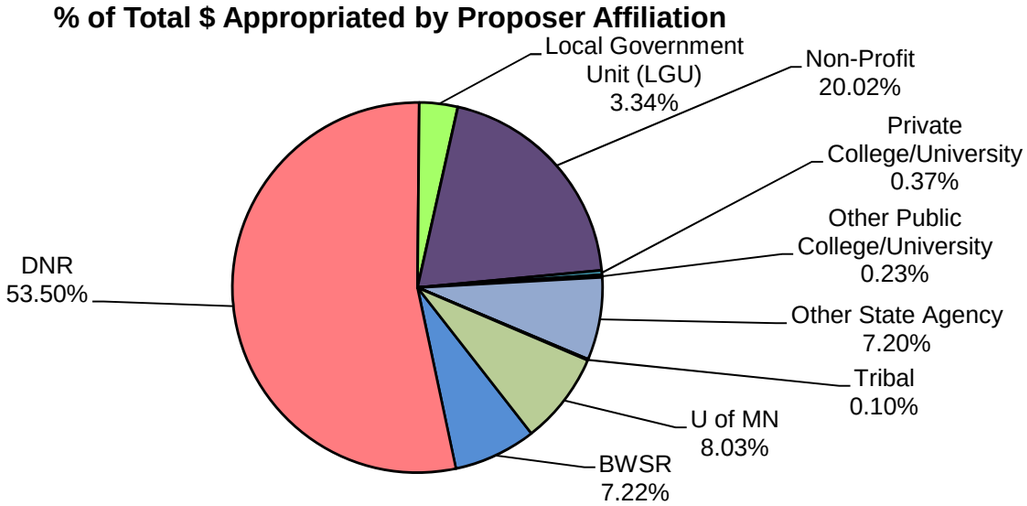
# FY 2012-13 ENVIRONMENT AND NATURAL RESOURCES TRUST FUND APPROPRIATIONS BY SUBDIVISION - M.L. 2011, 1st Special Session, Ch. 2, Art. 3

## Summary of Appropriations by Affiliation*

| Affiliation Type | $ Appropriated | # Appropriations |
|---|---|---|
| BWSR | $3,710,000 | 7 |
| DNR | $27,502,000 | 21 |
| Local Government Unit (LGU) | $1,717,000 | 5 |
| Non-Profit | $10,291,000 | 19 |
| Private College/University | $190,000 | 1 |
| Other Public College/University | $120,000 | 1 |
| Other State Agency | $3,699,000 | 4 |
| Tribal | $50,000 | 1 |
| U of MN | $4,127,000 | 10 |
| **Total =** | **$51,406,000** | **69** |

**Notes:**
*****Some appropriations have multiple partners with different affiliations receiving funds. The distribution of funds between affiliation types above is based on the legal recipient of the appropriation.

### % of Total $ Appropriated by Proposer Affiliation

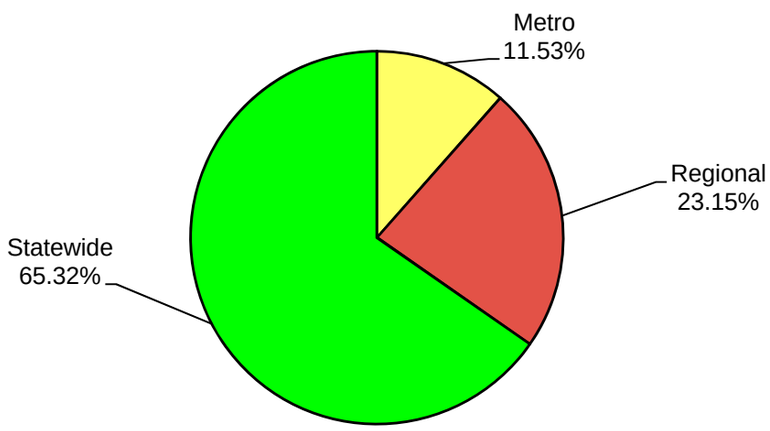



## Summary of Appropriations by Area of Impact

| | $ Appropriated | # Projects |
|---|---|---|
| Metro* | $5,925,000 | 9 |
| Regional** | $11,903,000 | 28 |
| Statewide | $33,578,000 | 32 |
| **Total =** | **$51,406,000** | **69** |

**Notes:**
* "Metro" region includes the 11 counties of Anoka, Carver, Chisago, Dakota, Hennepin, Isanti, Ramsey, Scott, Sherburne, Washington, and Wright.
**"Regional" means area of impact is less than "Statewide" but includes one or more regions of the state ("Northwest", "Northeast", "Central", "Southwest", or "Southeast") other than the 11-county "Metro" region. However, in some instances, regional impact wIll also include impact in the "Metro" region.

### % of Total $ Appropriated by Area of Impact



# FY 2012-13 ENVIRONMENT AND NATURAL RESOURCES TRUST FUND APPROPRIATIONS – M.L. 2011, 1st Special Session, Ch. 2, Art. 3

## SUMMARY OF ML 2011 APPROPRIATIONS BY SUBDIVISION ($51,406,000*)

**SUBD. 3. Natural Resource Data and Information: $9,775,000 – 17 Appropriations**

- Collection, interpretation, mapping, and dissemination of foundational data and information pertaining to groundwater, soils, wetlands, and distributions of plant and animal species and ecological systems.
- Research and analysis pertaining to moose populations; biomass harvesting; and changes in Minnesota's boreal forests.
- Refinement and development of methodologies and implementation of technologies and training to improve natural resource management efficacy and efficiency.
- Planning for natural resource conservation in the central Minnesota Mississippi River corridor and St. Croix River Basin.
- Acceleration of efforts investigating species of concern.

**SUBD. 4. Land, Habitat, and Recreation: $28,384,000 – 32 Appropriations [37 projects]**

- Expansion of state parks and trails; acceleration of operations and infrastructure improvements of state parks and trails.
- Grants to local units of government for acquisition and development of regional parks, trails, and scenic and natural areas.
- Protection, restoration, and enhancement of priority, high quality, and rare lands and habitat through fee title acquisition, conservation easements, restoration/enhancement, and related efforts.
- Outreach to engage citizens with Minnesota's Scientific and Natural Area system.
- Technical assistance and training for landowners and conservation professionals on conservation program opportunities, habitat restoration, and land stewardship.
- Planning, inventory, monitoring, and data management pertaining to at-risk native species, rare and unique habitats, and existing state-held conservation easements.
- Research and analysis pertaining to habitat protection and restoration strategies and genetic diversity of wild rice.

**SUBD. 5. Water Resources: $1,557,000 – 6 Appropriations**

- Inventory, assessment, mapping, and planning pertaining to sensitive shoreline protection, watershed restoration efforts, and trout stream water sources in relation to development impacts.
- Research and analysis pertaining to presence and threat of antibiotics in the Minnesota River and Mississippi River water quality.
- Education incorporating Mississippi River water quality assessment efforts into classrooms and outreach to help communities reduce contaminants of emerging concern within water resources.

**SUBD. 6. Aquatic and Terrestrial Invasive Species: $870,000 – 3 Appropriations**

- Research and analysis identifying potentially harmful bacteria transported into Lake Superior via ballast water discharge.
- Research and analysis pertaining to Emerald Ash Borer, including assessment and pilot implementation of biocontrol options.
- Assessment of the invasiveness risk potential of switchgrass selectively bred for biofuel production and development of related risk management strategies.

**SUBD. 7. Renewable Energy and Air Quality: $150,000 – 1 Appropriation**

- Implementation of community-scale forest bioenergy systems

**SUBD. 8. Environmental Education: $811,000 – 3 Appropriations**

- Outreach and technical assistance enabling students to implement renewable energy and energy conservation projects within their schools and communities in west and southwest Minnesota.
- Development and delivery of environmental education to youth through experiential, science-based learning activities involving ecology and horticulture, particularly in urban and other underserved communities.

**SUBD. 9. Emerging Issues: $8,735,000 – 4 Appropriations**

- Training of future conservation professionals through mentoring opportunities.
- Acceleration of efforts to prevent, manage, or eliminate aquatic invasive species and chronic-wasting disease.
- Acceleration of the Reinvest in Minnesota (RIM) – Wetlands Reserve Program (WRP) efforts.

**SUBD. 10. Administration and Contract Management: $1,402,000 – 2 Appropriations**

- LCCMR administration and project contract management.

*Includes approximately $25.3 million each year (total = $50,656,000) from the Environment and Natural Resources Trust Fund and a total of $750,000 from the Land and Water Conservation Account (LAWCON).

# FY 2012-13 ENVIRONMENT AND NATURAL RESOURCES TRUST FUND APPROPRIATIONS – M.L. 2011, 1st Special Session, Ch. 2, Art. 3

## SUMMARY OF EXPECTED OUTCOMES ACROSS SUBDIVISIONS FOR ~$51.4 MILLION

- **Natural Resource Inventory, Monitoring, Mapping, and Planning: ~$16.3 million**
  *Inventory, monitoring, mapping, and planning* efforts to obtain critical information and guide relevant decisions and efforts over time, including acceleration of the MN County Biological Survey; MN County Geologic Atlas program; MN Statewide Soil Survey; MN Wetlands Inventory; mapping and measurement of springsheds; improved techniques and planning for local conservation efforts; strategic planning and implementation of improved management for state-owned lands; invasive species and wildlife disease; and recommended guidelines for prairie management.

- **Terrestrial and Aquatic Habitat Acquisition: ~$12.6 million**
  *Acquisition* of an estimated 3,877 acres in a combination of fee title (1,390 acres and .9 miles of shoreline) and conservation easements (2,487 acres), including donated easements. Permanently protected areas will include forests, wetlands, shoreline, prairie, savanna, and other habitat for both human and animal benefit.

- **Terrestrial and Aquatic Habitat Restoration, Enhancement, and Improvement ~$2.4 million**
  *Restoration, enhancement, and improvement* activities on an estimated 4,898 acres and 4.4 miles of shoreline. Activities performed will include seed collection, prescribed burns, soil preparation, native vegetation installation, structural improvements, woody encroachment removal, and invasive species control.

- **Parks and Trails Acquisition: ~$6.4 million**
  *Acquisition* of an estimated 1,010 acres in state parks, state trails, and metropolitan and non-metropolitan regional parks and trails.

- **Parks and Trails Operations and Improvements: ~$4.9 million**
  *Operations and infrastructure improvements* in state parks, state recreation areas, and regional parks and trails, including day use facilities, campgrounds, and recreational trails.

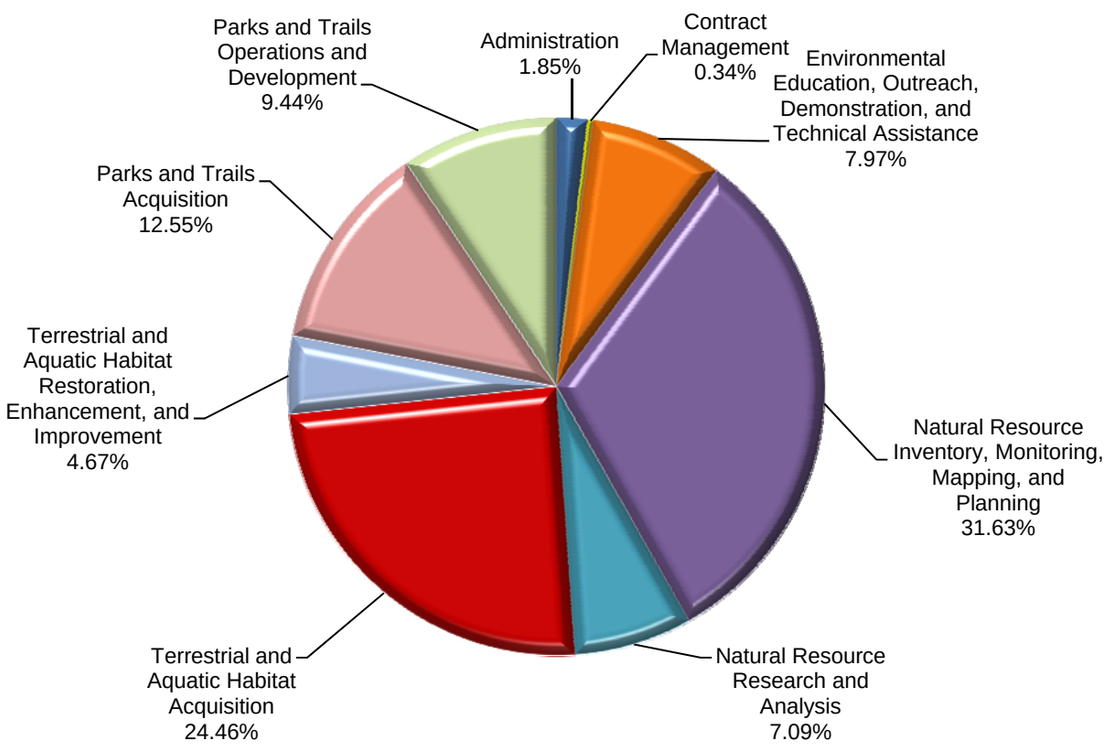
- **Natural Resource Research and Analysis: ~$3.6 million**
  *Research and analysis* projects that will advance our knowledge about and provide recommendations for addressing issues relating to species protection, decline, and recovery; ecosystem conservation and restoration; biomass harvesting and bioenergy options; water quality and conservation; and invasive species.

- **Environmental Education, Outreach, Demonstration, and Technical Assistance: ~$4.1 million**
  *Environmental education, outreach, demonstration, and technical assistance* efforts that will educate Minnesotans on topics including renewable energy and energy conservation, water quality and conservation, environmental science and ecology, wildlife and natural history, and outdoor recreation; demonstrate options for energy efficiency and sustainability; and provide training and technical assistance on renewable energy and natural resource conservation and management tools, practices, and options.

- **Contract Management: ~$0.2 million**
  DNR contract management for projects of non-state entities.

- **Administration: ~$.9 million**
  FY 2012-2013 LCCMR administration

## % OF EXPECTED OUTCOMES ACROSS SUBDIVISIONS




*Includes approximately $25.3 million each year (total = $50,656,000) from the Environment and Natural Resources Trust Fund and a total of $750,000 from the Land and Water Conservation Account (LAWCON).

## M.L. 2011 Projects
## MN Laws 2011, 1st Special Session, Chapter 2, Article 3, Section 2 (beginning July 1, 2011)

For Minnesota's FY 2012-13 biennium (July 1, 2011 - June 30, 2013), approximately $25.3 million was available each year (Total = $50,656,000) for funding from the Environment and Natural Resources Trust Fund and a total of $750,000 from the Land and Water Conservation Account (LAWCON). In response to the 2011-12 Request for Proposal (RFP) due April 9, 2010, 241 proposals requesting a total of approximately $163.8 million were received. After full consideration of all proposals received through a competitive, multi-step process, on 07/14/10 the LCCMR selected 92 projects to be included in 87 appropriation recommendations to the 2011 Minnesota Legislature. The Legislature adopted 61 of the recommendations, including 52 without any changes and 9 at a decreased or increased dollar amount; dropped 26 of the recommendations; and added 8 additional appropriations for a total of 69 total appropriations. All 69 appropriations were signed into law the Governor on 07/20/11.

NOTE: Below are short descriptions for projects funded during the 2011 Legislative Session. For all projects, contact the LCCMR office to obtain the most up-to-date work plans for current projects (project updates are required twice each year) or the final reports of completed projects.

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**Subd. 03 Natural Resource Data and Information**

03a Minnesota County Biological Survey
03b County Geologic Atlases for Sustainable Water Management
03c Completion of Statewide Digital Soil Survey
03d Updating National Wetland Inventory for Minnesota - Phase III
03e Golden Eagle Survey
03f Determining Causes of Mortality in Moose Populations - RESEARCH
03g Prairie Management for Wildlife and Bioenergy - Phase II - RESEARCH
03h Evaluation of Biomass Harvesting Impacts on Minnesota's Forests - RESEARCH
03i Change and Resilience in Boreal Forests in Northern Minnesota - RESEARCH
03j Information System for Wildlife and Aquatic Management Areas
03k Strengthening Natural Resource Management with LiDAR Training
03l Measuring Conservation Practice Outcomes
03m Conservation-Based Approach for Assessing Public Drainage Benefits
03n Mississippi River Central Minnesota Conservation Planning
03o Saint Croix Basin Conservation Planning and Protection
03p Species of Concern; Investigations - RESEARCH

**Subd. 04 Land, Habitat, and Recreation**

04a State Park and Recreation Area Operations and Improvements
04b State Parks and Trails Land Acquisition
04c Metropolitan Regional Park System Acquisition
04d Regional Park, Trail, and Connections Acquisition and Development Grants
04e Scientific and Natural Areas Acquisition and Restoration
04f LaSalle Lake State Recreation Area Acquisition
04g Minnesota River Valley Green Corridor Scientific and Natural Area Acquisition
04h Native Prairie Stewardship and Native Prairie Bank Acquisition
04i Metropolitan Conservation Corridors (MeCC) - Phase VI
04j Habitat Conservation Partnership (HCP) - Phase VII

04k Natural and Scenic Area Acquisition Grants
04l Acceleration of Minnesota Conservation Assistance
04m Conservation Easement Stewardship and Enforcement Program - Phase II
04n Recovery of At-Risk Native Prairie Species
04o Understanding Threats, Genetic Diversity, and Conservation Options for Wild Rice - RESEARCH
04p Southeast Minnesota Stream Restoration
04q Restoration Strategies for Ditched Peatland and Scientific and Natural Areas - RESEARCH
04r Northeast Minnesota White Cedar Plant Community Restoration
04s Land and Water Conservation Account (LAWCON) Federal Reimbursement

**Subd. 05 Water Resources**
05a Itasca County Sensitive Lakeshore Identification
05b Trout Stream Springshed Mapping in Southeast Minnesota - Phase III
05c Mississippi River Water Quality Assessment - RESEARCH
05d Zumbro River Watershed Restoration Prioritization
05e Assessment of Minnesota River Antibiotic Concentrations - RESEARCH

**Subd. 06 Aquatic and Terrestrial Invasive Species**
06a Improved Detection of Harmful Microbes in Ballast Water - RESEARCH
06b Emerald Ash Borer Biocontrol Research and Implementation - RESEARCH
06c Evaluation of Switchgrass as Biofuel Crop - RESEARCH

**Subd. 07 Renewable Energy and Air Quality**
07 Supporting Community-Driven Sustainable Bioenergy Projects

**Subd. 08 Environmental Education**
08a Youth-Led Renewable Energy and Energy Conservation in West and Southwest Minnesota
08b Minnesota Junior Master Naturalist Program
08c Experiential Environmental Education for Urban Youth

**Subd. 09 Emerging Issues**
09a Minnesota Conservation Apprentice Academy
09b Chronic Wasting Disease and Animal Health
09c Aquatic Invasive Species
09d Reinvest in Minnesota Wetlands Reserve Acquisition and Restoration Program Partnership

**Subd. 10 Administration and Contract Management**
10a Legislative-Citizen Commission on Minnesota Resources (LCCMR)
10b Contract Administration
10c LCC Web Site

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**SUBD. 03 NATURAL RESOURCE DATA AND INFORMATION**

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**Minnesota County Biological Survey**
Subd. 03a $2,250,000 TF

**Carmen Converse**
MN DNR
500 Lafayette Rd
St Paul, MN 55155

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**Appropriation Language**
$1,125,000 the first year and $1,125,000 the second year are from the trust fund to the commissioner of natural resources for continuation of the Minnesota county biological survey to provide a foundation for conserving biological diversity by systematically collecting, interpreting, and delivering data on plant and animal distribution and ecology, native plant communities, and functional landscapes.

**Project Overview**
The Minnesota County Biological Survey (MCBS) is an ongoing effort begun in 1987 by the Minnesota Department of Natural Resources (DNR) that is systematically surveying, county-by-county, the state's natural habitats. The effort identifies significant natural areas and collects and interprets data on the status, distribution, and ecology of plants, animals, and native plant communities throughout the state. Through July 2011, surveys have been completed in 81 of Minnesota's 87 counties and have added more than 19,000 new records of rare features to the DNR's information systems. MCBS data is used by all levels of government in natural resource planning and use decisions, including prioritization of protection of park lands and scientific and natural areas. This appropriation will permit continuation of the survey in Lake, St. Louis, Clearwater, and Beltrami counties and begin initial surveying in Koochiching and Lake of the Woods counties. Additionally one book will be published: a natural history guidebook of the Aspen Parkland-Red River Valley region of MN.

**Project due to be completed:** 6/30/2013

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**County Geologic Atlases for Sustainable Water Management**
Subd. 03b $1,800,000 TF

**Part 1 ($1,200,000)**
**Dale Setterholm**
U of MN - Minnesota Geological Survey
2642 University Ave W
St. Paul, MN 55114-1057

**Phone:** (612) 627-4780 x2
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**Part 2 ($600,000)**
**Jan Falteisek**
MN DNR
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St Paul, MN 55155

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**Web:** http://mndnr.gov

**Appropriation Language**
$900,000 the first year and $900,000 the second year are from the trust fund to accelerate the production of county geologic atlases to provide information essential to sustainable management of ground water resources by defining aquifer boundaries and the connection of aquifers to the land surface and surface water resources. Of this appropriation, $600,000 each year is to the Board of Regents of the University of Minnesota for the Geologic Survey and $300,000 each year is to the commissioner of natural resources. This appropriation is available until June 30, 2015, by which time the project must be completed and final products delivered.

**Project Overview**
The Minnesota County Geologic Atlas program is an ongoing effort begun in 1982 that is being conducted jointly by the University of Minnesota's Minnesota Geological Survey and the Minnesota Department of Natural Resources (DNR). The program collects information on the geology of Minnesota to create maps and reports depicting the characteristics and pollution sensitivity of Minnesota's ground-water resources and their interaction with surface waters. The information from County Geologic Atlases is used in planning and environmental protection efforts at all levels of government, by businesses, and by homeowners to ensure sound and sustainable planning, management, and protection of water resources used for drinking, agriculture, industry, and more. This appropriation will:

- Support completion of geologic atlases for Carlton, McLeod, Carver, Benton, and Chisago counties.
- Support ongoing work on geologic atlases for Anoka, Blue Earth, Clay, Nicollet, Renville, Sibley, and Wright counties;
- Initiate geologic atlases for three or more additional counties;
- Make collected data available in a digital format.

**Project due to be completed:** 6/30/2015

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**Completion of Statewide Digital Soil Survey**
Subd. 03c $500,000 TF

**Megan Lennon**
Board of Water and Soil Resources
520 Lafayette Rd N
St Paul, MN 55155

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**Web:** http://www.bwsr.state.mn.us

**Appropriation Language**
$250,000 the first year and $250,000 the second year are from the trust fund to the Board of Water and

Soil Resources to accelerate the completion of county soil survey mapping and Web-based data delivery. The soil surveys must be done on a cost-share basis with local and federal funds.

**Project Overview**
The Minnesota Soil Survey is an ongoing effort by the Board of Water and Soil Resources (BWSR) in cooperation with the U.S. Department of Agriculture's Natural Resources Conservation Service (NRCS) that is systematically collecting and mapping data pertaining to soil types and other soil properties in each county of the state. To date, surveys for nearly all counties in the state have been completed. Soils data is used by governments, farmers, and other businesses for a number of purposes from protection and restoration of soil, water, wetlands, and habitats to agricultural productivity and soil management to building construction. This appropriation will complete the mapping and digitization of soil surveys for Crow Wing, Koochiching, Lake, Cook, and Saint Louis counties.

**Project due to be completed:** 6/30/2013

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**Updating National Wetland Inventory for Minnesota - Phase III**
Subd. 03d $1,500,000 TF

**Steve Kloiber**
MN DNR
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St Paul, MN 55155

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**Appropriation Language**
$1,500,000 the second year is from the trust fund to the commissioner of natural resources to continue the update of wetland inventory maps for Minnesota. This appropriation is available until June 30,2015, by which time the project must be completed and final products delivered.

**Project Overview**
The National Wetland Inventory, a program initiated in the 1970s, is an important tool used at all levels of government and by private industry, non-profit organizations, and private landowners for wetland regulation and management, land management and conservation planning, environmental impact assessment, and natural resource inventories. The data behind the National Wetlands Inventory for Minnesota is now considerably out-of-date and a multi-phase, multi-agency collaborative effort coordinated by the Minnesota Department of Natural Resources is underway to update the data for the whole state. This appropriation is being used to conduct the third phase of this effort, which involves updating wetland maps for 30 counties in southern Minnesota and acquiring additional data needed to update wetland maps for an additional 22 counties in central Minnesota during a future phase of the inventory.

**Project due to be completed:** 6/30/2015

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**Golden Eagle Survey**
Subd. 03e $60,000 TF

**Scott Mehus**
National Eagle Center
50 Pembroke Ave
Wabasha, MN 55981

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**Web:** http://www.nationaleaglecenter.org

**Appropriation Language**
$30,000 the first year and $30,000 the second year are from the trust fund to the commissioner of natural resources for an agreement with the National Eagle Center to increase the understanding of golden eagles in Minnesota through surveys and education. This appropriation is available until June 30, 2014, by which time the project must be completed and final products delivered.

**Project Overview**
Not previously thought to be regular inhabitants of Minnesota, in recent years there have been reports of golden eagle sightings in most counties of the state, while recent surveys suggest there is now a regular wintering population in the blufflands of southeast Minnesota. This appropriation is being used to better understand the numbers, distribution, migration routes, and habitat needs of golden eagles in Minnesota. This information will inform natural resource management decisions and be used to educate landowners and the general public about golden eagles in the state.

**Project due to be completed:** 6/30/2014

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**Determining Causes of Mortality in Moose Populations**
Subd. 03f $600,000 TF

**Erika Butler**
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5463C W Broadway
Forest Lake, MN 55025

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**RESEARCH**

**Appropriation Language**
$300,000 the first year and $300,000 the second year are from the trust fund to the commissioner of natural resources to determine specific causes of moose mortality and population decline in Minnesota and to develop specific management actions to prevent further population decline. This appropriation is available until June 30, 2014, by which time the project must be completed and final products delivered.

**Project Overview**
Moose, one of Minnesota's prized wildlife species, are dying at much higher rates in Minnesota than elsewhere in North America. Recently observed increases in mortality rates amongst some moose in northeastern Minnesota have led to concern that the population there may be starting a decline like that seen in the northwestern part of the state, where moose populations fell from over 4,000 to fewer than 100 in less than 20 years. Additionally the specific causes of increased mortality amongst individual moose, such as potential nutritional factors, remain unknown. Scientists at the Minnesota Department of Natural Resources are using this appropriation to investigate the actual cause of death in recovered individual moose and determine what other factors may also be contributing. Once these causes of death and contributing factors are identified, it may be possible to implement management actions to address the overall population decline and help maintain healthy populations of moose in the state.

**Project due to be completed:** 6/30/2014

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**Prairie Management for Wildlife and Bioenergy - Phase II**
Subd. 03g $600,000 TF

**Clarence Lehman**
U of MN
1987 Upper Buford Cir
St Paul, MN 55108

**Phone:** (612) 625-5734
**Email:** lehman@umn.edu

**RESEARCH**

**Appropriation Language**
$300,000 the first year and $300,000 the second year are from the trust fund to the Board of Regents of the University of Minnesota to research and evaluate methods of managing diverse working prairies for wildlife and renewable bioenergy production. This appropriation is available until June 30, 2014, by which time the project must be completed and final products delivered.

**Project Overview**
Bioenergy, a form of renewable energy derived from biological sources such as wood or grasses, is becoming an important component of the energy production mix. As the demand for bioenergy feedstocks increases in Minnesota and elsewhere, land use changes could impact wildlife. However, with proper management strategies it is possible that bioenergy production could actually improve conditions for wildlife rather than make them worse. This appropriation is allowing scientists at the University of Minnesota to continue developing best management practices for working prairies that maximize biomass harvesting while also promoting wildlife conservation and associated habitat diversity. This project is part of a broad effort at the University aimed at figuring out how to sustain Minnesota resources while improving the rural economy and developing energy independence.

**Project due to be completed:** 6/30/2014

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**Evaluation of Biomass Harvesting Impacts on Minnesota's Forests**
Subd. 03h $350,000 TF

**Anthony D'Amato**
U of MN
1530 Cleveland Ave N
St Paul, MN 55108

**Phone:** (612) 625-3733
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**Web:** http://www.forestry.umn.edu/silviclab/index.htm

**RESEARCH**

**Appropriation Language**
$175,000 the first year and $175,000 the second year are from the trust fund to the Board of Regents of the University of Minnesota to assess the impacts biomass harvests for energy have on soil nutrients, native forest vegetation, invasive species spread, and long-term tree productivity within Minnesota's forests. This appropriation is available until June 30, 2014, by which time the project must be completed and final products delivered.

**Project Overview**
Minnesota's forests are currently being viewed as potential feedstocks for the production of renewable energy. A primary concern about harvesting forest biomass to generate renewable energy is the long-term impacts these harvests will have on soil nutrients and long-term ecosystem production, such as forest growth, carbon storage, and wildlife habitat. With this appropriation, scientists at the University of Minnesota's Department of Forest Resources are evaluating the ecological impacts of forest biomass harvesting in northern Minnesota. Results from this effort will be used by the energy industry and forestry professionals in both the public and private sector to guide long-term management that maximizes harvesting without negatively impacting forest productivity and ecological integrity.

**Project due to be completed:** 6/30/2014

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**Change and Resilience in Boreal Forests in Northern Minnesota**
Subd. 03i $150,000 TF

**Lee Frelich**
U of MN
1530 Cleveland Ave N
St Paul, MN 55108

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**RESEARCH**

**Appropriation Language**
$75,000 the first year and $75,000 the second year are from the trust fund to the Board of Regents of the University of Minnesota to assess the potential response of northern Minnesota's boreal forests to observed and predicted changes in climate conditions and develop related management guidelines and adaptation strategies. This appropriation is available until June 30, 2014, by which time the project must be completed and final products delivered.

**Project Overview**
Boreal forests of spruce, fir, paper birch, aspen, and jack pine cover more than two million acres of northern Minnesota, including the Boundary Waters Canoe Area Wilderness. These forests are near the southern edge of their geographic range. With a warmer climate the health and productivity of these forests may be jeopardized by increased stresses such as heat, drought, fires, storms, and insect pests resulting in a much different forest ecosystem for northern Minnesota in the future. Scientists at the University of Minnesota's Department of Forest Resources are using this appropriation to evaluate how these forests are poised to respond to these changes and obtain the necessary data to guide forest management and planning efforts, such as determining practices that will help fend off threats from invasive species.

**Project due to be completed:** 6/30/2014

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**Information System for Wildlife and Aquatic Management Areas**
Subd. 03j $500,000 TF

**Steve Benson**
MN DNR
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Grand Rapids, MN 55744

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**Appropriation Language**
$250,000 the first year and $250,000 the second year are from the trust fund to the commissioner of natural resources to develop an information system to facilitate improved management of wildlife and fish habitat and facilities. This appropriation is available until June 30, 2014, by which time the project must be completed and final products delivered.

**Project Overview**
The Minnesota Department of Natural Resources (DNR) manages over 2,135 state Wildlife Management Areas (WMA) and Aquatic Management Areas (AMA) containing over 1.3 million acres. This appropriation is enabling the DNR to develop an information system that will better facilitate the management of the state's WMAs and AMAs by helping to identify needs; prioritize, plan, and carry out related activities; track and assess results of activities; and make the information available to resource management professionals and the public.

**Project due to be completed:** 6/30/2014

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**Strengthening Natural Resource Management with LiDAR Training**
Subd. 03k $180,000 TF

**Leslie Everett**
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**Appropriation Language**
$90,000 the first year and $90,000 the second year are from the trust fund to the Board of Regents of the University of Minnesota to provide workshops and Web-based training and information on the use of LiDAR elevation data in planning for and managing natural resources.

**Project Overview**
The State of Minnesota is using an optical remote sensing technology called LiDAR (Light Detection and Ranging) to procure high resolution digital elevation data for the entire state. Precision, efficacy, and cost efficiency of numerous types of natural resource management activities can be greatly enhanced by use of this data. Potential users include natural resource professionals at all levels of government and in the private sector. However, most potential users have not yet had experience using this type of data because it's a relatively new technology. Through this appropriation the University of Minnesota's Water Resources Center is developing and implementing a training program that will enable natural resource professionals throughout the state to effectively employ this data in a variety of different applications in natural resource evaluation, management, and protection.

**Project due to be completed:** 6/30/2013

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**Measuring Conservation Practice Outcomes**
Subd. 03l $340,000 TF

**Megan Lennon**
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**Appropriation Language**
$170,000 the first year and $170,000 the second year are from the trust fund to the Board of Water and Soil Resources to improve measurement of impacts of conservation practices through refinement of

existing and development of new pollution estimators and by providing local government training.

**Project Overview**
Accounting for on the ground outcomes and measurable environmental benefits (e.g., pollution reduction) to the quality of soil, water, and habitat is an essential component of implementing conservation practices. Natural resource professionals use models and "estimators" to quantify these outcomes and benefits and guide future efforts. Over time, as conditions change and new information becomes available, estimators need to be revised or added to ensure outcomes and benefits are being accurately quantified. This appropriation is enabling the Minnesota Board of Soil and Water Resources to revise and create new estimators where needed, field verify the revised and new estimators, and provide local governments and other conservation professionals with training on how to use the revised and new estimators.

**Project due to be completed:** 6/30/2013

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**Conservation-Based Approach for Assessing Public Drainage Benefits**
Subd. 03m $150,000 TF

**Al Kean**
Board of Water and Soil Resources
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**Appropriation Language**
$75,000 the first year and $75,000 the second year are from the trust fund to the Board of Water and Soil Resources to develop an alternative framework to assess drainage benefits on public systems to enhance water conservation. This appropriation is available until June 30, 2014, by which time the project must be completed and final products delivered.

**Project Overview**
Artificial drainage exists in more than 25% of Minnesota. Runoff contributions from drained lands into these drainage systems contribute pollutants and degrade downstream water quality. Public drainage systems are funded by assessing costs to the lands benefitting from the systems. The current framework upon which these assessments are determined is based on maximizing crop production and does not account for overall water resources impacts, so there is no incentive for landowners to implement conservation practices that reduce runoff contributions to the drainage systems. The Minnesota Board of Soil and Water Resources is using this appropriation to develop and test an alternative framework for funding public drainage systems that would reduce costs to landowners if they implement conservation strategies that promote infiltration and reduce runoff.

**Project due to be completed:** 6/30/2014

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**Mississippi River Central Minnesota Conservation Planning**
Subd. 03n $175,000 TF

**Dennis Fuchs**
Stearns County Soil and Water Conservation District
Marketplace Mall, 110 2nd Street S, Ste 128
Waite Park, MN 56387

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**Appropriation Language**
$87,000 the first year and $88,000 the second year are from the trust fund to the commissioner of natural resources for an agreement with Stearns County Soil and Water Conservation District to develop and adopt river protection strategies in cooperation with local jurisdictions in the communities of the 26 miles of the Mississippi River between Benton and Stearns Counties. This appropriation must be matched by $175,000 of nonstate cash or qualifying in-kind funds.

**Project Overview**
From its headwaters to the Twin Cities, the Mississippi River has benefited from coordinated management plans and community efforts to protect its water quality and shoreland habitat - except for a 26-mile stretch in central Minnesota. Starting in St. Cloud and stretching north through Stearns and Benton counties, the stretch is governed by 11 different jurisdictions and the communities have no uniform land use controls to protect this shared resource despite population growth and development pressure threatening the health of the river. Stearns County Soil and Water Conservation District is using this appropriation to coordinate an effort between these 11 different local governments to develop and implement specific river protection policies and work with landowners along the river to implement shoreland management practices. Ultimately the effort aims to protect the water quality of the Mississippi River, reduce habitat fragmentation, and prioritize on-the-ground efforts.

**Project due to be completed:** 6/30/2013

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**St. Croix Basin Conservation Planning and Protection**
Subd. 03o $175,000 TF

**Deb Ryun**
St. Croix River Association
119 N. Washington St.
St. Croix Falls, WI 54024

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**Email:** debryun@scramail.com

**Appropriation Language**
$60,000 the first year and $60,000 the second year are from the trust fund to the commissioner of natural resources for an agreement with the St. Croix River Association to develop an interagency plan to identify and prioritize critical areas for project implementation to improve watershed health. This

appropriation must be matched by $120,000 of nonstate cash or qualifying in-kind funds. Up to $10,000 may be retained by the Department of Natural Resources at the request of the St. Croix River Association to provide technical and mapping assistance. This appropriation is available until June 30, 2014, by which time the project must be completed and final products delivered.

**Project Overview**
Portions of the St. Croix River Basin are now on the impaired waters list and rare landscapes, plants, and animal communities are increasingly threatened by development pressures. Up until now, conservation efforts in the St. Croix Basin have often been lacking focus and coordination between jurisdictions has been inadequate. Through this appropriation, the St. Croix River Association is establishing and coordinating a partnership effort between local, state, and federal government units and non-profits to develop a joint plan that will identify and prioritize areas for conservation implementation and guide efforts over time to improve overall watershed health in the St. Croix Basin.

**Project due to be completed:** 6/30/2014

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**Species of Concern; Investigations**
Subd. 03p $500,000 TF

**Part A: Minnesota Common Loons and American White Pelicans ($250,000)**
**Carrol Henderson**
MN DNR
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**RESEARCH**

**Part B: Minnesota Breeding Bird Atlas ($250,000)**
**TBD**

**Appropriation Language**
$500,000 the first year is from the trust fund to the commissioner of natural resources for investigating species of concern.

**Part A: Minnesota Common Loons and American White Pelicans - Project Overview**
Over a three month period in 2010, approximately five million barrels of oil was spilled into the Gulf of Mexico causing extensive damage to marine and wildlife habitats and resulting in significant losses in fish and wildlife populations. A number of Minnesota's migratory bird species spend parts of their lives in the areas impacted by the spill and impacts on their populations in the state could become evident over time. Impacts could result from immediate losses of birds that were present at the time of the spill or from cumulative negative effects resulting from contamination of the food chain by petroleum chemicals and the dispersants used on the oil. The two Minnesota species that are potentially most vulnerable are the common loon and the American white pelican - some of their young would have been

present in the Gulf at the time of the spill and their behavior and feeding patterns put them at greater risk of exposure to chemicals from the spill persisting in the environment. The Minnesota Department of Natural Resources is using this appropriation to determine whether or not common loon or American white pelican populations in Minnesota have been impacted by the Gulf oil spill. Besides population declines in the two species, other impacts that could occur as a result of chemical contamination in the food chain include changes in behavior, migratory abilities, reproductive success, or longevity. If a link is documented Minnesota may be eligible for remediation funds from the Federal Natural Resource Damage Assessment (NRDA) process currently underway, and those funds could be used to help restore the populations of these two species.

**Part B: Minnesota Breeding Bird Atlas - Project Overview**
A state Breeding Bird Atlas is a comprehensive systematic field survey of the occurrence, distribution, diversity, and breeding status of bird species within the state. Atlases are used to set conservation priorities, develop conservation plans, and guide habitat protection and restoration efforts. Minnesota is one of only seven states in the country that has yet to complete a Breeding Bird Atlas. Audubon Minnesota will use this appropriation to complete the Minnesota Breeding Bird Atlas and create related publications, including a book and online atlas with distribution maps, breeding status, and historical species information.

**Project due to be completed:** 6/30/2013

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## SUBD. 04 LAND, HABITAT, AND RECREATION

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**State Park and Recreation Area Operations and Improvements**
Subd. 04a $3,627,000 TF

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**Appropriation Language**
$1,877,000 the first year and $1,750,000 the second year are from the trust fund to the commissioner of natural resources for state park and recreation area operations and improvements, including activities directly related to and necessary for this appropriation. This appropriation is not subject to Minnesota Statutes, sections 116P.05, subdivision 2, paragraph (b), and 116P.09, subdivision 4.

**Project Overview**
Minnesota's extensive state park and recreation area system, the second oldest in the country, is currently comprised of a total of 76 state parks and recreation areas scattered throughout the state. The state park system provides abundant recreational and educational opportunities for citizens while also preserving some of the state's most valued natural, scenic, and cultural resources. The Minnesota

Department of Natural Resources is utilizing the appropriation to accelerate natural and cultural resource management in the parks through activities including invasive species control, habitat restoration and enhancement, and natural resource inventory and monitoring to ensure desired outcomes are being achieved.

**Project due to be completed:** 6/30/2013

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**State Parks and Trails Land Acquisition**
Subd. 04b $3,000,000 TF

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**Appropriation Language**
$1,500,000 the first year and $1,500,000 the second year are from the trust fund to the commissioner of natural resources to acquire state trails and critical parcels within the statutory boundaries of state parks. State park land acquired with this appropriation must be sufficiently improved to meet at least minimum management standards, as determined by the commissioner of natural resources. A list of proposed acquisitions must be provided as part of the required work program. This appropriation is available until June 30, 2014, by which time the project must be completed and final products delivered.

**Project Overview**
Privately owned lands exist within the designated boundaries of state parks throughout Minnesota. Purchase of these lands from willing landowners for addition to the state park system makes them permanently available for public recreation and enjoyment and facilitates more efficient management. Additional benefits include preserving contiguous wildlife corridors, facilitating preservation and restoration of native plant communities and cultural resources, reducing impacts of future development, and providing riparian buffers along wetlands, creeks, and lakes. The Minnesota Department of Natural Resources is using this appropriation to partially fund the acquisition of approximately 120 acres, which includes:

- 64 acres for 6.5 miles of the Brown's Creek Segment of the Willard Munger State Trail in Washington County
- 75 acres for Mille Lacs Kathio State Park in Mille Lacs County
- 3 acres for Crow Wing State Park in Cass County
- 48 acres for Tettegouche State Park in Lake County
- 20 acres for Nerstrand Big Woods State Park in Rice County

**Project due to be completed:** 6/30/2014

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**Metropolitan Regional Park System Acquisition**
Subd. 04c $2,250,000 TF

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**Appropriation Language**
$1,125,000 the first year and $1,125,000 the second year are from the trust fund to the Metropolitan Council for grants for the acquisition of lands within the approved park unit boundaries of the metropolitan regional park system. This appropriation may not be used for the purchase of residential structures. A list of proposed fee title and easement acquisitions must be provided as part of the required work program. This appropriation must be matched by at least 40 percent of nonstate money and must be committed by December 31, 2011, or the appropriation cancels. This appropriation is available until June 30, 2014, at which time the project must be completed and final products delivered, unless an earlier date is specified in the work program.

**Project Overview**
The Twin Cities area is host to a nationally renowned system of regional parks that provides numerous outdoor recreational opportunities for the public while preserving green space for wildlife habitat and other natural resource benefits. Through an existing grant program, the Metropolitan Council is using this appropriation to partner with local metropolitan communities to partially finance the acquisition of approximately 210 acres to be added to existing metropolitan regional parks. Priority will be given to lands with shoreland, lands that provide important natural resource connections, and lands containing unique natural resources.

**Project due to be completed:** 6/30/2014

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**Regional Park, Trail, and Connections Acquisition and Development Grants**
Subd. 04d $2,000,000 TF

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**Appropriation Language**
$1,000,000 the first year and $1,000,000 the second year are from the trust fund to the commissioner of

natural resources to provide matching grants to local units of government for acquisition and development of regional parks, regional trails, and trail connections. The local match required for a grant to acquire a regional park or regional outdoor recreation area is two dollars of nonstate money for each three dollars of state money. This appropriation is available until June 30, 2014, by which time the project must be completed and final products delivered.

**Project Overview**
A vast network of locally managed parks and trails of regional or statewide significance exist outside the seven county Metropolitan area providing outdoor recreational opportunities for the public while preserving green space for wildlife habitat and other natural resource benefits. Through an existing grant program, the Minnesota Department of Natural Resources is using this appropriation to partner with local communities around the state to partially finance the acquisition and/or development of approximately 550 acres for new or expanded regional parks, regional trails, or trail connections outside the seven county Metro area.

**Project due to be completed:** 6/30/2014

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**Scientific and Natural Areas Acquisition and Restoration**
Subd. 04e $1,640,000 TF

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**Appropriation Language**
$820,000 the first year and $820,000 the second year are from the trust fund to the commissioner of natural resources to acquire lands with high-quality native plant communities and rare features to be established as scientific and natural areas as provided in Minnesota Statutes, section 86A.05, subdivision 5, restore parts of scientific and natural areas, and provide technical assistance and outreach. A list of proposed acquisitions must be provided as part of the required work program. Land acquired with this appropriation must be sufficiently improved to meet at least minimum management standards, as determined by the commissioner of natural resources. This appropriation is available until June 30, 2014, by which time the project must be completed and final products delivered.

**Project Overview**
Minnesota's Scientific and Natural Areas (SNA) Program is an effort to preserve and perpetuate the state's ecological diversity and ensure that no single rare feature is lost from any region of the state. This includes landforms, fossil remains, plant and animal communities, rare and endangered species, and other unique biotic or geological features. These sites play an important role in scientific study, public education, and outdoor recreation. The Minnesota Department of Natural Resources is using this appropriation to conduct restoration activities on approximately 1,800 acres in existing SNAs, to acquire an additional 80 acres to be added to the SNA system, and to increase citizen and student knowledge

and skills pertaining to ecological restoration and biodiversity conservation through engagement with SNAs.

**Project due to be completed:** 6/30/2014

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**LaSalle Lake State Recreation Area Acquisition**
Subd. 04f $2,000,000 TF

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**Appropriation Language**
$1,000,000 the first year and $1,000,000 the second year are from the trust fund to the commissioner of natural resources for an agreement with The Trust for Public Land to acquire approximately 190 acres to be designated as a state recreation area as provided in Minnesota Statutes, section 86A.05, subdivision 3, on LaSalle Lake adjacent to the upper Mississippi River. If this acquisition is not completed by July 15, 2012, then the appropriation is available to the Department of Natural Resources for other state park and recreation area acquisitions on the priority list. Up to $10,000 may be retained by the Department of Natural Resources at the request of The Trust for Public Land for transaction costs, associated professional services, and restoration needs.

**Project Overview**
LaSalle Lake, a 211 acre lake in northwestern Hubbard County, is the second deepest lake in the state at 213 feet. It is surrounded by thousands of acres of natural areas that include rare species, high-quality forest and wetlands, coldwater stream, and portions of the Upper Mississippi River. In partnership with the Minnesota Department of Natural Resources, the Trust for Public Land is coordinating a multi-phase effort to permanently protect a total of 980 acres surrounding LaSalle Lake for the creation of LaSalle State Recreation Area, making the area available for public enjoyment for generations to come. This appropriation is being used to purchase a 190 acre portion of the total acreage that includes some of the highest quality habitat and biodiversity as identified by the Minnesota County Biological Survey.

**Project due to be completed:** 6/30/2013

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**Minnesota River Valley Green Corridor Scientific and Natural Area Acquisition**
Subd. 04g $2,000,000 TF

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**Appropriation Language**
$1,000,000 the first year and $1,000,000 the second year are from the trust fund to the commissioner of natural resources for an agreement with the Redwood Area Communities Foundation to acquire lands with high-quality native plant communities and rare features to be established as scientific and natural areas as provided in Minnesota Statutes, section 86A.05, subdivision 5. A list of proposed acquisitions must be provided as part of the required work program. Land acquired with this appropriation must be sufficiently improved to meet at least minimum management standards, as determined by the commissioner of natural resources. Up to $54,000 may be retained by the Department of Natural Resources at the request of the Redwood Area Communities Foundation for transaction costs, associated professional services, and restoration needs. This appropriation is available until June 30, 2014, by which time the project must be completed and final products delivered.

**Project Overview**
Minnesota's Scientific and Natural Areas (SNA) Program is an effort to preserve and perpetuate the state's ecological diversity and ensure that no single rare feature is lost from any region of the state. This includes landforms, fossil remains, plant and animal communities, rare and endangered species, and other unique biotic or geological features. These sites play an important role in scientific study, public education, and outdoor recreation. The Redwood Area Communities Foundation is using this appropriation to work in partnership with the Minnesota Department of Natural Resources to acquire approximately 420 acres of lands in the Minnesota River Valley containing some of the most ecologically sensitive plant communities, rare species, and other unique natural resources in the area. Acquired lands will be established as Scientific and Natural Areas.

**Project due to be completed:** 6/30/2014

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**Native Prairie Stewardship and Native Prairie Bank Acquisition**
Subd. 04h $1,000,000 TF

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**Appropriation Language**
$500,000 the first year and $500,000 the second year are from the trust fund to the commissioner of natural resources to acquire native prairie bank easements, prepare baseline property assessments, restore and enhance native prairie sites, and provide technical assistance to landowners. This appropriation is available until June 30, 2014, by which time the project must be completed and final

products delivered.

**Project Overview**
Prior to European settlement more than 18 million acres of prairie covered Minnesota. Today less than 1% of that native prairie remains, and about half of those remaining acres are in private landownership without any formal protection currently in place. Through this appropriation the Minnesota Department of Natural Resources will work with private landowners of high quality native prairie sites to protect remaining native prairie using a variety of tools. Approximately 200 acres are expected to be permanently protected through Native Prairie Bank conservation easements. A variety of restoration and enhancement activities will be implemented on a total of about 900 acres. Additionally, education and technical assistance will be provided to interested landowners to help them improve the management and stewardship of native prairie sites they own.

**Project due to be completed:** 6/30/2014

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**Metropolitan Conservation Corridors (MeCC) - Phase VI**
Subd. 04i $3,475,000 TF

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**Appropriation Language**
$1,737,000 the first year and $1,738,000 the second year are from the trust fund to the commissioner of natural resources for the acceleration of agency programs and cooperative agreements. Of this appropriation, $150,000 the first year and $150,000 the second year are to the commissioner of natural resources for agency programs and $3,175,000 is for the agreements as follows: $100,000 the first year and $100,000 the second year with Friends of the Mississippi River; $517,000 the first year and $518,000 the second year with Dakota County; $200,000 the first year and $200,000 the second year with Great River Greening; $220,000 the first year and $220,000 the second year with Minnesota Land Trust; $300,000 the first year and $300,000 the second year with Minnesota Valley National Wildlife Refuge Trust, Inc.; and $250,000 the first year and $250,000 the second year with The Trust for Public Land for planning, restoring, and protecting priority natural areas in the metropolitan area, as defined under Minnesota Statutes, section 473.121, subdivision 2, and portions of the surrounding counties, through contracted services, technical assistance, conservation easements, and fee title acquisition. Land acquired with this appropriation must be sufficiently improved to meet at least minimum management standards, as determined by the commissioner of natural resources. Expenditures are limited to the identified project corridor areas as defined in the work program. This appropriation may not be used for the purchase of habitable residential structures, unless expressly approved in the work program. All conservation easements must be perpetual and have a natural resource management plan. Any land acquired in fee title by the commissioner of natural resources with money from this appropriation must be designated as an outdoor recreation unit under Minnesota Statutes, section 86A.07. The

commissioner may similarly designate any lands acquired in less than fee title. A list of proposed restorations and fee title and easement acquisitions must be provided as part of the required work program. An entity that acquires a conservation easement with appropriations from the trust fund must have a long-term stewardship plan for the easement and a fund established for monitoring and enforcing the agreement. Money appropriated from the trust fund for easement acquisition may be used to establish a monitoring, management, and enforcement fund as approved in the work program. An annual financial report is required for any monitoring, management, and enforcement fund established, including expenditures from the fund. This appropriation is available until June 30, 2014, by which time the project must be completed and final products delivered.

**Overall Project Overview**

Though many parts of the Twin Cities metropolitan area are urbanized, there are also has large areas of natural lands that continue to serve as important habitat for fish, wildlife, and plant communities. However, pressure on these remaining lands continues to intensify as population and development pressures increase. This appropriation represents the sixth phase of an ongoing effort by a partnership of state and non-profit organizations, called the Metro Conservation Corridors (MeCC) partnership, to conduct strategic and coordinated land protection, restoration, and enhancement activities that build connections between remaining natural areas and ensures their benefits are available for future generations. This phase involves seven partners and is expected to result in the permanent protection of more than 600 acres and the restoration and enhancement of more than 750 acres.

**Individual Partner Project Overviews**

- *1.1/1.2 - MeCC VI - Coordination, Mapping & Outreach & Mapping and Database Work - Minnesota Land Trust ($40,000)*
  The Minnesota Land Trust provides coordination, mapping, and data management for the Metropolitan Conservation Corridors partnership. Funds are being used to coordinate the partnership, guide strategic outreach and implementation efforts, manage project data, and provide reporting and mapping of accomplishments.
- *2.1 - MeCC VI - Restore and Enhance Significant Watershed Habitat - Friends of the Mississippi River ($200,000)*
  Friends of the Mississippi is using this appropriation to restore and enhance approximately 163 acres of permanently protected prairie and forest lands in Dakota, Washington, Ramsey, and Hennepin counties in order increase the amount of high quality habitat within designated conservation corridors. Specific activities will include updating management plans, soil preparation, prescribed burning, native vegetation installation, woody encroachment removal, and invasive species control.
- *2.3 - MeCC VI - Restoring Our Lands and Waters - Great River Greening ($400,000)*
  These funds will enable Great River Greening to restore approximately 121 acres of permanently protected forests, savanna, prairie, and wetland habitat and 0.18 miles of shoreland habitat while engaging hundreds of volunteers in the stewardship of the Metropolitan area's remaining natural areas. Specific activities include invasive species control, seeding/planting, prescribed burning, and other associated activities.
- *2.6/3.3 - MeCC VI - Priority Expansion and Restoration MN Valley NW Refuge - Minnesota Valley National Wildlife Refuge Trust Inc. ($600,000)*
  The Minnesota Valley National Wildlife Refuge Trust is using this appropriation to purchase a total of approximately 125 acres of land to expand the Minnesota Valley National Wildlife Refuge and to restore and enhance approximately 405 acres of oak savanna and remnant native prairie communities within the refuge. Many benefits are anticipated from this project,

including improved habitat connectivity, protection of native species, improved water quality in the Minnesota River, and increased public access to natural lands for activities such as hiking, hunting, and fishing.

- *2.7/3.7 - MeCC VI - Dakota County Riparian and Lakeshore Protection - Dakota County ($1,035,000)*
  Through this appropriation Dakota County plans to permanently protect approximately 287 acres along rivers, including the Vermillion and Cannon Rivers, by securing conservation easements from willing landowners. For all acres protected, natural resource management plans will be prepared to ensure their long term stewardship. Additionally, restoration and enhancement activities are expected to occur on approximately 75 acres.
- *3.1 - MeCC VI - TPL's Critical Land Protection Program - Trust for Public Land ($500,000)*
  The Trust for Public Land is using this appropriation to purchase approximately 30 acres of land and 0.3 miles of shoreline with high ecological value and then convey the land to state or local governments for long-term stewardship and protection. Lands being considered for permanent protection in this round of funding include areas around the Rum River and Rice Creek in Anoka County, Lindstrom Natural Area in Chisago County, Savage Fen Scientific and Natural Area and Pike Lake in Scott County, and St. Croix/Fraconia-Scandia Scientific and Natural Area in Washington County.
- *3.2 - MeCC VI - Protect Significant Habitat by Acquiring Conservation Easements - Minnesota Land Trust ($400,000)*
  With this appropriation, the Minnesota Land Trust plans to protect 150 acres of high quality forest, prairie, or wetland habitat by securing permanent conservation easements and dedicating funds for their perpetual monitoring, management, and enforcement. Lands being considered for permanent protection in this round of funding are located in Anoka, Carver, Goodhue, Hennepin, Isanti, Washington, and Wright counties.
- *3.5 - MeCC VI - Aquatic Management Area Acquisition - MN DNR ($300,000)*
  The Minnesota Department of Natural Resources is using this appropriation to purchase 35 acres, with 0.6 miles of shoreline, along the Vermillion River in Dakota County to be managed as Aquatic Management Areas. Priority will be given to lands that have a high risk of development, provide protection to shoreline and riparian zones, and allow access for anglers and habitat improvement projects.

**Project due to be completed:** 6/30/2014

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**Habitat Conservation Partnership (HCP) - Phase VII**
Subd. 04j $3,475,000 TF

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**Appropriation Language**

$1,737,000 the first year and $1,738,000 the second year are from the trust fund to the commissioner of natural resources for the acceleration of agency programs and cooperative agreements. Of this appropriation, $125,000 the first year and $125,000 the second year are to the commissioner of natural resources for agency programs and $3,225,000 is for agreements as follows: $637,000 the first year and $638,000 the second year with Ducks Unlimited, Inc.; $38,000 the first year and $37,000 the second year with Friends of Detroit Lakes Wetland Management District; $25,000 the first year and $25,000 the second year with Leech Lake Band of Ojibwe; $225,000 the first year and $225,000 the second year with Minnesota Land Trust; $200,000 the first year and $200,000 the second year with Minnesota Valley National Wildlife Refuge Trust, Inc.; $242,000 the first year and $243,000 the second year with Pheasants Forever, Inc.; and $245,000 the first year and $245,000 the second year with The Trust for Public Land to plan, restore, and acquire fragmented landscape corridors that connect areas of quality habitat to sustain fish, wildlife, and plants. The United States Department of Agriculture, Natural Resources Conservation Service, is an authorized cooperating partner in the appropriation. Expenditures are limited to the project corridor areas as defined in the work program. Land acquired with this appropriation must be sufficiently improved to meet at least minimum habitat and facility management standards, as determined by the commissioner of natural resources. This appropriation may not be used for the purchase of habitable residential structures, unless expressly approved in the work program. All conservation easements must be perpetual and have a natural resource management plan. Any land acquired in fee title by the commissioner of natural resources with money from this appropriation must be designated as an outdoor recreation unit under Minnesota Statutes, section 86A.07. The commissioner may similarly designate any lands acquired in less than fee title. A list of proposed restorations and fee title and easement acquisitions must be provided as part of the required work program. An entity who acquires a conservation easement with appropriations from the trust fund must have a long-term stewardship plan for the easement and a fund established for monitoring and enforcing the agreement. Money appropriated from the trust fund for easement acquisition may be used to establish a monitoring, management, and enforcement fund as approved in the work program. An annual financial report is required for any monitoring, management, and enforcement fund established, including expenditures from the fund. This appropriation is available until June 30, 2014, by which time the project must be completed and final products delivered.

**Overall Project Overview**

With continued land use changes in Minnesota, areas that once served as important areas for fish, wildlife, and plant habitat have become fragmented and disconnected resulting in adverse impacts on these ecological communities. Strategic and coordinated efforts in protection, restoration, and enhancement of lands throughout Minnesota can create land and water corridors that reconnect remaining habitat areas and reverse some of the adverse impacts. This appropriation represents the seventh phase of an ongoing effort by a partnership of state, federal, and non-profit organizations, called the Habitat Corridors Partnership (HCP), to do such strategic and coordinated land protection, restoration, and enhancement. Earlier phases of this project have resulted in the protection, restoration, or enhancement of more than 100,000 acres throughout the state. Many of these projects matched Trust Fund money with non-state funds, stretching these dollars to provide a greater benefit to the state. This phase involves eight partners and is expected to result in the permanent protection of approximately 1,100 acres and restoration or enhancement of more than 630 acres. Projects from the individual partners are listed below.

**Individual Partner Project Overviews**

- *1a - HCP VII - Coordination, Mapping & Data Management - Pheasants Forever Inc. ($51,000)* Pheasants Forever provides coordination, mapping, and data management for the Habitat

Corridors Partnership. Funds are being used to coordinate the partnership, guide strategic outreach and implementation efforts, manage project data, and provide reporting and mapping of accomplishments.

- *2e - HCP VII - Wild Rice/Waterfowl Habitat: Enhancement and Long-term Monitoring (2e) - Leech Lake Band of Ojibwe ($50,000)*
  The Leech Lake Band of Ojibwe is working within the Leech Lake Reservation boundaries to address loss and degradation of aquatic habitat for wild rice and waterfowl. Efforts will include regulating water levels on shallow lakes by controlling beaver activity and conducting periodic water level draw-downs, reseeding of approximately 200 acres of wild rice, and implementing adaptive management based on analysis of wild rice productivity.
- *2g - HCP VII - Restoration & Management - Wildlife Management Areas - MN DNR ($30,000)*
  An estimated 200 acres of lands acquired through this phase of the Habitat Corridors Partnership are expected to be transferred to the state for designation as Wildlife Management Areas (WMA). The Minnesota Department of Natural Resources is using these funds to conduct habitat restoration on these new WMA lands, as well as develop the infrastructure necessary for public access to them.
- *2h - HCP VII - Restoration & Management - DNR Fisheries - MN DNR ($200,000)*
  The Minnesota Department of Natural Resources is coordinating efforts to improve habitat for aquatic species and protect water quality on lakes, streams, and their surrounding sensitive shorelands. A total of up to 3.5 miles or 35 acres of water bodies in Kandiyohi, Otter Tail, Rice, or Stevens Counties are expected to benefit from restoration activities including installation of aeration systems, development of spawning areas, installation of native vegetation, and stabilization of stream banks.
- *2o - HCP VII - Prairie Pothole Restoration on Waterfowl Areas - Friends of the Detroit Lakes Wetland Management District ($75,000)*
  Friends of the Detroit Lakes Wetland Management District is using these funds to restore approximately 50 acres of prairie pothole wetlands in Clay and Becker Counties. Efforts aim to create wildlife habitat for waterfowl and other species and reduce downstream flooding of the Red River Valley by increasing the capacity of the land to hold and store water from spring runoff and severe storms.
- *3a - HCP VII - Shoreland Protection Program - Minnesota Land Trust ($450,000)*
  With this appropriation, the Minnesota Land Trust plans to protect approximately 500 acres of critical shoreline habitat along Minnesota's lakes, wetlands, rivers, and streams by securing permanent conservation easements and dedicating funds for their perpetual monitoring, management, and enforcement. Lands being considered for permanent protection in this round of funding are located in Becker, Beltrami, Blue Earth, Itasca, Kandiyohi, Lac Qui Parle, Le Sueur, Otter Tail, Pope, and Wabasha counties.
- *3c - HCP VII - Shallow Lake Conservation Easements - Ducks Unlimited Inc. ($500,000)*
  This appropriation is enabling Ducks Unlimited to help state and federal wildlife conservation agencies protect and restore shallow lakes for waterfowl. Conservation easements will be acquired on approximately 150 acres of privately owned shoreland and up to 60 acres of lands previously converted for cropping will be restored back to wildlife habitat. Lands being considered for permanent protection in this round of funding are located in Beltrami, Douglas, Freeborn, Grant, Meeker, Pope, Stearns, Swift, and Wright counties.
- *3d - HCP VII - Wetlands Reserve Program - Ducks Unlimited Inc. and USDA NRCS (775,000)*
  The U.S. Department of Agriculture and Ducks Unlimited are working together to provide technical assistance to landowners that that will result in the protection of approximately 2,500 acres of prairies and wetlands in southern and western Minnesota. As a result of this

appropriation, an estimated $4 million of additional funding for conservation is anticipated to be provided in match by the federal Wetland Reserve Program.

- *4a - HCP VII - WMA/WPA Acquisition beyond Boundaries - Pheasants Forever Inc. ($434,000)*
  There funds are enabling Pheasants Forever to acquire in fee title approximately 86 acres of habitat along the borders of existing Wildlife Management Areas (WMA) or Waterfowl Production Areas (WPA) in LeSueur, Lincoln, or Rice counties and convey the lands to a public agency for long term stewardship and protection. These strategic acquisitions will leverage and expand the existing habitat, water quality, and recreation benefits already provided by existing protected lands.
- *4c - HCP VII - TPLs Critical Lands Protection Program - Trust for Public Land ($490,000)*
  The Trust for Public Land is using this appropriation to acquire in fee title approximately 44 acres of high quality habitat and convey it the Minnesota Department of Natural Resources for long-term stewardship and protection. Priority will be given to shoreland and other lands that provide natural buffers to water resources. Lands being considered for permanent protection in this round of funding are located in Hubbard, Kandiyohi, LeSueur, and Rice counties.
- *4h - HCP VII - Priority Acquisition, MN Valley Wetland Management District - Minnesota Valley National Wildlife Refuge Trust Inc. ($400,000)*
  The Minnesota Valley National Wildlife Refuge Trust is using this appropriation to purchase a total of approximately 80 acres of high quality grasslands and wetlands in Blue Earth or Le Sueur County to be managed as a federal Waterfowl Production Area (WPA) in the Minnesota Valley Wetland Management District.
- *4i - HCP VII - Habitat Acquisition - DNR Professional Services - MN DNR ($20,000)*
  An estimated 400 acres acquired by other Habitat Corridors Partnership (HCP) partners is expected to be transferred to the DNR for long-term management during this phase of the partnership. The Minnesota Department of Natural Resources (DNR) is using these funds to cover professional services costs associated with these property transfers.

**Project due to be completed:** 6/30/2014

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**Natural and Scenic Area Acquisition Grants**
Subd. 04k $1,000,000 TF

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**Appropriation Language**
$500,000 the first year and $500,000 the second year are from the trust fund to the commissioner of natural resources to provide matching grants to local governments for acquisition of natural and scenic areas, as provided in Minnesota Statutes, section 85.019, subdivision 4a. This appropriation is available until June 30, 2014, by which time the project must be completed and final products delivered.

**Project Overview**
The Natural and Scenic Area Grant Program is a competitive, matching grant program that partners the state with local communities to help them acquire and permanently protect natural and scenic resources that do not qualify for state designation but have important local or regional significance. Natural and scenic areas provide for public use, protection of species and natural communities, appreciation of scenic vistas, and scientific and educational opportunities. This appropriation will allow the Minnesota Department of Natural Resources to provide up to six matching grants to cities, counties, townships, or school districts for acquisition of approximately 150 acres of new or expanded natural and scenic areas.

**Project due to be completed:** 6/30/2014

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**Acceleration of Minnesota Conservation Assistance**
Subd. 04l $625,000 TF

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**Appropriation Language**
$313,000 the first year and.$312,000 the second year are from the trust fund to the Board of Water and Soil Resources to provide grants to soil and water conservation districts to provide technical assistance to secure enrollment and retention of private lands in federal and state programs for conservation.

**Project Overview**
Enrollment of private lands in conservation programs can provide important natural resource and other public benefits by taking the lands out of production so that they can provide various wildlife and ecological benefits. This appropriation is enabling the Minnesota Board of Soil and Water Resources to provide grants to local soil and water conservation districts for employment of technical staff to assist private landowners in implementing conservation programs. This effort is expected to assist with the enrollment, retention, and management of 30,000 private acres of grasslands, wetlands, and forests in federal and state conservation programs, particularly in areas expected to lose enrollments in the Conservation Reserve Program (CRP).

**Project due to be completed:** 6/30/2013

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**Conservation Easement Stewardship and Enforcement Program - Phase II**
Subd. 04m $500,000 TF

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**Appropriation Language**
$250,000 the first year and $250,000 the second year are from the trust fund to the commissioner of natural resources to accelerate the implementation of the Phase I Conservation Easement Stewardship Plan being developed with an appropriation from Laws 2008, chapter 367, section 2, subdivision 5, paragraph (h).

**Project Overview**
The purchase of conservation easements - restrictions on land use that protect natural features while keeping land in private ownership - has proven to be an effective means to protect land at a far lower initial cost than full state ownership. However, once an easement is purchased there are ongoing stewardship, monitoring, and enforcement responsibilities necessary to ensure the terms of the agreement between the easement holder and the landowner are met. An earlier effort funded by the Environment and Natural Resources Trust Fund in 2008 allowed the Minnesota Department of Natural Resources (DNR) to develop a central inventory and management system of the conservation easements held by the DNR, along with a plan for how the DNR's conservation easements would be administered into the future. This appropriation is allowing the DNR to continue and accelerate the implementation of the previously developed plan.

**Project due to be completed:** 6/30/2013

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**Recovery of At-Risk Native Prairie Species**
Subd. 04n $147,000 TF

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**Appropriation Language**
$73,000 the first year and $74,000 the second year are from the trust fund to the Board of Water and Soil Resources for an agreement with the Martin County Soil and Water Conservation District to collect, propagate, and plant declining, at-risk native species on protected habitat and to enhance private market sources for local ecotype native seed. This appropriation is available until June 30, 2014, by which time the project must be completed and final products delivered.

**Project Overview**

With less than 1% of the original native prairie remaining in the state, many locally-adapted prairie species are in decline and at-risk of being lost due to continued habitat fragmentation and land conversion. This poses challenges to efforts to preserve these species because seed sources for these plants are therefore also becoming fewer. Using this appropriation the Martin County Soil and Water Conservation District aims to help reverse this trend. Through partnerships with local seed growers and nurseries they will collect, propagate, and plant these declining and at-risk, locally-adapted plant species on protected habitat as part of restoration efforts in order to encourage and increase their presence on the landscape.

**Project due to be completed:** 6/30/2014

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**Understanding Threats, Genetic Diversity, and Conservation Options for Wild Rice**
Subd. 04o $195,000 TF

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**RESEARCH**

**Appropriation Language**
$97,000 the first year and $98,000 the second year are from the trust fund to the Board of Regents of the University of Minnesota to research the genetic diversity of wild rice population throughout Minnesota for use in related conservation and restoration efforts. This appropriation is contingent upon demonstration of review and cooperation with the Native American tribal nations in Minnesota. Equipment purchased with this appropriation must be available for future publicly funded projects at no charge except for typical operating expenses. This appropriation is available until June 30, 2014, by which time the project must be completed and final products delivered.

**Project Overview**
The ecological, economic, and cultural and historical values embodied by wild rice is said to be unmatched by any other native plant species in Minnesota. However, naturally occurring wild rice in the state now faces a multitude of threats, such as loss of habitat from development, competition from invasive species, impacts from mining and other industrial activity, and hydrologic changes in lakes, rivers, and streams. It is recognized that to preserve wild rice in Minnesota it is critical to maintain its genetic diversity, yet knowledge of genetic diversity in wild rice is limited. Scientists at the University of Minnesota's Department of Plant Biology are using this appropriation to study the genetic diversity of wild rice in Minnesota in order to enhance options and inform best practices for wild rice protection and restoration.

**Project due to be completed:** 6/30/2014

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**Southeast Minnesota Stream Restoration**
Subd. 04p $250,000 TF

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**Appropriation Language**
$125,000 the first year and $125,000 the second year are from the trust fund to the commissioner of natural resources for an agreement with Trout Unlimited to restore at least four miles of riparian corridor for trout and nongame species in southeast Minnesota and increase local capacities to implement stream restoration through training and technical assistance. This appropriation is available until June 30, 2014, by which time the project must be completed and final products delivered.

**Project Overview**
Early European settlement and agricultural practices from the 1850s to the 1930s led to wide scale erosion, flooding, and altering of streams and valleys in southeast Minnesota. Hundreds of miles of clean coldwater creeks and streams were inundated with fine sediment as a result. While land use practices have improved, many streams still suffer from the practices of the past. Trout Unlimited is using this appropriation to work with private citizens and federal, state, and county agencies to conduct 12 showcase stream habitat restorations on more than four miles of southeastern Minnesota streams that will serve as models and build local capacity to conduct future restorations. Restoration target areas include parts of the Cannon River in Dakota County, Hay Creek in Goodhue County, Zumbro River in Wabasha County, Mill Creek in Olmsted County, Whitewater River in Winona County, Root River in Fillmore County, and Winnebago River in Houston County.

**Project due to be completed:** 6/30/2014

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**Restoration Strategies for Ditched Peatland and Scientific and Natural Areas**
Subd. 04q $200,000 TF

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**RESEARCH**

**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.

**Project Overview**
Thirty-seven percent of the naturally stored carbon in Minnesota occurs in a unique ecosystem type called peatlands that covers only 10% of the state. Peatlands form where water levels are near the surface and drainage is poor, which slows decomposition of plant debris and results in an accumulation of these organic materials in a partially decomposed mass called peat. Peatland ecology is largely governed by the water flowing through them and disruption of this flow can have profound impacts on the accumulation of peat, landforms, and vegetation. One peatland located in Lake of the Woods and Roseau counties, the Winter Road Lake Peatland, experienced such disruption in the early 1900's when a failed attempt to drain the lands for agriculture left behind numerous drainage ditches. The Minnesota Department of Natural Resources is using this appropriation to evaluate the effects of this ditching on peatland hydrology and habitat in order to understand options for peatland restoration and possibly create potential for wetland banking credits. Findings will be used to guide restoration strategies for peatlands throughout the state.

**Project due to be completed:** 6/30/2014

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**Northeast Minnesota White Cedar Plant Community Restoration**
Subd. 04r $250,000 TF

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**Appropriation Language**
$125,000 for the first year and $125,000 the second year are from the trust fund to the Board of Water and Soil Resources to assess the decline of northern white cedar plant communities in northeast Minnesota, prioritize cedar sites for restoration, and provide cedar restoration training to local units of government.

**Project Overview**
Northern white cedar wetland plant communities provide a number of specialized habitat functions, including winter refuge for deer and other wildlife, thermal buffering for brook trout streams, and critical habitat for songbirds and other unique wildlife such as martens and fishers. However, these plant communities have been declining in Minnesota for decades mostly as a result of development impacts. The Minnesota Board of Water and Soil Resources is using this appropriation to try to improve the

quantity and quality of white cedar wetland plant communities in Minnesota. Efforts will include assessing existing white cedar communities to prioritize sites for restoration and then providing training and demonstration of restoration and re-vegetation techniques for local natural resource managers.

**Project due to be completed:** 6/30/2014

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**Land and Water Conservation Account (LAWCON) Federal Reimbursement**
Subd. 04s $750,000 LAWCON

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**Appropriation Language**
$750,000 is from the state land and water conservation account (LAWCON) in the natural resources fund to the commissioner of natural resources for priorities established by the commissioner for eligible state projects and administrative and planning activities consistent with Minnesota Statutes, section 116P.14, and the federal Land and Water Conservation Fund Act. This appropriation is available until June 30, 2014, by which time the project must be completed and final products delivered.

**Project Overview**
Through the Land and Water Conservation Fund (LAWCON) the Federal government designates a portion of receipts from offshore oil and gas leases to be provided to state and local governments to fund conservation and outdoor recreation efforts. The Minnesota Department of Natural Resources is using this appropriation to support costs required to maintain eligibility for future LAWCON funding and for acquisition, development, and redevelopment of parks and recreation areas in the state.

**Project due to be completed:** 6/30/2014

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**SUBD. 05 WATER RESOURCES**

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**Itasca County Sensitive Lakeshore Identification**
Subd. 05a $160,000 TF

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**Appropriation Language**
$80,000 the first year and $80,000 the second year are from the trust fund to the commissioner of natural resources for an agreement with Itasca County Soil and Water Conservation District to identify sensitive lakeshore and restorable shoreline in Itasca County. Up to $130,000 may be retained by the Department of Natural Resources at the request of Itasca County to provide technical assistance.

**Project Overview**
Poorly planned development along lakeshores negatively impacts lake ecosystems by degrading water quality and fish and wildlife habitat. Given the increased demand for shoreland property, protection of the most ecologically sensitive shorelands is critical. The Itasca County Soil and Water Conservation District is using this appropriation to assess shorelands on high priority lakes in the county to identify the most ecologically sensitive lakeshore as a means of guiding and prioritizing future conservation efforts.

**Project due to be completed:** 6/30/2013

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**Trout Stream Springshed Mapping in Southeast Minnesota - Phase III**
Subd. 05b $500,000 TF

**Part 1 ($220,000)**
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**Part 2 ($280,000)**
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**Appropriation Language**
$250,000 the first year and $250,000 the second year are from the trust fund to continue to identify and delineate water supply areas and springsheds for springs serving as cold water sources for trout streams and to assess the impacts from development and water appropriations. Of this appropriation, $140,000 each year is to the Board of Regents of the University of Minnesota and $110,000 each year is to the commissioner of natural resources.

**Project Overview**

Native trout require clean, cold water that usually originates from springs. However the groundwater springs feeding the 173 designated trout streams in southeastern Minnesota are under increasing pressure from current and expected changes in land use and increased groundwater withdrawals for domestic, agricultural, and industrial use. This joint effort by the University of Minnesota and the Minnesota Department of Natural Resources is working to identify and map the springs and the areas that feed them in order to understand how these springsheds might be affected by development and increased water use and determine what can be done to protect and restore their water quality.

**Project due to be completed:** 6/30/2013

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**Mississippi River Water Quality Assessment**
Subd. 05c $557,000 TF

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**RESEARCH**

**Appropriation Language**
$278,000 the first year and $279,000 the second year are from the trust fund to the Board of Regents of the University of Minnesota to assess water quality in the Mississippi River using DNA sequencing approaches and chemical analyses. The assessments shall be incorporated into a Web-based educational tool for use in classrooms and public exhibits. This appropriation is available until June 30, 2014, by which time the project must be completed and final products delivered.

**Project Overview**
Minnesota contains the headwaters of the Mississippi River, one of the largest and most important waterways in the world. A vital force in all life processes, microorganisms play a major role in the river's water quality through the biological and chemical processing they provide and as indicators of how human activity is impacting water quality. However, relatively little is actually known about as much as 99% of the microorganisms present in the river. Improved understanding of these microorganisms and the effects they have on water quality will greatly enhance efforts by federal, state, and local agencies to maintain and improve the Mississippi River's water quality. Scientists at the University of Minnesota are using this appropriation to use DNA sequencing and chemical analysis technologies to capture for the first time a more complete picture of the diversity and function of microorganisms in the river and how they influence water quality. As part of this effort, hands-on student and teacher participation and public engagement through educational exhibits will help improve public understanding of the importance of the river and water quality.

**Project due to be completed:** 6/30/2014

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**Zumbro River Watershed Restoration Prioritization**
Subd. 05d $150,000 TF

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**Appropriation Language**
$75,000 the first year and $75,000 the second year are from the trust fund to the commissioner of natural resources for an agreement with the Zumbro Watershed Partnership, Inc. to identify sources of erosion and runoff in the Zumbro River Watershed in order to prioritize restoration and protection projects.

**Project Overview**
Within the Zumbro River Watershed of southeast Minnesota, studies suggest that small areas of the landscape contribute disproportionately to nonpoint source pollution. However, because a coordinated, watershed-wide approach to prioritizing and implementing conservation practices in the watershed does not currently exist, conservation practices are being implemented opportunistically and not necessarily where they might have the greatest impact. Through this appropriation the Zumbro Watershed Partnership is coordinating a planning and prioritization effort that will guide future implementation of restoration and protection practices in order to maximize water quality benefits and ensure the most effective use of resources.

**Project due to be completed:** 6/30/2013

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**Assessment of Minnesota River Antibiotic Concentrations**
Subd. 05e $190,000 TF

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**RESEARCH**

**Appropriation Language**
$95,000 the first year and $95,000 the second year are from the trust fund to the commissioner of

natural resources for an agreement with Saint Thomas University in cooperation with Gustavus Adolphus College and the University of Minnesota to measure antibiotic concentrations and antibiotic resistance levels at sites on the Minnesota River.

**Project Overview**
The occurrences of contaminants including antibiotics, other pharmaceuticals, and personal care products in the environment have gained increasing attention in recent years because of their potential health and ecological impacts. However, serious gaps remain in our understanding of these contaminants and the significance of the threats they may pose. Through this appropriation scientists at the University of St. Thomas, Gustavus Adolphus College, and the University of Minnesota are cooperating to focus specifically on the threats posed by antibiotics to understand which antibiotics are of the most concern - for example, because of their potential to increase antibiotic resistance - and to delineate their urban and rural sources. Findings will help develop strategies to manage threats and minimize future impacts posed by antibiotics to human and ecological health.

**Project due to be completed:** 6/30/2013

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**SUBD. 06 AQUATIC AND TERRESTRIAL INVASIVE SPECIES**

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**Improved Detection of Harmful Microbes in Ballast Water**
Subd. 06a $250,000 TF

**Randall Hicks**
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**RESEARCH**

**Appropriation Language**
$125,000 the first year and $125,000 the second year are from the trust fund to the Board of Regents of the University of Minnesota for the University of Minnesota Duluth to identify and analyze potentially harmful bacteria transported into Lake Superior through ship ballast water discharge. This appropriation is available until June 30, 2014, by which time the project must be completed and final products delivered.

**Project Overview**
Ballast water - water carried in tanks on ships to help provide stability and aid steering - is likely the single greatest source for introduction of non-native and invasive aquatic species. Ballast water is collected in one body of water and discharged into another body of water, usually large distances apart. The recent appearance of a deadly fish virus called Viral Hemorrhagic Septicemia (VHS) in the Great Lakes has raised awareness that some bacteria being transported in ballast water, just like certain plant and animal species, also have the potential to be harmful invasive species. Nevertheless, little is actually

currently known about what bacteria are being transported and what can be done to prevent their spread. Biologists at the University of Minnesota - Duluth are using this appropriation to identify and analyze bacteria being transported in ballast water in order to determine which are of greatest concern and to inform strategies for early detection and spread prevention.

**Project due to be completed:** 6/30/2014

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**Emerald Ash Borer Biocontrol Research and Implementation**
Subd. 06b $500,000 TF

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**RESEARCH**

**Appropriation Language**
$250,000 the first year and $250,000 the second year are from the trust fund to the commissioner of agriculture to assess a biocontrol method for suppressing emerald ash borers by testing bioagent winter survival potential, developing release and monitoring methods, and piloting implementation of emerald ash borer biocontrol. This appropriation is available until June 30, 2014, by which time the project must be completed and final products delivered.

**Project Overview**
The Emerald Ash Borer (EAB) is an invasive insect that has been decimating ash trees throughout the Great Lake states and is currently advancing into Minnesota where it threatens the nearly 1 billion ash trees that occur throughout the state - the second most in any state. Loss of these trees would devastate ecosystems throughout Minnesota and have major economic impacts for the forest products industry as well as through the costs associated with treatment, removal, and replacement of lost trees. Biological control - the use of a natural enemy of a species from its native habitat to help with control of that species - is currently the only promising long-term management strategy for EAB. The Minnesota Department of Agriculture is using this appropriation to pilot and assess the effectiveness of a biocontrol method for EAB in Minnesota that involves the use of three types of tiny, stingless wasps that are parasitoids of EAB.

**Project due to be completed:** 6/30/2014

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**Evaluation of Switchgrass as Biofuel Crop**
Subd. 06c $120,000 TF

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**RESEARCH**

**Appropriation Language**
$60,000 the first year and $60,000 the second year are from the trust fund to the Minnesota State Colleges and Universities System for Central Lakes College in cooperation with the University of Minnesota to determine the invasion risk of selectively bred native grasses for biofuel production and develop strategies to minimize the invasion potential and impacts on biodiversity. This appropriation is available until June 30, 2014, by which time the project must be completed and final products delivered.

**Project Overview**
Bioenergy, a form of renewable energy derived from biological sources such as wood or grasses, is becoming an important component of the energy production mix. Native switchgrass is a species that has shown potential as a biofuel crop and efforts have been underway to selectively breed and hybridize it for maximize yield. However, these selectively bred switchgrass varieties also show some potential to be invasive and crowd out native biodiversity, resulting in significant ecological and economic impacts. Scientists at Central Lakes College and the University of Minnesota are using this appropriation to evaluate the invasion risk of selectively bred switchgrass varieties and develop strategies to minimize the invasion potential and impacts on biodiversity. Findings will help support long-term biofuel sustainability.

**Project due to be completed:** 6/30/2014

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**SUBD. 07 RENEWABLE ENERGY**

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**Supporting Community-Driven Sustainable Bioenergy Projects**
Subd. 07 $150,000 TF

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**Appropriation Language**
$75,000 the first year and $75,000 the second year are from the trust fund to the commissioner of natural resources for an agreement with Dovetail Partners, Inc. in cooperation with the University of

Minnesota to assess feasibility, impacts, and management needs of community-scale forest bioenergy systems through pilot studies in Ely and Cook County and to disseminate findings to inform related efforts in other communities.

**Project Overview**
Small scale community bioenergy systems hold significant promise for increasing energy security, reducing carbon emissions, and contributing to local economies. These types of systems rely on materials such as wood and grasses sourced from the surrounding area as fuel sources for local energy production. However, many questions still remain about how to effectively and sustainably implement these types of community bioenergy systems. Dovetail Partners is piloting an effort with the City of Ely and Cook County to develop the information and tools necessary for communities to assess the viability of these types of energy systems based on the resources available within their own regions.

**Project due to be completed:** 6/30/2013

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**SUBD. 08 ENVIRONMETNAL EDUCATION**

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**Youth-Led Renewable Energy and Energy Conservation in West and Southwest Minnesota**
Subd. 08a $246,000 TF

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**Appropriation Language**
$123,000 the first year and $123,000 the second year are from the trust fund to the commissioner of natural resources for an agreement with Prairie Woods Environmental Learning Center to initiate youth-led renewable energy and conservation projects in over 30 communities in west central and southwest Minnesota.

**Project Overview**
Adoption of renewable energy technologies and energy conservation practices can contribute in a variety of ways to the environmental and economic health of rural Minnesota communities through costs savings and emissions reductions. Engaging and coaching students as the leaders in the process of implementing such practices provides the added benefit of increasing knowledge, teaching about potential career paths, and developing leadership experience. Using this appropriation the Prairie Woods Environmental Learning Center and its partners are expanding an existing program called the Youth Energy Summit (YES!) to implement additional youth-led renewable energy and energy conservation projects in over 30 communities in west central and southwestern Minnesota. These projects will be driven by collaboration between students, community members, and local businesses and organizations.

**Project due to be completed:** 6/30/2013

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**Minnesota Junior Master Naturalist Program**
Subd. 08b $365,000 TF

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**Appropriation Language**
$365,000 the first year is from the trust fund to the Board of Regents of the University of Minnesota to expand the junior naturalist after-school programs. This appropriation is available until June 30, 2014, by which time the project must be completed and final products delivered.

**Project Overview**
Children are spending increasingly less time outdoors and are often failing to develop an appreciation and connection with nature. This has implications for children's health as well as their knowledge about science, the environment, and the world. In the long term this also impacts the broad public awareness and understanding necessary to ensure long-term protection and stewardship of our environment and natural resources. In order to help reverse this trend the University of Minnesota and the Minnesota Department of Natural Resources are partnering to expand and further develop an after-school program that provides outdoor, science-based educational opportunities for fourth and fifth grade students, particularly in underserved areas, to learn about the ecology and natural history of their schoolyards, neighborhoods, nearby natural areas, and the state.

**Project due to be completed:** 6/30/2013

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**Experiential Environmental Education for Urban Youth**
Subd. 08c $200,000 TF

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**Appropriation Language**

$200,000 the first year is from the trust fund to the commissioner of natural resources for an agreement with Hennepin County in cooperation with community partners to initiate new environmental education programs targeting inner-city youth that provide hands-on, experiential outdoor learning opportunities. This appropriation is available until June 30, 2014, by which time the project must be completed and final products delivered.

**Project Overview**
Many inner-city youth receive little, if any, exposure to outdoor and environmental education. This lack of exposure has implications for children's health as well as their knowledge about science, the environment, and the world. In the long term this also impacts the broad public awareness and understanding necessary to ensure long-term protection and stewardship of our environment and natural resources. Hennepin County is using this appropriation to develop a new program called UrbanWatch that will aim to provide hands-on, experiential outdoor learning experiences to inner-city students in North Minneapolis in order to increase their knowledge and skills relating to ecology, agriculture, water resources, and biological diversity.

**Project due to be completed:** 6/30/2013

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**SUBD. 09 EMERGING ISSUES**

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**Minnesota Conservation Apprentice Academy**
Subd. 09a $200,000 TF

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**Appropriation Language**
$100,000 the first year and $100,000 the second year are from the trust fund to the Board of Water and Soil Resources in cooperation with Conservation Corps Minnesota to train and mentor future conservation professionals by providing apprenticeship service opportunities to soil and water conservation districts. This appropriation is available until June 30, 2014, by which time the project must be completed and the final products delivered.

**Project Overview**
Many of the most experienced conservation practitioners at local soil and water conservation districts throughout the state are nearing retirement, and with their departure will go much of their practical, on-the-ground knowledge, experience, and skills. Meanwhile, college students seeking to be the next generation of conservation practitioners have knowledge of emerging technologies and other innovations that can improve and contribute to current conservation efforts. Through this appropriation the Minnesota Board of Soil and Water Resources will work with the Minnesota Conservation Corps to

continue an effort that places students in apprenticeship positions with county soil and water conservation district offices throughout the state. This unique program provides an opportunity for interns to gain valuable in-the-field experience from current practitioners while sharing their knowledge with those practitioners about the newest ideas and solutions for meeting today's natural resource challenges.

**Project due to be completed:** 6/30/2014

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**Chronic Wasting Disease and Animal Health**
Subd. 09b $1,200,000 TF

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**Appropriation Language**
$600,000 the first year and $600,000 the second year are from the trust fund to the commissioner of natural resources to address chronic wasting disease and accelerate wildlife health programs, including activities directly related to and necessary for this appropriation.

**Project Overview**
Chronic Wasting Disease (CWD) is a disease found in North American deer, moose, and elk that affects the animal's brain and nervous system and is ultimately fatal to the animals that contract it. A deer harvested in southeastern Minnesota during the 2010 hunting season was found to have the disease - the first time CWD has been found in a wild deer in Minnesota. Subsequent surveillance and testing has found no other such cases of CWD. However, the single finding has prompted accelerated efforts to contain and manage its potential spread due to the serious management problems and other implications posed by CWD were it to become widespread in the state. The Minnesota Department of Natural Resources is using this appropriation to accelerate its CWD management and response plans and efforts.

**Project due to be completed:** 6/30/2013

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**Aquatic Invasive Species**
Subd. 09c $5,690,000 TF

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**Appropriation Language**
$2,177,000 the first year and $3,513,000 the second year are from the trust fund to the commissioner of natural resources to accelerate aquatic invasive species programs, including the development and implementation of best management practices for public water access facilities to implement aquatic invasive species prevention strategies, including activities directly related to and necessary for this appropriation. $50,000 is for a grant to develop and produce a documentary identifying the challenges presented by aquatic invasive species. The documentary shall be available to the Department of Natural Resources to distribute to watercraft license purchasers and the general public through online and other media.

**Project Overview**
Invasive species are species that are not native to Minnesota and cause economic or environmental harm or harm to human health. Minnesota's waters are threatened by a number of aquatic invasive species including zebra mussels, Eurasian watermilfoil, common carp, and an emerging threat of Asian carp. This appropriation is allowing the Minnesota Department of Natural Resources to accelerate a variety of efforts throughout the state aimed at managing and helping to prevent the spread of aquatic invasive species.

**Project due to be completed:** 6/30/2013

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**Reinvest in Minnesota Wetlands Reserve Acquisition and Restoration Program Partnership**
Subd. 09d $1,645,000 TF

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**Appropriation Language**
$1,645,000 the first year is to the Board of Water and Soil Resources to acquire permanent conservation easements and restore wetlands and associated upland habitat in cooperation with the United States Department of Agriculture Wetlands Reserve Program. A list of proposed land acquisitions must be provided as part of the required work program.

**Project Overview**
The Reinvest in Minnesota (RIM) Wetlands Reserve Program restores wetlands and grasslands through the purchase of permanent conservation easements on privately owned land. The easements limit future land use and put conservation plans in place for future management. The Minnesota Board of Soil

and Water Resources is using this appropriation to accelerate the RIM Wetlands Reserve Program resulting in additional permanently protected wetlands and grasslands throughout the state.

**Project due to be completed:** 6/30/2013

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**Subd. 10 Administration and Contract Management**

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**Legislative-Citizen Commission on Minnesota Resources (LCCMR)**
Subd. 10a $946,000 TF

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**Appropriation Language**
$473,000 the first year and $473,000 the second year are from the trust fund to the LCCMR for administration as provided in Minnesota Statutes, section 116P.09, subdivision 5.

**Project Overview**
Per M.S. 116P.09, up to 4% of the amount available for appropriation from the Environment and Natural Resources Trust Fund (ENRTF) for a biennium is available for expenses related to LCCMR administration. These expenses include the LCCMR's project selection and approval process and its ongoing oversight of projects funded by the ENRTF, including both new projects funded during the biennium and existing projects funded in previous bienniums. Historically, LCCMR has always used less than 3% of available funds for administration. This appropriation, which represents 1.86% of the amount available for the biennium, funds LCCMR administration expenses for FY 2012-13.

**Project due to be completed:** 6/30/2013

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**Contract Administration**
Subd. 10b $175,000 TF

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**Appropriation Language**
$88,000 the first year and $87,000 the second year are from the trust fund to the commissioner of natural resources for expenses incurred for contract fiscal services for the agreements specified in this section. The commissioner shall provide documentation to the Legislative-Citizen Commission on Minnesota Resources on the expenditure of these funds. This appropriation is available until June 30, 2014.

**Project Overview**
Appropriations to non-state entities must be made through a formal contract with a state entity that manages all of the funds for the project on a reimbursement basis. This appropriation to Minnesota's Department of Natural Resources (DNR) funds the expenses incurred by the DNR in contracting, contract management, and expense re-imbursement for most of the Environment and Natural Resources Trust Fund appropriations made to non-state entities, including both new projects funded during the biennium and existing projects funded in previous bienniums.

**Project due to be completed:** 6/30/2014

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**LCC Web Site**
Subd. 10c $3,000 TF

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**Appropriation Language**
$3,000 in the first year is appropriated to the Legislative Coordinating Commission for the Web site required in Minnesota Statutes, section 3.303, subdivision 10.

**Project Overview**
A website called "Minnesota's Legacy" was created by the Minnesota Legislature to help citizens monitor how dollars from the Legacy Amendment and the Environment and Natural Resources Trust Fund are being invested in the state. This appropriation is being used by the Legislative Coordinating Commission to assist with the administration of the website.

**Project due to be completed:** 6/30/2013

# III. Completed Research Projects

*"a summary of any research project completed in the preceding biennium;"*

This section includes summaries of all projects completed, including research projects.

- The following documents are summaries of accomplishments for each appropriation year and short abstracts for all projects completed since the previous biennial report of January 15, 2011.
- The abstracts describe the general accomplishments of each project for completed projects.
  See http://www.lccmr.leg.mn
- Research projects have been marked as such in the description.
- Full final reports are available at the LCCMR, Room 65 - State Office Building. The abstracts are current as of 12/31/2012.
- Legal Citations
  - M.L. 2010, Chapter 362, Section 2
  - M.L. 2009, Chapter 143, Section 2
  - M.L. 2008, Chapter 367, Section 2
  - M.L. 2007, Chapter 20, Section 2
  - M.L. 2006, Chapter 243, Sec. 20
  - M.L. 2005, First Special Session, Article 1, Section 9

# M.L. 2010 Projects Completed 2011-2012

# MN Laws 2010, Chapter 362, Section 2

**M.L. 2010 Projects Completed 2011-2012**

**M.L. 2010 Projects**
**MN Laws 2010, Chapter 362, Section 2 (beginning July 1, 2010)**

NOTE: Below are short abstracts for projects funded during the 2010 Legislative Session and ending during 2011-2012. The final date of completion for these projects is listed at the end of the abstract. Final Reports for all completed projects are available at http://www.lccmr.leg.mn/projects/2010-index.html or by contacting the LCCMR office.

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**Subd. 03 Natural Resource Data and Information**
03c Minnesota Breeding Bird Atlas
03d Integrated, Operational Bird Conservation Plan for Minnesota
03h Strategic Planning for Minnesota's Natural and Artificial Watersheds
03j Farmland Conservation in Minnesota

**Subd. 04 Land, Habitat, and Recreation**
04f Minnesota's Habitat Conservation Partnership Supplemental
04g Metropolitan Conservation Corridors Supplemental

**Subd. 05 Water Resources**
05f Evaluation of Dioxins in Minnesota Lakes - RESEARCH
05g Assessment of Shallow Lake Management - RESEARCH

**Subd. 07 Renewable Energy**
07d Demonstrating Sustainable Energy Practices at Residential Environmental Learning Centers (RELCs)

**Subd. 08 Environmental Education**
08c Connecting Youth with Nature
08h Project Get Outdoors
08k Online Field Trip of Minnesota River

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**SUBD. 03 NATURAL RESOURCE DATA AND INFORMATION**

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**Minnesota Breeding Bird Atlas**
Subd. 03c $372,000

**PART 1 ($211,000)**
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**PART 2 ($161,000)**

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**Appropriation Language**
$372,000 is from the trust fund to continue development of a statewide survey of Minnesota breeding bird distribution and create related publications, including a book and online atlas with distribution maps and breeding status. Of this appropriation, $211,000 is to the commissioner of natural resources for an agreement with Audubon Minnesota and $161,000 is to the Board of Regents of the University of Minnesota for the Natural Resources Research Institute. The atlas must be available for downloading on the Internet free of charge.

**PART 1: AUDUBON MINNESOTA**

**Overall Project Outcome and Results**
The Minnesota Breeding Bird Atlas is a statewide survey of the breeding distribution of Minnesota's birds. The project combines efforts, coordinated by Audubon Minnesota, of volunteers and multiple partners to obtain detailed information on breeding status of Minnesota's birds, with systematic and habitat based abundance data, coordinated by the Natural Resources Research Institute at the University of Minnesota-Duluth. The combination of these two efforts represents a powerful addition to understanding the distribution, relative abundance, and habitat use by Minnesota's breeding birds.

Over 800 volunteers have participated in the project and have reported over 22,000 hours of donated time. Twenty-nine individuals act as regional coordinators helping to recruit, train, and monitor volunteers. Our database has 207,000 observations on 245 species and confirmed breeding by 226 species around the state. Data has been reported from 5,596 blocks, including 2,166 priority blocks (there is one priority block per township) which gives us data from 92% of the state.

Final products will include a book and on-line atlas, including distribution maps, species breeding status, and conservation and historical information. Products will be available to the public as well as conservation agencies and organizations. Information gathered during this project is at the sub-township level and will provide spatial detail more compatible with contemporary remote sensing imagery available for vegetation, water, and development. Data will be useful to a wide variety of organizations including federal agencies, many state agencies such as the MN DNR and MPCA, county land management agencies, and both regional and local organizations to highlight tourism opportunities. Data will also be of great utility for use in agency decision-making regarding the dedicated funding legislation associated with land acquisition and water quality protection. These types of spatially-intensive data sets are essential to make wiser decisions about land use allocations for energy development, transportation networks, and other residential or industrial development.

**Project Results Use and Dissemination**
The primary form of information dissemination to date has been through the Minnesota Breeding Bird Atlas website (mnbba.org). Because our data collection is not complete, and we have not subjected all of the data to quality control we have not made efforts to disseminate the information to a wider audience at this time but plan to do so in future efforts.

**Project completed:** 6/30/2012

**PART 2: NRRI**

**Overall Project Outcome and Results**
This project is the third and fourth years of a four-year effort in the development of the Minnesota Breeding Bird Atlas - the first comprehensive assessment of Minnesota's breeding birds. The overall project is divided into two parts: 1) volunteer observations organized by Audubon Minnesota and 2) systematic surveys of Minnesota's breeding birds organized by the University of Minnesota (summarized here). Objectives were to gain uniform statewide coverage for all Minnesota's birds, estimate breeding bird populations by habitat type, and contribute to a nationwide network of bird atlases. Data gathering was primarily completed by graduate and undergraduate students at the University of Minnesota. All passed an aural bird identification test, verified their hearing ability, and participated in field standardization exercises.

Over the two breeding seasons (2011 and 2012) of this project, the target of 40% of Minnesota townships (>920) was successfully completed. Currently, over 80% (>1,800) of the townships have been sampled, with over 230 species observed and over 160,000 individuals counted in over 2,800 individual point counts. Thousands of additional breeding observations were submitted by surveyors from this project to the volunteer database in the complementary study organized by Audubon Minnesota, including over 4,000 probable or confirmed breeding records for Minnesota birds. Over 70% of the data gathered during 2009-2012 have been entered, checked for errors, and briefly summarized.

**Project Results Use and Dissemination**
The data gathered through 2010 have been downloaded to the Minnesota breeding bird atlas database and during the fall of 2011 through the Cornell University interface. All of these data will be incorporated into a comprehensive atlas of Minnesota's breeding birds that will be used as 1) a first-ever baseline on the current population status of this important Minnesota resource, 2) critical information for future conservation planning, and 3) as a guide for such activities as identifying important bird areas or for nature-based tourism activities. The ultimate dissemination of these data will be through an interactive data system and we anticipate the publication of a hard copy book assuming suitable funding can be obtained.

**Project completed:** 6/30/2012

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**Integrated, Operational Bird Conservation Plan for Minnesota**
Subd. 03d $151,000

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**Appropriation Language**
$151,000 is from the trust fund to the commissioner of natural resources for an agreement with Audubon Minnesota to develop an integrated bird conservation plan targeting priority species and providing a framework for implementing coordinated, focused, and effective bird conservation throughout Minnesota.

**Overall Project Outcome and Results**
Many national, regional, and state conservation plans broadly address Minnesota birds, but a consolidated and focused state conservation agenda does not exist. The goal of this initiative was to develop a clear operational plan for Minnesota conservation organizations and resource agencies that builds on existing plans, establishes priorities to guide conservation actions, and identifies conservation targets. Plans were prepared for Minnesota's four ecological provinces: the Tallgrass Aspen Parklands, the Laurentian Mixed-Forest, the Eastern Broadleaf Forest and the Prairie Parkland. The bird composition of each province is sufficiently distinct to warrant a different approach and different priorities. Three tasks were implemented in each province:

- First Task: Delineated a pool of priority species and selected a subset of conservation target species.
- Second Task: Decided where, among the suite of Minnesota's 48 Important Bird Areas (IBAs), it is most important to work to protect and manage these species.
- Third Task: Developed a toolbox of conservation actions to insure these species maintain viable populations on the priority IBAs, as well as throughout Minnesota.

Titled An Implementation Blueprint for Minnesota Bird Conservation, the operational plan's components include:

1. Implementation Blueprints for Bird Conservation in each ecological province, which identify clear priorities to guide conservation actions;
2. conservation accounts for 78 priority species;
3. detailed Conservation Blueprints for nine target species;
4. a database compiling critical information on 434 Minnesota birds;
5. a publication that highlights twelve of Minnesota's stewardship species (species that have >5% of their global population in the state and >5% of their North American breeding range in the state); and
6. management plans for three of Minnesota's priority Important Bird Areas (Goose Lake Swamp IBA, the Twin Cities Mississippi River IBA, and the Vermillion Bottoms-Cannon River IBA).

**Project Results Use and Dissemination**

- The Conservation Blueprints were used in the development of Audubon's recently completed Guide to Urban Bird Conservation (Spring 2012): http://mn.audubon.org/twin-cities-bird-conservation.
- A booklet, Stewardship Birds of Minnesota: Our Global Responsibility was published in June 2012.
- Findings were presented at nine workshops and eleven additional statewide and regional meetings.

- The Common Tern Minnesota Conservation Blueprint was used at a Structured Decision Making meeting to inform future Common Tern management at the Rice Lake National Wildlife refuge.
- Audubon is exploring ways to make all project data available to resource managers in a GIS format; in the interim Conservation Blueprints for the nine conservation targets and Implementation Blueprints for each ecological province will be available on the Audubon Minnesota website.
- Information is helping update Minnesota's Comprehensive Wildlife Conservation Strategy.

**Project Publication:**
Stewardship Birds of Minnesota: Our Global Responsibility (PDF - 6.6 MB)

**Project completed:** 06/30/2012

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**Strategic Planning for Minnesota's Natural and Artificial Watersheds**
Subd. 03h $327,000

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**Appropriation Language**
$327,000 is from the trust fund to the Board of Regents of the University of Minnesota to identify the interrelationship between artificial systems of drain tiles and ditches and natural watersheds to guide placement of buffers and stream bed restoration and modification.

**Overall Project Outcome and Results**
Artificial watersheds have significant areas that are drained using ditches and/or buried perforated pipes, leading to hydrologic characteristics that differ from natural watersheds. Water and pollutants from artificial watersheds often disturb the hydrologic regime and impair water quality in natural watersheds. This project aims to protect Minnesota's natural watersheds by disconnecting them from the artificial watersheds.

High resolution digital elevation models (DEMs) from LiDAR and corresponding digital orthoquad photos were obtained in Beauford Creek, Seven Mile Creek and Elm Creek Watersheds. These data were used along with GIS databases for land use, soils, and hydrologic networks to predict the locations of renewable wetlands. In the Beauford watershed (5,500 ac), logistic regression was able to accurately identify 69% of the potentially restorable wetland locations. Most of the error was due to very small wetlands that are difficult to identify using GIS techniques alone. In the Seven Mile Creek watershed (23,500 ac), logistic regression was able to accurately identify 70% of the potentially restorable wetland locations. In Elm Creek (186,600 ac), 94% of the potentially restorable wetlands were identified. These results show that it is possible to quickly and accurately identify a large proportion of larger restorable wetlands over large areas in Minnesota using straightforward terrain analysis techniques, soil databases

and logistic regression.

The optimum locations for restoring wetlands were determined based on factors that included the location and extent of subsurface tile drains, the contributing area to the wetland, the distance between the potential wetland and nearby streams, ditches or county tile mains, the amount of discharge from subsurface tile drains to wetlands, and the ratio of drainage flow to wetland storage capacity. Using these criteria, 44 optimal sites for wetland restoration were identified in Beauford Creek watershed, while 75 sites were identified in Seven Mile Creek watershed. Placing wetlands at these locations is optimal in terms of intercepting, treating and reducing the effects of subsurface tile discharge to nearby drainage ditches.

More efficient approaches for processing LiDAR DEMs were developed using a supercomputer. The new methods run much faster than conventional methods for processing LiDAR DEMs on a personal computer. Terrain attributes for DEMs (e.g. slope, flow accumulation, stream power index, compound topographic wetness, etc) were calculated for all 42 Minnesota counties that have LiDAR data. We are exploring the possibility of using the Minnesota Geospatial Information Office web site to disseminate these LiDAR based terrain attributes.

**Project completed:** 06/30/2012

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**Farmland Conservation in Minnesota**
Subd. 03j $100,000

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**Appropriation Language**
$100,000 is from the trust fund to the commissioner of natural resources for an agreement with the Farmers Legal Action Group, Inc. to assess the implementation of applicable laws for preserving agricultural land and develop a comprehensive and systematic approach and policy tools to preserve agricultural lands.

**Overall Project Outcome and Results**
The report that resulted from this project - "Preserving Minnesota's Agricultural Land: Proposed Policy Solutions" - recommends a new statewide approach to preserving our state's diminishing agricultural lands to ensure that our state's best farmland is preserved. The state's prime farmland - that most well suited for farming - has been developed at a steady rate, with significant negative consequences for the security and stability of our natural resources and food supply.

The report notes that existing state farmland preservation programs can be invaluable tools for the

immediate and short-term preservation of farmland, but they have not successfully preserved farmland for the long-term because they suffer from poor incentives and limited promotion. State land use planning requirements could facilitate farmland preservation, but Minnesota's fail to because they do not require local governments to address farmland preservation in their comprehensive plans or zoning ordinances.

Among the report's recommendations are:

- Adopt state farmland preservation goals and a statutory requirement for comprehensive plans and zoning ordinances to include farmland preservation plans.
- Develop a statewide Purchase of Agricultural Conservation Easement (PACE) program to be offered in counties with farmland preservation plans. Include soil and water conservation and stewardship plans in the easements. Consider building upon Dakota County's PACE program, which explicitly joins farmland protection with water quality protection.
- Streamline the Metro and Greater Minnesota Programs into one comprehensive state program administered by the Minnesota Department of Agriculture. Make the program available in all counties with farmland preservation plans.
    - Tiered incentives should be used to promote conservation and long-term protection.
    - Add a permanent and a 30-year agricultural preserve option.
    - Require preservation of similar quantity and quality of farmland to acquired farmland when enrolled land is acquired though eminent domain or annexation.
- Make all working farms, including small-acreage farms, eligible for Green Acres program benefits. Farms most affected by existing size restrictions are Community Supported Agriculture farming operations, beginning and immigrant farmers, small-scale diversified farms, direct marketers, and farms that raise grass fed livestock or that allow animals to forage. Current restrictions result in excluding farms using production methods that are better for the environment and thwarts economic development by denying benefits to burgeoning small-scale farming operations.
- Develop policies and allocate resources to help to facilitate the transfer of land from one generation of farmers to the next and allow for affordable access to good quality farmland. Consider adopting a tax credit for those who lease land to beginning farmers; conservation measures could be made a required component of such leases.

**Project Results Use and Dissemination**
The report has been distributed to a regional media list; federal, state, and local public officials and staff; farm organizations; and influential farmers and other citizens. The report's contents (and a link to the report online) has also been distributed to almost 3,000 contacts. Plans are underway for any follow up strategies farm organizations may pursue in the legislative sessions ahead.

**Project Publication:**
Preserving Minnesota's Agricultural Land: Proposed Policy Solutions (PDF - 8.3 MB)

**Project completed:** 06/30/2012

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**SUBD. 04 LAND, HABITAT, AND RECREATION**

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**Minnesota's Habitat Conservation Partnership Supplemental**
Subd. 04f $1,344,000

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**Appropriation Language**
$1,344,000 is added to Laws 2009, chapter 143, section 2, subdivision 4, paragraph (e), from the trust fund for the acceleration of agency programs and cooperative agreements. Of this appropriation, $308,000 is to the commissioner of natural resources for agency programs and $1,036,000 is for agreements as follows: $425,000 with Ducks Unlimited, Inc.; $50,000 with National Wild Turkey Federation; $164,000 with the Nature Conservancy; $102,000 with Minnesota Land Trust; $200,000 with the Trust for Public Land; $45,000 with Friends of Detroit Lakes Wetland Management District; and $50,000 to the Leech Lake Band of Ojibwe to plan, restore, and acquire fragmented landscape corridors that connect areas of quality habitat to sustain fish, wildlife, and plants. The United States Department of Agriculture Natural Resources Conservation Service is an authorized cooperating partner in the appropriation. Expenditures are limited to the project corridor areas as defined in the work program. Land acquired with this appropriation must be sufficiently improved to meet at least minimum habitat and facility management standards as determined by the commissioner of natural resources. This appropriation may not be used for the purchase of residential structures, unless expressly approved in the work program. All conservation easements must be perpetual and have a natural resource management plan. Any land acquired in fee title by the commissioner of natural resources with money from this appropriation must be designated as an outdoor recreation unit under Minnesota Statutes, section 86A.07. The commissioner may similarly designate any lands acquired in less than fee title. A list of proposed restorations and fee title and easement acquisitions must be provided as part of the required work program. All funding for conservation easements must include a long-term stewardship plan and funding for monitoring and enforcing the agreement.

**Project Overview**
With continued land use changes in Minnesota, areas that once served as important areas for fish, wildlife, and plant habitat have become fragmented and disconnected resulting in adverse impacts on these ecological communities. Strategic and coordinated efforts in protection, restoration, and enhancement of lands throughout Minnesota can create land and water corridors that reconnect remaining habitat areas and reverse some of the adverse impacts. This appropriation represents a supplement to the sixth phase of an ongoing effort by a partnership of state, federal, and non-profit organizations to do such strategic and coordinated land protection, restoration, and enhancement. Earlier phases of this project have resulted in the protection, restoration, or enhancement of more than 100,000 acres throughout the state. Many of these projects matched Trust Fund money with non-state funds, stretching these dollars to provide a greater benefit to the state. This supplemental funding to Phase VI of this effort involves nine partners and is expected to result in the permanent protection of

nearly 200 additional acres and restoration or enhancement of approximately 1,900 additional acres. Projects from the individual partners are listed below.

**Project completed:** 6/30/2012

**ABSTRACTS AND FINAL REPORTS OF INDIVIDUAL PARTNER PROJECTS** (Click project # to go to listing for that project)

2d - HCP VI Supplemental - Shallow Lake Assessment and Management - MN DNR ($45,000)
2f - HCP VI Supplemental - Shallow Lake Habitat Enhancement and Wild Rice Enhancement and Monitoring - Leech Lake Band of Ojibwe ($50,000)
2h - HCP VI Supplemental - Fisheries Habitat Restoration - MN DNR ($100,000)
2k - HCP VI Supplemental - Prairie Management - MN DNR ($63,000)
2n - HCP VI Supplemental - Campaign for Conservation - Restoration - The Nature Conservancy ($164,000)
2o - HCP VI Supplemental - Working Lands Partnership - Friends of the Detroit Lakes Wetland Management District ($45,000)
2p - HCP VI Supplemental - Bluffland Restoration - National Wild Turkey Federation ($50,000)
3a - HCP VI Supplemental - Shoreland Protection Program - Minnesota Land Trust ($102,000)
3c - HCP VI Supplemental - Shallow Lake Easements - Ducks Unlimited, Inc. ($75,000)
3d - HCP VI Supplemental - Wetland Reserve Program - Ducks Unlimited, Inc. and USDA Natural Resource Conservation Services ($350,000)
4b - HCP VI Supplemental - Fisheries Land Acquisition - MN DNR ($100,000)
4c - HCP VI Supplemental - Critical Lands Protection Program - Trust for Public Land ($200,000)

**2d FINAL REPORT - HCP VI Supplemental - Shallow Lake Assessment - MN DNR ($45,000)**

***Overall Project Outcome and Results***

The Minnesota Department of Natural Resources (DNR) is working with Ducks Unlimited (DU) and other partners in a focused, strategic approach to assess, improve and protect the aquatic ecology and water quality of shallow lakes for waterfowl and other wildlife. Shallow lakes are a critical component of the wetland habitat complexes once common to Minnesota landscapes. These lakes provide the migration, brood rearing, and hibernacula critical for shorebirds, waterfowl, water birds, turtles and amphibians. Through this grant, and the existing shallow lake program, DNR will provide the predesign habitat assessment and monitoring of shallow lake structural enhancements accomplished by DU through bioengineering. There were 15 shallow lake assessments planned to be completed with this grant. There were actually 11 shallow lake habitat assessments completed with a combination of DNR and ENRTF funding. All of the assessments were completed within the Habitat Conservation Partnership Project Area 3. The information collected will be used to inform lake management strategies including DU lake structure enhancements and DNR accelerated management activities. Assessments included data collection on water depths, aquatic vegetation, water clarity, and water chemistry. Lakes were selected from a priority list developed by the MN DNR shallow lakes program. The reason for the shortfall was related to the conversion of the state accounting system to SWIFT and the consequent difficulty in locating and coding to the proper account.

***Project Results Use and Dissemination***

Accomplishment Reports and press releases will be made available at http://www.mnhabitatcorridors.org.

**Project completed:** 6/30/2012

**2f FINAL REPORT - HCP VI Supplemental - Shallow Lake Habitat Enhancement and Wild Rice Enhancement and Monitoring - Leech Lake Band of Ojibwe ($50,000)**

***Overall Project Outcome and Results***

The goal of this project was to improve habitat for waterfowl and other species that utilize wetlands on the Leech Lake Reservation in addition to analyzing a long term wild rice data set to determine if waterfowl numbers are influenced by rice abundance. A number of techniques were utilized to accomplish this work.

Waterfowl habitat enhancements, over the period of this grant, were conducted on seven impoundments that are located throughout the reservation and covered approximately 300 acres. On these impoundments water levels were managed and dike and control structures were repaired and maintained. Beaver plugging is also an issue on many of these impoundment so dam material was removed as needed, Clemson Levelers were installed, and in some cases beaver removal was utilized to control the problem. Water draw downs were also accomplished on two impoundments to restore aquatic vegetation.

A second aspect of this project was to enhance waterfowl food supply by planting wild rice. Wild rice has been degraded in some locations due to inappropriate water levels, damage from wind storms, and human activities. Two hundred acres of water was reseeded with rice during the course of this grant period.

The third aspect of this project was to scan, and rectify the first seventeen years of aerial wild rice bed images that have been taken of major rice beds on the Reservation. A subset of this data was then analyzed and compared to waterfowl abundance data provided by the MN DNR to see if a positive correlation between rice abundance and waterfowl numbers could be identified. The work thus far completed has not been able to detect a significant relationship between rice abundance and waterfowl numbers, but we will continue this work on a larger data set looking at more parameters to see if one exists. The largest benefit from this work has been the development of the methodology to analyze rice distribution and abundance from aerial photographs that will be helpful for us and other resource personnel to manage wild rice into the future.

***Project Results Use and Dissemination***

The methodology and techniques used to quantify wild rice beds from aerial photographs will be available to other resource managers if they would like to use them to evaluate their rice beds.

**Project completed:** 6/30/2012

**2h FINAL REPORT - HCP VI Supplemental - Fisheries Habitat Restoration - MN DNR ($100,000)**

***Overall Project Outcome and Results***

Citizens of the state of Minnesota benefit from this project by having a better fish community structure in Hartley and Long Lake that is sustainable by natural reproduction. This then creates better fishing and recreation available in high priority waterbodies. The project was completed on June 30, 2011. The project consisted of seven step-pools that started at the dam and went down stream approximately 230 ft. In addition four stop-log bays on the dam were modified to allow fish passage. The public have reported seeing fish using the pools to move into Hartley Lake and Long Lake. In July 2011, heavy rains created high waters and resulted in some of the organic fill being washed out. The lake association is going to work with staff to repair the damage. Long term maintenance of this project is going to be

shared with the local lake association.

***Project Results Use and Dissemination***
Information on HCP project results have been shared and disseminated through all partner organizations. The Environment and Natural Resources Trust Fund provides information to the general public on how the lottery funds are spent for natural resource activities.

**Project completed:** 6/30/2012

**2k FINAL REPORT - HCP VI Supplemental - Prairie Management - MN DNR ($63,000)**
***Overall Project Outcome and Results***
A total of 127 acres of invasive species were controlled during the project (69 acres of woody removal, 58 acres of herbaceous invasive species treatments). Invasive tree species controlled includes Buckthorn, Siberian elm, Red cedar and Boxelder. Herbaceous invasive species treated include Spotted Knapweed, Leafy Spurge, and Crown-vetch. Projects were implemented by both private contractors and DNR crews. A total of 197 acres were burned on 2 SNA's and 2 Native Prairie Banks during the reporting period. All burns were completed by DNR crews as it remains difficult to hire qualified prescribed fire contractors. A total of 15 acres were reconstructed on the Langhei SNA and Mickelson Native Prairie Bank. All seeds were collected on the projects sites, and every attempt was made to collect a diversity of seeds. Both reconstructions are adjacent to native prairie; one reconstruction was a former row-crop field, and the other a site previously disturbed by installation of underground utilities. Data collection occurred on 4 different management projects. The data was loaded into the SNA Program's Adaptive Management Spatial Database (AMSD) for analysis and permanent documentation. Projects monitored included invasive species treatments and prescribed burning. As additional SNA management actions are implemented, and the data sets grow larger, AMSD will prove to be a valuable tool for continuous improvement of management methods.

***Project Results Use and Dissemination***
Accomplishment Reports and press releases will be made available at http://www.mnhabitatcorridors.org.

**Project completed:** 6/30/2012

**2n FINAL REPORT - HCP VI Supplemental - Campaign for Conservation - Restoration/Acquisition - The Nature Conservancy ($164,000)**

***Overall Project Outcome and Results***
The Nature Conservancy's (TNC) 2010 ENRTF appropriation focused on habitat restoration/enhancement in critical corridors and landscapes identified by TNC and the Habitat Conservation Partnership. This program allowed us to significantly accelerate our work to maintain and enhance Minnesota's prairies, savannas, and wetlands using prescribed fire and surveying/treating invasive species. Other efforts focused on restoring sand prairies and long-lived conifers in landscapes where these are threatened. Our goal in this phase was to restore 2,415 acres. We were able to complete work on 3,178 acres, including:

1. 2,529 acres of prescribed fire was planned/implemented at 15 sites in the Northern Tallgrass Prairie and prairie-forest transition areas of Minnesota.
2. 533 acres of invasive species were treated at 15 sites in the same areas.

3. 75 acres of white pine and other long-lived conifers were replanted in forests along the North Shore.
4. 41 acres of sand prairie were restored in Southeast Minnesota.

Not included in these totals, but still valuable, were preparations for future prescribed burns on 240 acres and surveys for invasive species on over 7,000 further acres. Both will contribute to future conservation results. In addition, this support from the Environment and Natural Resource Trust Fund allowed TNC to bring an additional $54,284 in private and non-state public dollars for conservation work in these critical places.

**Project completed:** 6/30/2012

**2o FINAL REPORT - HCP VI Supplemental - Working Lands Partnership - Friends of the Detroit Lakes Wetland Management District ($45,000)**

***Overall Project Outcome and Results***

This project funded the restoration of thirty-three wetlands totaling approximately seventeen acres on two Waterfowl Production Areas (WPAs) in Becker County. These areas are managed by the USFWS's Detroit Lakes Wetland Management District office. The primary objective was to restore small seasonal wetlands on WPAs. These small wetlands are important because they are the first to melt in the spring, providing critical habitat to early arriving migrating birds. Research has also shown that these types of wetlands have some of the highest invertebrate densities, a critical food source for egg-laying hens and fast-growing ducklings. These wetlands also play a role in flood protection in the Red River Valley. Because they are temporary or seasonal wetlands, they are often dry during the late fall. During snow melt the following spring, they are able to capture their full volume of water. Wetland restoration in western Minnesota is becoming increasingly important under several climate change models. First, these models predict increased flooding in the future. Second, the models predict that the climate of central Dakotas, the duck factory, will shift to western Minnesota. Wetland restoration in Minnesota buffers us against current and future flooding as well as the possible future waterfowl and songbird production in the Central Flyway.

**Project Results Use and Dissemination**

We are currently drafting a press release for local television and newspapers to discuss all of the grant funded projects in this area, including both ENRTF and LSOHC-CPL funded projects. However, due to the business of the pre-Xmas season, we will probably wait until mid-January before contacting these media. We have had informal conversations with newspapers in the area and they are interested in doing a story on the habitat restoration work in this area.

**Project completed:** 6/30/2012

**2p FINAL REPORT - HCP VI Supplemental - Bluffland Restoration - National Wild Turkey Federation ($50,000)**

***Overall Project Outcome and Results***

This project was part of a long-term bluffland restoration effort by DNR, National Wild Turkey Federation, and private landowners in SE MN. Funds from the Environment and Natural Resources Trust Fund were used to hire contractors to remove Eastern red cedar, buckthorn, honeysuckle, and prickly ash that was growing over former "goat prairies". The project focused primarily on improving habitat for the timber rattlesnake, three other at-risk snake species (racer, bullsnake, and hognose snake) and numerous at-risk plant species in the Bluffland subsection.

Goat prairies are native prairies found on steep south-facing hills in southeastern Minnesota. They are important to wildlife because the wind prevents deep snowpack, and intense sunlight melts much of what does stick. Animals can then rest and forage on the exposed sites. Nearby rock bluffs hold snakes, which forage in the prairies in summer. These prairies were historically maintained by periodic wildfire, but fire prevention has allowed native red cedar and non-native brushy species to encroach on them. These need to be removed to restore the native habitat. Restoring vegetation through these methods also reduces soil loss and improves water quality within the watershed.

During this grant period we treated 29.2 acres of habitat on private lands by hand cutting the invasive overstory. Stumps were treated with herbicides to prevent re-sprouting. Cut material was piled and burned on-site. A ten-year agreement was required from the landowners before any work began. The level of brush infestation, location and access impacted the contract price, which in turn led to lower than anticipated accomplishment acreage. The treatment area was 28 acres rather than the anticipated "up to 45 acres" as indicated in the initial plan. A second site was added later and an additional 1.2 acres treated. Periodic prescribed burning will be conducted by DNR (non-Trust-Fund monies) and will maintain the site in the desired habitat state.

***Project Results Use and Dissemination***
Accomplishment Reports and press releases will be made available at http://www.mnhabitatcorridors.org.

**Project completed:** 6/30/2012

**3a FINAL REPORT - HCP VI Supplemental - Shoreland Protection Program - Minnesota Land Trust ($102,000)**

***Overall Project Outcome and Results***
This 2010 grant was supplemental to the sixth phase (2009) of our Shorelands Protection project. This grant provided acquisition capital needed to complete two urgent projects that otherwise we would not have been able to complete. One project protects important shoreline along Lake Superior, while the other project protects shoreline along the Little Pine River. Collectively, these two easements protect 99 acres of critical habitat and protect more than 7,000 feet of fragile shoreline.

Both easements were purchased at significant bargain prices. One of the projects (Lake Superior) also used some 2009 funding, so project details, including the funding breakdown, also were reported in our 2009 (Phase 6) final report.

Additionally, the Land Trust prepared baseline property reports for each easement, detailing the condition of the property for future monitoring and enforcement. To fund this required perpetual obligation, the Land Trust dedicated funds to its segregated Stewardship and Enforcement Fund for several completed projects. For these projects, we estimated the anticipated annual expenses of each project and the investment needed to generate annual income sufficient to cover these expenses in perpetuity - all in accordance with our internal policies and procedures as approved by LCCMR. We will report to LCCMR annually on the status of the Stewardship and Enforcement Fund and the easements acquired with funds from this grant.

An appraised value is known for only one of the easements. The donated value of this easement is $515,000. Based on the estimate of value for the second easement, we believe the donated value of that easement is approximately $53,000. Therefore, we were able to leverage significant private

donation with the State's small investment in these projects.

Cumulatively, across all phases of the HCP program, the Land Trust has protected 7,549 acres of critical habitat and nearly 224,000 feet of shoreline, at a cost to the State of $293 per acre.

The Land Trust's work on this project continues to demonstrate the cost effectiveness of working with conservation easements to protect natural and scenic resources along Minnesota's lakes, rivers, and streams, as the cost to the State was well below the cost to purchase land along our increasingly threatened shorelines. This grant continued to generate interest among landowners, and therefore, ongoing funding will be important to sustained success. Additionally, we believe that funds to purchase easements - even a small incentive - will be necessary in the future as work becomes more targeted, selective, and focused on building complexes of protected land.

***Project Results Use and Dissemination***
The Land Trust disseminated information about the specific land protection projects completed under this grant though our newsletter, email updates, web site, and press releases. The Land Trust also shared information about conservation easements generally and our experience with our partner organizations, other easement holders, local communities, as well as policy makers including members of the LCCMR and LSOHC.

**Project completed:** 6/30/2012

**3c FINAL REPORT - HCP VI Supplemental - Shallow Lake Easements - Ducks Unlimited, Inc. ($75,000)**
***Overall Project Outcome and Results***
Ducks Unlimited used this grant in combination with our 2009 appropriation to help fund approximately 40% of the cost to purchase a permanent conservation easement on the 150-acre Donovan-Posch property on Garden and Johnson Lakes in Crow Wing County in June 2011. In addition, Ducks Unlimited also provided technical assistance and conducted outreach and promotion of conservation easements as a land protection option to new landowners on several shallow lakes, and secured appraisals for potential conservation easements on both the Papenheim and Douglas County Land Company properties on Lake Christina, and ordered an appraisal on the Radunz property on Cedar Lake in Meeker/McLeod County under this grant before funds ran out. Negotiations with these and other landowners are ongoing and will continue in the future through our 2011 appropriation. DU spent $29,639 in Other Funds to complete this project.

**Project Results Use and Dissemination**
This grant helped DU continue the protection of shallow lakes by working with private landowners to secure conservation easements and promote conservation easement concepts. Conservation easements with private landowners are sensitive land deals that don't lend themselves to widespread publicity. However, DU has recognized individual landowners and has publicized our work to protect shallow lake shorelines and shoreland locally through local conservation groups, soil and water districts, and tribal organizations supportive of our work to protect wild rice lakes. DU also informed the foundations supporting our Living Lakes Initiative of our conservation accomplishments. The accomplishment of securing two new permanent conservation easements through this grant has helped encourage other private landowners to consider working with DU to protect their shorelines, and news of our progress may be further disseminated through DU news releases and articles DU publications in the future. Accomplishment Reports and press releases will be made available at http://www.mnhabitatcorridors.org.

**Project completed:** 6/30/2012

**3d FINAL REPORT - HCP VI Supplemental - Wetland Reserve Program - Ducks Unlimited, Inc. and USDA Natural Resource Conservation Services ($350,000)**

***Overall Project Outcome and Results***

In partnership with the USDA's Natural Resources Conservation Service (NRCS), Ducks Unlimited (DU) contracted with seven Wetlands Reserve Program (WRP) wetland technicians from November 2010 through November 2011 as part 3d of the Habitat Conservation Partnership (HCP) Phase 6.5 "Supplemental" grant. Grant funds were used in combination with private DU funds and federal USDA funds provided by the Natural Resources Conservation Service (NRCS) to contract for the professional services of these seven technicians, whose function was to provide technical assistance to private landowners and USDA - NRCS complete applications and enroll new lands into the WRP, and to help USDA-NRCS and private landowners plan, design, and implement restoration measures on lands previously enrolled in the WRP. The delivery goal for these technicians was to provide Technical Assistance (TA) to help NRCS protect 1,000 acres through new WRP easements and help restore wetlands and associated upland habitat on WRP easements in HCP project areas at an estimated Other Funds cost of $1,520,000 to NRCS. During the life of this grant, the contract specialists made 900 landowner contacts, prepared and submitted 122 applications, submitted 156 easement restoration plans or plan modifications, completed 7 wetland restoration designs, and provided field level management and oversight of 64 restoration projects. Meanwhile, during this grant period, NRCS spent $6,222,501 of federal other funds to close 50 WRP easements protecting 5,252 acres. DU and NRCS also spent an additional $463,127 to pay specialists and administer this grant, for a total non-state Other Funds investment of $6,685,628 during this grant period, significantly more than our estimated proposal goal of $1,520,000.

***Project Results Use and Dissemination***

Information on the WRP signups has been publicized through news releases from the USDA's NRCS and local Soil and Water Conservation Districts, and through hundreds of individual landowner contacts made by DU wetland restoration specialists. Additional announcements and landowner contacts continue to be made and publicized by DU and USDA's NRCS.

**Project completed:** 6/30/2012

**4b FINAL REPORT - HCP VI Supplemental - Fisheries Land Acquisition - MN DNR ($100,000)**

***Overall Project Outcome and Results***

This project focused on the acquisition of Preece Point AMA, one of the most prominent geographic features on Lake Marquette - a Mississippi River headwaters lake. Here the lakeshore forms a long, narrow point, which is visible from virtually everywhere around the lake. The entire property along with it's associated aquatic habitat is unimpacted by human activities. This AMA will now provide walk-in access to a lake that has no developed public access. The property was sold to DNR as a bargain sale, and the family is happy to know that it will be preserved in it's natural state.

Project goals were to protect 20 acres (0.3 miles of lake and stream shoreline) with the help of partner and other state funding. Partner funding includes donations of land value and cash.

This project resulted in a grand total of approximately 11.8 acres and 0.2 miles of lake and stream shoreline. Environmental and Natural Resources Trust dollars directly acquired approximately 5.9 acres

of the total, including 0.1 mile of lake shoreline. Donations of land value and cash ("other funds" $50,000) and other state monies ($50,000) leveraged with trust dollars totaled $100,000. These contributions helped acquire the remaining acres of the grand total, including 2.94 acres and 0.05 shoreline miles using other state dollars and 2.94 acres and 0.05 shoreline miles from donations of land value and cash. Preece Point was acquired jointly using both 2009 and 2010-Supplemental grants to Minnesota's Habitat Conservation Partnership - Fish and Wildlife Acquisition (4b). Results for Preece Point were proportionately distributed for each grant.

As a result of the combined 2009 and 2009-supplemental grants, 17 acres, including 0.3 miles of critical fish and wildlife habitat are now permanently protected and open to public angling and other light use recreational activities on Preece Point AMA. Acquired parcels are now designated and managed as Aquatic Management Areas (AMAs).

***Project Results Use and Dissemination***
Accomplishment Reports and press releases are available at www.mnhabitatcorridors.org., and all AMAs will be added to DNR's Public Recreational Information Maps (PRIM).

**Project completed:** 6/30/2012

**4c FINAL REPORT - HCP VI Supplemental - Critical Lands Protection Program - Trust for Public Land ($200,000)**
***Overall Project Outcome and Results***
On September 30, 2011, the Trust for Public Land (TPL) acquired 510 acres in Le Sueur County containing high-quality wetlands and 1.64 miles of naturally flowing Cannon River just upstream from a concentration of rare freshwater mussels. TPL immediately conveyed the property to the Department of Natural Resources (DNR) who will manage the land as a new Wildlife Management Area ("Dora Lake WMA"). In addition to conserving a large area of Minnesota County Biological Survey (MCBS)- identified native habitat, acquisition of these tracts provides an opportunity to restore approximately 200 acres of tilled land in a sensitive water quality area. The DNR will restore them to wetlands, grassland and eventual guided succession to Big Woods. Protection of the property ensures habitat for fish, game and wildlife in the Cannon River watershed.

***Project Results Use and Dissemination***
Accomplishment Reports and press releases about the overall Habitat Conservation Partnership are available at www.mnhabitatcorridors.org.. Information about this acquisition and the Cannon River Headwaters Habitat Complex effort will be posted on TPL's website: www.tpl.org. Information about the Cannon River Headwaters Habitat Complex effort has also been disseminated through its network of supporters which include: the Cannon River Watershed Partnership, the Tri-Lake Sports Club, the Dark House Anglers Southern Chapter, Minnesota Deer Hunters Association South Central Prairieland Bucks Chapter (Le Sueur, Rice, Waseca, and Steele Counties), Waterville Sportsman's Club, Montgomery Sportsmen's Club, Minnesota Waterfowl Association Scott- LeSueur Chapter, the Izaak Walton League Owatonna Chapter, and the Minnesota Department of Natural Resources.

**Project completed:** 9/30/2011

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**Metropolitan Conservation Corridors Supplemental**
Subd. 04g $1,750,000

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**Appropriation Language**
$1,750,000 is added to Laws 2009, chapter 143, section 2, subdivision 4, paragraph (f), from the trust fund to the commissioner of natural resources for acceleration of agency programs and cooperative agreements. Of this appropriation, $1,750,000 is for agreements as follows: $890,000 with the Trust for Public Land; $485,000 with Minnesota Land Trust; $325,000 with Minnesota Valley National Wildlife Refuge Trust, Inc.; and $50,000 with Friends of the Minnesota Valley for planning, restoring, and protecting important natural areas in the metropolitan area, as defined under Minnesota Statutes, section 473.121, subdivision 2, and portions of the surrounding counties, through grants, contracted services, technical assistance, conservation easements, and fee title acquisition. Land acquired with this appropriation must be sufficiently improved to meet at least minimum management standards as determined by the commissioner of natural resources. Expenditures are limited to the identified project corridor areas as defined in the work program. This appropriation may not be used for the purchase of residential structures, unless expressly approved in the work program. All conservation easements must be perpetual and have a natural resource management plan. Any land acquired in fee title by the commissioner of natural resources with money from this appropriation must be designated as an outdoor recreation unit under Minnesota Statutes, section 86A.07. The commissioner may similarly designate any lands acquired in less than fee title. A list of proposed restorations and fee title and easement acquisitions must be provided as part of the required work program. All funding for conservation easements must include a long-term stewardship plan and funding for monitoring and enforcing the agreement.

**OVERALL PROJECT OUTCOMES AND RESULTS**
During this supplemental grant to the fifth phase of the Metro Corridors project, the Metro Conservation Corridors Partners continued their work to accelerate protection and restoration of remaining high-quality natural lands in the greater Twin Cities Metropolitan Area by strategically coordinating and focusing conservation efforts within a connected and scientifically-identified network of critical lands. This corridor network stretches from the area's urban core to its rural perimeter, including portions of 16 counties.

This supplemental phase was focused on unique opportunities that were not funded through prior phases of the MeCC program. This supplemental phase included only four of the MeCC partners and accomplished work in two specific result areas.

1. Restore and Enhance Significant Habitat: Partners restored and enhanced a total of 133 acres of significant habitat in the Lower Minnesota River Watershed using Phase V Supplemental funding plus an additional 33 acres with other funds.

2. Acquire Significant Habitat: Partners protected 494 acres of land through acquisition of fee title and conservation easements and leveraged an additional 454 acres of land using other funds.

Since 2003, MeCC partners have protected more than 10,000 acres and restored nearly 8,000 acres. These strategic and coordinated efforts address a number of recommendations of the Statewide Conservation and Preservation Plan, including, protecting priority land habitats, protecting critical shorelands of streams and lakes, restoring land, wetlands, and wetland-associated watersheds, and improving connectivity and access to outdoor recreation.

**OVERALL PROJECT RESULTS USE AND DISSEMINATION**
As projects were completed, the individual partners were encouraged to publicize accomplishments through press releases, organization newsletters and websites. These efforts resulted in information being distributed to the public through websites, email lists, daily and weekly newspapers, newsletters, and other print materials. Additionally, the MeCC Partnership maintains an interactive public web map that shows the locations of MeCC projects over time. This web map can be accessed at: http://www.dnr.state.mn.us/maps/MeCC/mapper.html.

**Project completed:** 6/30/2012

**ABSTRACTS AND FINAL REPORTS OF INDIVIDUAL PARTNER PROJECTS** (Click project # to go to listing for that project)
2.4 - MeCC V Supplemental - Lower Minnesota River Watershed Restoration and Enhancement Friends of the Minnesota Valley ($50,000)
3.1 - MeCC V Supplemental - Critical Land Protection Program - Trust for Public Land ($890,000)
3.2 - MeCC V Supplemental - Protect Significant Habitat by Acquiring Conservation Easements - Minnesota Land Trust ($485,000)
3.3 - MeCC V Supplemental - Minnesota Valley National Wildlife Refuge Fee Title Acquisition - Minnesota Valley National Wildlife Refuge Trust, Inc. ($325,000)

**2.4 FINAL REPORT - MeCC V Supplemental - Lower Minnesota River Watershed Restoration and Enhancement - Friends of the Minnesota Valley ($50,000)**
***Project Outcome and Results***
Friends of the Minnesota Valley (FMV) undertook restoration of habitat for the Lower Minnesota River Watershed portion of the Metropolitan Conservation Corridors Project (MeCC) as a continuation of our wildlife habitat restoration within the Minnesota Valley National Wildlife Refuge and Wetland Management District (Refuge) and within the Lower Minnesota River Watershed.

The Friends' objectives were to complement and connect habitat restoration and management of Refuge lands with that being done by other entities. Project sites addressed the need to restore hydrology within floodplain communities and to restore upland communities such as native oak savanna and wet and dry prairies, resulting in the rehabilitation of nesting, breeding, and brood-rearing habitat for migratory waterfowl in wetland areas and habitat for four documented species in upland areas. Due to late and persistent flooding, our access to the wetland site was prohibited and, as a result, we shifted our focus to upland restoration, as described in our amended work program.

FMV and our partners were able to successfully restore and enhance 30 acres of native wet prairie, 74 acres of native dry sand-gravel oak savanna, and 29 acres of native dray sand-gravel prairie with LCCMR funds during MeCC Phase V Supplement for a total acreage of 133 acres. We also restored additional match acreage of 14 acres of native dry sand-gravel oak savanna and 9 acres of native dry sand-gravel

prairie with non-LCCMR, non-state funds. All work was completed on four Refuge Units and included cutting and herbicide treatment of non-native woody brush species such as buckthorn, honeysuckle, prickly ash, eastern red cedar, and Siberian elm. Our project data is publicly accessible by contacting the Friends, through information disseminated through our newsletter which is distributed to our 1,200 active members, our annual report, on our website, and through information provided by the MeCC Partnership.

***Project Results Use and Dissemination***
As projects were completed, Friends of the Minnesota Valley publicized project accomplishments through the Friends' quarterly newsletter, our annual report, and the posting of project information on our website. Other dissemination of information occurred through the Metro Conservation Corridors partnership and on the Metro Corridors website.

**Project completed:** 6/30/2012

**3.1 FINAL REPORT - MeCC V Supplemental - Critical Land Protection Program - Trust for Public Land ($890,000)**
***Project Outcome and Results***
In its Critical Lands Protection Program, The Trust for Public Land (TPL) used $890,000 from the Environment and Natural Resources Trust Fund (ENRTF) to secure fee title on portions totaling 50.2 acres of 407 total acquired acres. TPL conveyed these lands to public agencies for permanent protection. Individual project successes include the following:

- TPL spent $552,000 2010 ENRTF funds to protect 10.8 ENRTF acres of land as part of a larger 69-acre purchase of a high biodiversity corridor including forest, bluffland, wetland and rare calcareous fen. TPL conveyed the land to the Department of Natural Resources as the Savage Fen SNA on the Credit River addition in Scott County.
- TPL spent $338,000 2010 ENRTF to protect 39.4 ENRTF acres of land as part of a 338-acre acquisition of one of the largest undeveloped and contiguous tracts of open space in the Twin Cities Metro Area. TPL then conveyed the land to Anoka County. Located at the confluence of Cedar Creek and the Rum River, this land will be managed by the County as the Cedar Creek Conservation Area.

TPL leveraged $890,000 in TPL Metro Conservation Corridors (MeCC) 2010 funding on these projects with $1,090,000 in non-state funds to protect 357 additional pro-rated acres of land. $300,000 of this was non-state public funds and $790,000 of this was from private land value donations. Additionally, $300,000 in state RIM funds were used to protect 5.9 pro-rated acres and $3,400,000 in Outdoor Heritage Funds were used to protect 250.8 pro-rated acres. TPL's 2009 ENRTF funds in the amount of $62,000 and DNR's 2009 and 2010 ENRTF funds in the amount of $358,493 were used to protect 7.2 pro-rated acres and 7.1 pre-rated acres respectively. SNA 2006 bonding dollars in the amount of 289,507 were also used to protect 5.7 pro-rated acres. All acres acquired total 407.

*Please note, since a portion of TPL's 2009 ENRTF funding was used for the Cedar Creek Conservation Area project, a portion of these results was also reflected in TPL's 2009 MeCC Work Program update and Final Report.

***Project Results Use and Dissemination***
As conservation transactions were completed, The Trust for Public Land disseminated information on the TPL website, www.tpl.org, broadcast emails to Embrace Open Space (EOS) and TPL list serve members, distributed press releases, and included information in TPL's newsletters as appropriate. TPL

also worked with the long-term stewards to ensure information was distributed to their listserves and posted on their websites as well.

**Project completed:** 6/30/2012

**3.2 FINAL REPORT - MeCC V Supplemental - Protect Significant Habitat by Acquiring Conservation Easements - Minnesota Land Trust ($485,000)**

***Project Outcome and Results***

This 2010 grant was supplemental to the fifth phase (2009) of the Metro Conservation Corridors project. This grant provided acquisition capital needed to complete urgent projects that otherwise we would not have been able to complete. Two perpetual conservation easements were completed that collectively protect 374 acres of land and more than 700 feet of shoreline. One easement was purchased at a bargain price, and one easement was donated. The Land Trust also purchased two additional easements that used both 2009 and 2010 ENRTF funding. Because we reported those projects accomplishments as part of our 2009 report, we described them but did not count acreage in the 2010 reports to avoid double-counting. All projects represent unique opportunities to protect high quality natural habitat, riparian areas, and to build upon prior land protection work by the Land Trust at several priority sites.

Additionally, the Land Trust prepared baseline property reports for each easement, detailing the condition of the property for future monitoring and enforcement. To fund this required perpetual obligation, the Land Trust dedicated ENRTF and other funds to its segregated Stewardship and Enforcement Fund for all completed projects. We estimated the anticipated annual expenses of each project and the investment needed to generate annual income sufficient to cover these expenses in perpetuity - all in accordance with our internal policies and procedures as approved by LCCMR. We will report to LCCMR annually on the status of the Stewardship and Enforcement Fund and the easements acquired with funds from this grant.

The total value for the two easements acquired is $1,242,000. The donated value is $1,162,000. Therefore, we were able to leverage significant private donation with the State's investment in these projects.

Cumulatively, across all phases of the Metro Corridors program, the Land Trust has protected 3,672 acres of critical habitat and more than 76,000 feet of shoreline, at a cost to the State of $580 per acre.

The Land Trust's work on this project continues to demonstrate the cost effectiveness of working with conservation easements to protect natural and scenic resources within developed and developing areas, as the cost to the State was well below the cost to purchase land in the Twin Cities region. This grant continued to generate interest among landowners, and therefore, ongoing funding will be important to sustained success. Additionally, we believe that funds to purchase easements - even a small amount - will be necessary in the future as work becomes more targeted, selective, and focused on building complexes of protected land.

***Project Results Use and Dissemination***

The Land Trust disseminated information about the specific land protection projects completed under this grant though our newsletter, email updates, web site, and press releases. The Land Trust also shared information about conservation easements generally and our experience with our partner organizations, other easement holders, local communities, as well as policy makers including members of the LCCMR and LSOHC.

**Project completed:** 6/30/2012

**3.3 FINAL REPORT - MeCC V Supplemental - Minnesota Valley National Wildlife Refuge Fee Title Acquisition - Minnesota Valley National Wildlife Refuge Trust, Inc. ($325,000)**

***Project Outcome and Results***

The Minnesota Valley Trust acquired 103 acres of priority lands in Scott County to expand the St. Lawrence Unit of the Minnesota Valley National Wildlife Refuge. Of the 103 acres acquired, 70 acres were acquired with Environment and Natural Resources Trust Fund and 33 acres were acquired with other private, non-state funds.

An additional 63.71 acres were acquired from two other landowners using other private, non-state funds as match of the ENRTF grant. Those acquisitions expand the Jessenland Unit of the Minnesota Valley Refuge in Sibley County. The total leverage to this project was 96.71 acres acquired using other, non-state funds.

These targeted acquisitions expand upon prior acquisitions funded in part by the Environment and Natural Resources Trust Fund, as recommended by the LCCMR. The parcels acquired are adjacent to or very near other lands protected by the Minnesota Valley Trust for the Minnesota Valley National Wildlife Refuge. All are within the expansion boundaries for the Refuge as identified through a public planning process by the US Fish and Wildlife Service and documented in the Refuge's "Comprehensive Conservation Plan."

After any needed restoration and enhancement, the lands will be donated to the USFWS for perpetual management as part of the Minnesota Valley National Wildlife Refuge. They will be managed for wildlife and open to the public for wildlife-dependent recreation, including hunting, fishing, wildlife observation, photography, wildlife interpretation and environmental education.

***Project Results Use and Dissemination***

The Minnesota Valley Trust will publicize the completion of this project through its website and news releases. All funding partners will be acknowledged on Refuge Unit kiosks, including the Environment and Natural Resources Trust Fund, as recommended by the Legislative Citizen Commission on Minnesota Resources.

**Project completed:** 6/30/2012

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**SUBD. 05 WATER RESOURCES**

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**Evaluation of Dioxins in Minnesota Lakes**
Subd. 05f $264,000

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**RESEARCH**

**Appropriation Language**
$264,000 is from the trust fund to the Board of Regents of the University of Minnesota to examine the concentration of dioxins in lake sediment and options to improve water quality in lakes.

**Overall Project Outcome and Results**
Triclosan is an antimicrobial agent commonly detected in wastewater effluent. During water and wastewater disinfection with chlorine, triclosan can be transformed to a series of chlorinated triclosan derivatives. When discharged into surface waters, triclosan and its derivatives react in sunlight to form a series of four polychlorinated dibenzo-p-dioxins.

To evaluate the historical and current exposure of surface waters to triclosan, chlorinated triclosan derivatives, and their derived dioxins, sediment cores were collected from wastewater-impacted Minnesota lakes. Following radiometric dating, triclosan and chlorinated triclosan derivatives were extracted from core sections and quantified. Dioxins were extracted from the same core sections and also quantified.

The concentrations and temporal trends of triclosan, chlorinated triclosan derivatives, and their dioxins in aquatic sediments were found to be a function of historical wastewater treatment operations and lake system scale. Cores collected from large-scale riverine systems with many wastewater sources recorded increasing concentrations of triclosan, chlorinated triclosan derivatives, and their derived dioxins since the patent of triclosan in 1964. The trends were directly attributed to increased triclosan use, local improvements in treatment, and changes in wastewater disinfection practices. Concentrations of triclosan, chlorinated triclosan derivatives, and their dioxins were higher in small-scale systems, reflecting a greater degree of wastewater impact. In a lake receiving no wastewater influent, no triclosan was detected. Low levels of the four triclosan-derived dioxins were found in northern wastewater-impacted Minnesota lakes prior to the introduction of triclosan as well as in the lake with no wastewater input. The background levels of these dioxins were attributed to a secondary, region-specific source. Nonetheless, it is clear that triclosan is the major source of these dioxins after 1960. The contribution of the triclosan-derived dioxins to the total dioxin pool in terms of mass was determined for each sediment core. In heavily impacted systems, the dioxin contribution from triclosan and chlorinated triclosan derivatives accounted for up to 60% of total dioxin mass in recent sediment. Thus, the discharge of triclosan and chlorinated triclosan derivatives may pose a threat to wastewater-impacted lakes.

The findings of this work suggest that additional treatment of wastewater to remove triclosan, additional regulation of triclosan use, or dissemination regarding the prevalence of triclosan in consumer products may be necessary. Full results are presented in the M.S. Thesis of Cale T. Anger submitted with this report.

**Project Results Use and Dissemination**
This project led to the production of the M.S. Thesis of Cale T. Anger, Quantification of Triclosan,

Chlorinated Triclosan Derivatives, and their Dioxin Photoproducts in Lacustrine Sediment Cores. The thesis received the Distinguished Master's Thesis Award from the University of Minnesota, recognizing it as the best thesis at the U of MN for 2011-2012. A manuscript with the same title has been submitted to the peer reviewed journal Environmental Science & Technology. The results of the work have been presented at the American Chemical Society National Meeting, the St. Croix River Research Rendevous, the Itasca Water Legacy Project lecture series, and the Mississippi River Forum. Two more presentations at the American Society of Limnology and Oceangraphy and the IWA Micropol and Ecohazard conferences are planned. We anticipate press coverage of the findings upon publication of the peer-reviewed article.

**Project completed:** 6/30/2012

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**Assessment of Shallow Lake Management**
Subd. 05g $262,000

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**RESEARCH**

**Appropriation Language**
$262,000 is from the trust fund to the commissioner of natural resources to evaluate the major causes of deterioration of shallow lakes in Minnesota and evaluate results of current management efforts. This appropriation is available until June 30,2013, by which time the project must be completed and final products delivered.

**Overall Project Outcome and Results**
Minnesota's shallow lakes provide numerous direct human benefits such as clean water, hydrologic storage to limit flooding, recreational opportunities, and access to unique wild areas. They also contribute many valuable ecosystem services including carbon sequestration, habitat for native species, and unique recreational opportunities. Unfortunately, water and habitat quality of Minnesota's shallow lakes have deteriorated dramatically during the past century. Conversion from native upland covers, widespread wetland drainage and surface-water consolidation to facilitate agricultural and urban/residential development have been implicated as major causes for these changes. To facilitate better conservation of these areas, we studied approximately 140 shallow lakes in 5 ecological regions of Minnesota to:

- Identify major factors leading to deterioration.
- Evaluate results of specific lake restoration approaches, including cost-effectiveness of various combinations of lake management strategies.
- Assess the impacts of increased surface water connectivity on fish invasions and resulting habitat quality.

Our efforts included: comprehensive sampling of shallow lakes to identify direct and indirect causes of deterioration, evaluation of approximately eight lakes currently undergoing rehabilitation, and economic analyses to help managers identify which restoration strategies are likely to produce the greatest improvements in water quality and other lake characteristics per unit cost. Our key findings were as follows:

- High nutrient levels and dense populations of undesirable fishes favor water quality deterioration. These influences increase along a NE-SW gradient. Turbid lakes more often occur in prairie than in forested regions.
- Fish removal via rotenone, water control structures, and drawdowns improve water quality and wildlife habitat. Deteriorated conditions often recur; this underscores need for long-term approaches that reduce nutrient loading.
- Fish removal via rotenone and drawdown are effective methods for improving lakes in the short-term (5-10 years). Because improvements may not persist, watershed restoration to reduce nutrient loading is also necessary. More monitoring of rehabilitated lakes is necessary. Region-specific guidelines are not yet possible, but in-lake measures will be most beneficial in short-term, regardless of where lakes are located.
- Limiting surface connectivity is critical to controlling distribution of undesirable fishes including invasive species.

These findings were used to develop improved modeling and produced a series of recommendations to guide future efforts to maintain and rehabilitate shallow lakes throughout Minnesota. This information is being disseminated through future presentations and publications and through the Minnesota DNR Data Deli website (http://deli.dnr.state.mn.us).

**Project Results Use and Dissemination**

We anticipate preparation of 5-8 peer reviewed manuscripts to be developed from data gathering and analyses completed during the present study. We are also planning to develop a shallow lake workshop for lake managers and other conservation partners to be held in central Minnesota during July or August 2013. We expect to offer a day-long technical program that will center on results of the present LCCMR-funded research, allow discussion of lake rehabilitation strategies, and will offer opportunities for project managers and collaborators to present study findings directly to lake and landscape managers and other conservation partners in Minnesota. Presently, the Minnesota Chapter of the Wildlife Society has agreed to sponsor this workshop and to coordinate meeting and facilities requirements.

Results and synthesis from this work have been presented at annual meetings of the American Society of Limnology (Lake Biwa, Shiga, Japan, July 2012), the Ecological Society of America (Portland, Oregon, Aug 2012), and at various regional meetings of DNR staff and others. In addition, results have been distributed to DNR staff, other professionals, and the general public via annual project summaries from the Wildlife Research Unit, Minnesota DNR. We expect to develop 5-8 manuscripts for publication during the next 2-3 years.

**Project completed:** 06/30/2012

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**SUBD. 07 RENEWABLE ENERGY**

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**Demonstrating Sustainable Energy Practices at Residential Environmental Learning Centers (RELCs)**
Subd. 07d $1,500,000

**MN COALITION OF RELCs**
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**07d-4 ($258,000)**
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**07d-5 ($240,000)**
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**07d-6 ($234,000)**
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**Appropriation Language**
$1,500,000 is from the trust fund to the commissioner of natural resources for agreements as follows: $206,000 with Audubon Center of the North Woods; $212,000 with Deep Portage Learning Center; $350,000 with Eagle Bluff Environmental Learning Center; $258,000 with Laurentian Environmental Learning Center; $240,000 with Long Lake Conservation Center; and $234,000 with Wolf Ridge Environmental Learning Center to implement renewable energy, energy efficiency, and energy conservation practices at the facilities. Efforts will include dissemination of related energy education.

**07d1: EAGLE BLUFF ENVIRONMENTAL LEARNING CENTER AND OVERALL PROJECT COORDINATION**

**Overall Project Outcome and Results**
Minnesota's six accredited Residential Environmental Learning Center's undertook a collaborative project, "Today's Leaders for a Sustainable Tomorrow," with the intent of acting as a public resource for information regarding energy use and energy technologies. This was accomplished by demonstrating geographically appropriate technologies for reducing energy use and providing public access to energy information through formal education programs and a web presence. In-depth information on each center's energy reduction demonstrations are found in their individual reports. A bulleted summary of each demonstration is as follows:

- Eagle Bluff Environmental Learning Center - Lanesboro, MN: Installed deep energy reduction retrofit, solar thermal, and a solar hot water heater.
- Audubon Center of the North Woods - Sandstone, MN: Installed geothermal heat pump, solar arrays, solar panels, and a wind generator.
- Deep Portage Learning Center - Walker, MN: Installed wood gasification system and lighting upgrades (CFLs to LEDs and T12s to T8s).
- Laurentian Environmental Learning Center - Britt, MN: Installed building envelope improvements, energy conservation technologies, and a solar hot water heater.
- Long Lake Conservation Center - Palisades, MN: Installed building envelope improvements, a solar hot water heater, and lighting upgrades (trail lighting and T12s to T8s).
- Wolf Ridge Environmental Learning Center - Finland, MN: Installed biofuel heating system, solar arrays, wind generation, and lighting upgrades (trail lighting and T 12s to T8s).

Eagle Bluff implemented a deep energy reduction retrofit on its most inefficient building, the staff residence. The building was super insulated using the Cold Climate Housings Research Center's REMOTE

(Residence Exterior Membrane Outside-insulate Technique). Solar thermal heat was added for domestic hot water and building heating. A 5.6 Kw solar photovoltaic system provides green power for the heating system. As a result of the retrofit, the building became the 9th house in North America to receive ACI's 1000 Home Challenge for reducing energy consumption by over 78% A pdf describing the project is available from Eagle Bluff.

All centers collaborated in developing over 20 new units of educational curriculum based on the following seven areas: biomass, conservation, efficiency, energy basics, food and energy, solar power and wind power. An activity toolbox was designed for use at the RELC's and in the formal classroom. They range from formal lessons to informal tours to an energy choice challenge and are currently in practice at the RELC's collectively reaching nearly 60,000 visitors/students annually. In order to determine the efficacy of the educational materials and program, an external assessment was done which evaluated the knowledge and behaviors of visitors to the RELC who participated in the activities. The results showed that 88.5% of children and 50.6% of adults had an increase in knowledge and 70.2% of children and 52.6% of adults increased their energy conserving behaviors while visiting an RELC.

**Project Results Use and Dissemination**
Homeowners, commercial businesses, educators and the general public can access the educational materials, assessment results, demonstration information, and current energy use/production on the Today's Leaders for a Sustainable Tomorrow website at: www.tlfast.org.

In addition, this project has allowed the centers the opportunity to collaborate with Winona State University to offer an Energy Resource Advisor course which is part of Continuing Education program and a core course in WSU's Sustainability major.

Using the TLFAST demonstrations and curriculum as the framework, the centers are also now positioned to collaborate on an innovative program funded by the National Science Foundation which focuses on providing informal STEM (Science-Technology-Engineering-Math) experiences for K-12 students.

In the upcoming year and upon the total completion of the project, the centers' will be participating in tours, conferences, or workshops to share the success of the project and publicize the resources available to the public as a result of the project.

**Project completed:** 6/30/2012

**07d2: AUDUBON CENTER OF THE NORTH WOODS**

**Overall Project Outcome and Results**
As part of the coalition of Minnesota's residential environmental learning centers Today's Leaders for a Sustainable Tomorrow (TLFAST), the Audubon Center of the North Woods has made reducing our carbon footprint, through energy conservation, efficiency and renewable technologies, a top priority. We aim to serve as a sustainable energy demonstration site by modeling responsible energy usage and through energy offering energy curriculum for the nearly 10,000 participants that visit us every year. Through funding from the Environment and Natural Resources Trust Fund (ENRTF), we have been able to make strides in both of these directions. With our ENRTF grant, we hired an architecture and engineering firm to design the envelope improvements and solar hot water systems that would benefit several of our campus buildings. We contracted with local builders and installers to:

1. Improve the envelopes of our two largest buildings, the Dining Hall and Crosby Dormitory, through blown cellulose insulation, foam sealing air penetrations and weather stripping exterior doors.
2. Insulate the walls and roof as well as re-side and re-shingle our 100+ year old Wildlife Barn.
3. Insulate Nationally Historic Registered Schwyzer Lodge through blown cellulose insulation in the crawl spaces and attic, as well as vapor-line and foam-seal the open air basement.
4. Install a solar hot water system at our Dining Hall for hot water use in our kitchen and dining hall restrooms.
5. Install a solar hot water system at Crosby Dormitory for hot water use of showers and sinks in the dormitory rooms.

Through these energy improvements we anticipate savings 259,570 lbs. of carbon annually from reduction in propane and electricity usage. As part of TLFAST, we have helped to create 22 energy lessons to engage and inform students about energy issues and topics to be taught at the Audubon Center and outreach programs.

**Project Results Use and Dissemination**
Information about this project is disseminated through the TLFAST collective website at http://earthsensealliance.org/e_energy.php. We have written about this project in our past two Audubon Center of the North Woods newsletters, and have been leading energy tours for local groups for the past several months, highlighting the outcomes of the ENRTF grant. In the spring of 2011, we contacted our 80+ participating K-12 schools about the opportunity to pilot test the energy curriculum developed and had several schools participate. Information about the completed energy lessons has been sent to all participating schools as options for their on-site or outreach programs.

**Project completed:** 6/30/2012

**07d3: DEEP PORTAGE LEARNING CENTER**

**Overall Project Outcome and Results** Cass County, MN has installed a small wind turbine and solar hot water system and has made electrical and envelope improvements to the environmental education facility known as Deep Portage Learning Center. A $212,000 grant from the Environment and Natural Resources Trust Fund has made this possible. All of these systems have been installed, and we now have a year's worth of energy savings data. The 10 Kw small wind turbine has produced 4,200 Kw hours of electricity and has eliminated the emission of 10,080m lbs. of carbon dioxide. The solar hot water system has produced thousands of gallons of domestic hot water and displaced 1,400 gallons of fossil fuel propane. New LED (light-emitting diodes) lights, E Solutions refrigeration equipment and new Energy Star windows round out the project. These technologies are for demonstration and education. A new sustainable energy curriculum has been developed and piloted with several Minnesota schools. Five-hundred-plus people have now gone on a renewable energy tour at the center. This project shows our residents how to reduce our carbon footprint, save money. and support local jobs and industry. The electrical use at the Deep Portage Learning Center is now an astonishing 2.2 Kw hours per square foot annually. The Carbon footprint has been cut in half, and the total energy savings is $15,000-20,000 per year. This is a model that can be repeated at public schools and government buildings around the State.

**Project Results Use and Dissemination**
Information about this project will be disseminated in our center's newsletters, website and blogs, emails, and annual reports. It will also be discussed in all future New ERA training seminars held on-site at each center.

The Energy Resource Advisor (ERA) certificate, developed by Winona State University, is a new curriculum designed to accelerate public understanding of energy efficiency, clean energy, carbon emissions, resource conservation, green technologies, and green jobs. This curriculum is the first of its kind in Minnesota. It is a non-credit, continuing education course for adults 18 years of age and older, using online instructional technology combined with applied, field experience at one of the six RELCs. Participants in this class will learn about: a) the basic components of an energy audit, b) small-scale renewable energy including site suitability, system sizing, and financial incentives that are available, c) alternative building and transportation options, d) ways to "green up" the home or business, and e) the field of emerging "green" jobs. After completing this course, the successful participant may serve as an energy resource advisor and "green" consultant in the community and workplace.

Deep Portage has had over 200 participants attend renewable energy tours and has taught classes to elementary students in renewable energy. We have posted data on our Facebook page, and our website has a renewable energy toolbar with data on the accomplishments of the initiative. The TLFAST and LCCMR websites also feature information.

The collective website is up and running, www.tlfast.org/dplc.html. The six centers have collaboratively developed 22 units of curriculum for use by each center. These curricula integrate the use of the demonstrated sustainable energy practices at each of the centers. These lessons were pilot tested in all six centers this past spring, adjustments made over the summer, and are now all available for groups.

**Project completed:** 6/30/2012

**07d4: LAURENTIAN ENVIRONMENTAL LEARNING CENTER**

**Overall Project Outcome and Results**
In 2007, a McKinstry study was conducted at the six residential environmental learning centers in Minnesota to identify ways to reduce carbon, and energy consumption. The results of the study were used as the baseline carbon and energy use for Laurentian Environmental Center. This data was submitted as part of the LCCMR ENRTF grant request that focused on carbon reduction as a result of envelope improvements for the lodge and office buildings, and a solar hot water. In 2010, Laurentian Environmental Center (LEC) was awarded $258,000 from the ENRTF. In late early fall of 2010,an RFP was sent out for the design work of the project. Wagner Zaun Architecture of Duluth was selected to design and manage the project. A predesign site assessment determined the scope of work. A design package and RFP for the energy retrofit of the lodge and office was created, and sent out. Nelson Exteriors was selected to complete the project. The retrofit work included air sealing, insulation, high efficiency windows and doors, and mechanical improvements. Construction began in fall 2010, and was completed in spring 2011.

In spring 2011, design work for the solar hot water system was conducted by Wagner Zahn Architecture, and Conservation Technologies. Bid specifications were developed. Qualified contractors were identified, and invited to submit proposals. Innovative Power Systems was awarded the contract for the design and installation of the lodge solar hot water system, and Gruska Construction was awarded the contract for site preparation and slab installation. The slab was installed fall 2011. Solar installation occurred fall/winter 2011/2012.. The solar hot water system was fully operational in April 2012.. Innovative Power Systems designed and installed a solar hot water monitoring package that was below budget, and met the center needs.

The envelope improvements in the lodge and office have made a remarkable difference in the overall comfort of the buildings. Prior to the construction, it was difficult to maintain uniform temperatures. Air sealing, insulation, and operational windows have made the building extremely comfortable for groups and staff to use. Propane use in the lodge has dropped approximately 40%, due to a combination of burning more wood for heating, and the energy retrofit projects. Future energy monitoring and utility bills will likely yield continued reductions in carbon, and energy use.

**Project completed:** 6/30/2012

**07d5: LONG LAKE CONSERVATION CENTER**

**Overall Project Outcome and Results**
Minnesota's six Residential Environmental Learning Centers (RELC) including Long Lake Conservation Center (LLCC) teamed up to obtain grant funding to reduce their carbon footprints and provide energy education that focuses on renewable energy. In order to get the most value from the energy efficiency measures a study was conducted for each RELC. As a result, a series of recommendations were given to reduce carbon and energy consumption. Each RELC is unique, so recommendations varied between them. Specifically for LLCC, the recommendations were to improve the energy efficiency in campus buildings, convert campus lighting to solar and LED's, design and install solar energy sources for the Northstar Lodge and Dining Hall.

LLCC goals for this project were:

1. Increase conservation measures and energy efficiency in the targeted buildings.
2. Invest in renewable energy technology applications that LLCC currently does not have.
3. Use these conservation measures and renewable energy applications to educate users on making choices about conservation and renewable energy options that are applicable to their everyday lives.

All three goals have been met and the project was under budget.

In 10 years this collective education program will reach nearly 100,000 people who will attend LLCC and participate in its programs. This includes 55-60 K-12 schools annually and a number of other colleges and organizations who use LLCC.

The project is completed with the monitoring equipment installed and tested during the last week in June. Final installation and testing of the Solar Panel for the Dining Hall was completed in May, 2012. An issue with the Mille Lacs Energy Cooperative regarding the 3 Phase inverter was solved resulting in the final installation. The issue was technical in nature and the inverter's Manufacturer's specifications were submitted to Mille Lacs Energy Cooperative, which they approved. The experience could assist in future solar projects with the cooperative. Overall the project went very well. However, over the 4th of July Holiday, LLCC experienced a lightning strike that disabled the entire phone system and the Directors computer, where the monitoring software was loaded. Aitkin County IT Department has rebuilt the computer and has re-installed the system at LLC. The phone system was also just recently repaired.

**Project completed:** 6/30/2012

**07d6: WOLF RIDGE ENVIRONMENTAL LEARNING CENTER**

**Overall Project Outcome and Results**

In 2007, the six residential environmental learning centers (RELCs) of Minnesota organized a collaborative group naming themselves Today's Leaders For A Sustainable Tomorrow (TLFAST). The TLFAST group that collectively serves over 550 schools in the region and over 40,000 students annually, began an effort to raise the energy education capacity of each center, along with a stronger commitment to model sustainable energy practices. Needing a baseline to begin, the TLFAST group hired McKinstry Engineering in 2007 to conduct an energy audit of each facility and recommend the best efforts to reduce energy and/or carbon footprints at each center. The McKinstry recommendations were used as a basis for action items chosen to implement at each center. At Wolf Ridge Environmental Learning Center (WRELC), the ENRTF funding enabled four projects.

1. Installation of an energy monitoring system that provides data on the generation and total consumption of energy, both electrical and heating, in each building of the facility. Use of the system provides accurate information to instructors of conservation lessons while also providing maintenance personnel with data to focus on documented energy wasting conditions.
2. Upgrading the building envelopes in 5 buildings by replacing the worst insulating and sealing doors with a Curries Trio-E Door. This door product is one of the most energy efficient, highest performing commercial doors available. Following professional site evaluation and calculation, replacing the five doors will achieve savings of 125,034 kBtu or 42,673 kWh of energy. Four of the five doors are in buildings heated by wood, thus carbon neutral; at the fifth location, the door is calculated to conserve 2,888 kg of CO2.
3. Upgrade to energy efficient interior lighting by conversion of the last of the campus' T12 fluorescent fixtures, 106 total, to T8 technology; a reduction of 33% energy use, thus 33% reduction in carbon footprint. Also upgraded was the entire outdoor campus lighting system by replacing all 46 fixtures with LED lighting technology. This achieved a 74% reduction in energy consumption and carbon footprint for lighting at the center.
4. The addition of a solar domestic hot water heating system to the East Dormitory that houses 180 students. The installed system will supply 50% of the annual hot water need for the building occupancy while reducing the domestic hot water carbon footprint by 49%.

A fifth project was originally proposed and approved with the ENRTF funding, a recapture of waste heat from refrigeration systems in the center's kitchen, but following initial work on the project, expert opinion and consultation quickly revealed problems and the project was aborted following an approved amendment for redistribution of funds. The budgeted funds were moved into three of the other four projects.

As the project only recently concluded, data collection is not yet adequate to document the change in carbon footprint for the entire center, but examples listed above by project, provide via calculation the reductions in energy and/or carbon footprint. To further enhance the education effectiveness of these demonstrations, 24 energy education lessons were created with the ENRTF funding and have been implemented at the six respective centers.

**Project Results Use and Dissemination**

It is important within every energy sustainability learning experience that students' understand that to achieve energy sustainability the best investment value for the effort is to first begin with conservation, then move to increased efficiencies and finally to new renewable energy generation. Wolf Ridge chose and implemented projects that will demonstrate and be regularly used to teach all three concepts. On a daily basis our students will engage with energy efficient doors, view the trail in front of them lit by an energy efficient LED light fixture, see the panels that renewably generate the hot water for their shower, and learn from a monitoring system how much energy was used or conserved in their dormitory. These

are the learning experiences that occur simply by living at WRELC as a student for a week.

Immediately after the ENRTF funding was made available to the TLFAST group, the energy education specialists of the six centers met and outlined plans for over 20 new units of energy curriculum to be developed. Twenty-four new curricular units on energy were developed, pilot tested with students, refined, and written lesson plans were prepared with accompanying Minnesota graduation standards. Lessons were created for eight subject areas: biomass, climate change, conservation, efficiency, energy basics, food and energy, solar power and wind power. Developed lessons have been incorporated into curriculum in the following WRELC courses: Climate Change, Renewable Energy, and Conservation Challenge. All of the lessons as well as 19 point of action posters are available at the web site for free download, www.tlfast.org. The free and publicly available curriculum on the web site is also made available to the over 550 schools that attend the collective group of RELCs. See the comprehensive report from Eagle Bluff ELC that provides more detail on the educational dissemination of the collective effort of the six RELCs known collectively as TLFAST.

The fulfillment of the project as per its title became evident even before the project was complete. Not only are the participants in WRELC programs learning from the demonstrated installations, but also political leaders, agency staff of Minnesota and corporate business leaders. To date 123 people have come to tour and learn from the sustainable energy installations including: the Ambassador of Sweden, leaders of several different offices of the Minnesota Department of Natural Resources, staff of US Senator offices, native tribal leadership and corporate leaders interested in renewable energy. In program participation, WRELC recorded 13,084 participants last year on the WRELC campus, with another 10,843 in off site programs. The on-campus attendance is an extremely consistent number of students that are annually learning from these models of energy sustainable practices at WRELC. With support from the ENRTF, WRELC is changing how our future generations will see their own future. What is considered "cutting edge" to adults, is being learned and viewed by our children as behaviors and technologies that are simply "the appropriate way we live" in the 21st century. Through this project we have furthered established this transformation for thousands of Minnesota children each year.

**Project completed:** 6/30/2012

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**SUBD. 08 ENVIRONMENTAL EDUCATION**

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**Connecting Youth with Nature**
Subd. 08c $160,000

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**Appropriation Language**
$160,000 is from the trust fund to the commissioner of natural resources to hold teacher training workshops on the use of digital photography as a tool for learning about nature. The equipment must be provided from other funds.

**Overall Project Outcome and Results**
Connecting Youth with Nature has successfully achieved it goals as initially proposed. The working title of the project was changed to the "Digital Photography Bridge to Nature" because there were federal agencies using the name "Connecting Youth with Nature" for other environmental education initiatives. Two statewide coordinators were hired under contract-one for the metropolitan region and one for greater Minnesota. Nine workshop facilitators were hired to deliver 80 Digital Bridge workshops over the course of the project. The kickoff teacher workshop was held on July 10 at Luverne, Minnesota, and was attended by 60 teachers. The keynote speaker was world-reknown National Geographic photographer Jim Brandenburg who grew up in Luverne, Minnesota.

A total of 40 camera kits of 12 cameras each and several field guides were purchased and assembled with additional funds provided by the Nongame Wildlife Program and the DNR Division of Parks and Trails. Additional cameras were purchased for use on "Photo safari" programs in State Parks.

For the 24 month period from July 10, 2010, through June 30, 2012, a total of 84 teacher workshops were carried out for a total of 1147 teachers. The goal of the project was to present 80 workshops reaching 1000 teachers in two years. In addition to facilitating teacher workshops, project facilitators have also gone into classrooms with teachers and taken the students on "photo safaris". A total of ten photos safaris were carried out with teachers with a total of over 500 students.

Workshop facilitators have been providing the camera kits to teachers so they can carry out their photo safaris after attending Digital Bridge workshops. The Nikon digital cameras selected for this project have been holding up very well to such intensive use. Only ten cameras out of 500 have been damaged beyond repair.

**Project Results Use and Dissemination**
Information on the Digital Photography Bridge to Nature project is available on the DNR website (http://www.dnr.state.mn.us/eco/nongame/projects/digitalbridge.html). Additional publicity on this project has been shared on local and state newspapers, radio, television, and the national Birdwatching magazine.

**Project completed:** 06/30/2012

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**Project Get Outdoors**
Subd. 08h $15,000

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**Appropriation Language**
$15,000 is from the trust fund to the commissioner of natural resources for an agreement with Project Get Outdoors, Inc. to develop out of school programs connecting children to local nature experiences.

**Overall Project Outcomes and Results**
Project GO has developed a toolkit to help local communities design, implement, evaluate, and sustain free after-school and summer programs that introduce children to nearby public lands and outdoor activities and skills they can enjoy at these sites.

Through funds from the Minnesota Environment and Natural Resources Trust Fund, Project GO was able to assemble 50 Activity Backpacks and 32 Equipment Trunks for Project GO program leaders to use in their communities. Each program leader is issued a backpack to keep during their involvement with the Project GO program. The Activity Backpacks provide basic supplies to help leaders implement 100 or more different outdoor games, projects, and activities.

The Equipment Trunks focus on 16 different activities and are available for Project GO leaders to check out for free. These trunks are housed at Whitewater State Park for use in SE Minnesota and we anticipate the other set of 16 trunks will be housed out of Minneopa State Park for use by Project GO clubs in SW Minnesota.

At the time of this report, 14 backpacks have been issued. Equipment trunks are beginning to be checked out. Program leaders are excited to have these resources and so far, feedback has been very positive. The children are happy to have more diverse equipment and supplies to use while learning about the outdoors. We plan to evaluate the usefulness of these resources over the coming year via a program leader survey. One obstacle we are looking at is getting the equipment trunks to and from program sites that are farther from the storage site. We are hoping to develop a network of volunteer "runners" who would be reimbursed mileage for delivering and returning the equipment trunks when a GO site in a community such as Red Wing or Spring Grove desires to check out a trunk.

**Project Results Use and Dissemination**
The completed Activity Backpacks have already been issued to 14 sites. We will continue to help communities design Project GO programs that are unique as well as work with local staff at community organizations such as youth centers, school age child care programs, and other after school sites to introduce children in those programs to nature through our toolkit resources.

Since completing the assembly of the 50 Activity Backpacks and 32 Equipment Trunks, Project GO has formed a partnership with local public health and child care resource professionals to look at implementing our program into the larger child care centers that serve school age children during the after school hours. We are currently piloting this at a child care center in Caledonia and looking to work with two child care centers in Rochester. We will train the school age room staff at these centers to use our backpacks at least once a week. As an incentive for them to use the backpacks and journal their experiences, Project GO will provide a person to come out to their site no more than once a month to lead a hands-on nature activity using one of the Equipment Trunks. This new approach with child care centers will allow us to serve many more children. Project GO will be presenting at an upcoming Focus

on the Child conference in Rochester, sharing this information with child care providers from across the southern region.

A number of colleges and college professors in SE Minnesota have expressed enthusiasm to connect their students to service learning, internship, and practicum experiences with Project GO. We have found that college students bring great enthusiasm to the program which the children really enjoy and in exchange Project GO is able to provide real world learning experiences for these students.

We are already looking to secure additional funds to purchase more backpacks, as we anticipate the first 50 will be issued within a year. The US Fish & Wildlife Service Winona District is eager to help us acquire another batch of backpacks.

**Project completed:** 11/16/2010

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**Online Field Trip of Minnesota River**
Subd. 08k $124,000

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**Appropriation Language**
$124,000 is from the trust fund to the commissioner of natural resources for an agreement with Minnesota State University - Mankato to develop online educational materials on the Minnesota River for schools and outreach centers.

**Overall Project Outcome and Results**
Considerable public funding and effort has gone into better understanding and restoring the Minnesota River. Research about the river is housed in an array of scientific publications not easily accessible for the public. This project helps to bridge the information gap between researchers and the public and to generally improve environmental education about the river. The project's goal is to increase public awareness about the river's health by using new media techniques to engage students and the public.

Major results included 1) developing and delivering the "Ask an Expert about the Minnesota River" website and 2) performing educational outreach. This project developed a multi-media virtual field trip with accompanying educational materials to showcase what scientists are learning about the Minnesota River. Citizens have a unique opportunity to learn directly from natural resource experts about the current state of the Minnesota River. Video clips of interviews and related information are available online on the Minnesota River Basin Data Center website: http://mrbdc.mnsu.edu/learn.

*Online Educational Website - Ask an Expert about the Minnesota River*
Video clips of scientist and citizen experts answering questions about the river's health are the central

feature of the website enriched by accompanying handouts, and graphics. Specifically, the major features of the website include:

- 171 video clips of experts answering questions;
- 27 handouts with background information developed to enrich each theme;
- 9 panoramic virtual tours and 20 slideshows;
- 5 educator's guides and 7 accompanying PowerPoint presentations on prairies, wetlands, agriculture, fish, and mussels.

*Educational outreach and learning stations*

Four computer kiosks (learning stations) were installed at key educational centers across the basin - specifically Treaty Site History Center in St. Peter, MN; Regional River History Center in New Ulm, MN; Ney Nature Center in Henderson, MN; and Clean Up the River Environment (CURE) office in Montevideo, MN - likely reaching 4,000-8,000 people in the upcoming year. Open houses at the four educational centers and other events directly reached approximately 349 people during the project period. Four school classroom presentations reached approximately 371 students.

**Project Results Use and Dissemination**

The broad dissemination goals for the project are to share data with the public, students and teachers through both traditional and nontraditional outreach methods. The dissemination of this project proceeded at several levels. All the project data is available on the web in a user-friendly format. Computer kiosks (learning stations) highlighting the project were developed and installed in four key river and history centers across the basin. We also conducted outreach to three schools and four educational centers that included presentations and open houses. We have also used social media resources such as Facebook and YouTube to disseminate information about the project.

We worked collaboratively with a wide range of state and local agencies (MPCA, MDNR, Department of Agriculture, etc.) and citizen organizations (CURE, Ney Nature Center, Nicollet County Historical Society) to develop and publicize the project. Project staff have spoken about the project to local and state officials and staff, nonprofit organizations, teachers and students, and citizens. The project has received attention at scientific meetings (both poster session in 2011 and presentation in 2012 at the Minnesota Water Resources Conference) and educational training (DNR Naturalists). The project team plans to continue outreach to schools and putting on public events to promote the project and further raise public awareness about the Minnesota River.

**Project completed:** 06/30/2012

# M.L. 2009 Projects Completed 2011-2012

# MN Laws 2009, Chapter 143, Section 2

**M.L. 2009 Projects Completed 2011-2012**

**M.L. 2009 Projects**
**MN Laws 2009, Chapter 143, Section 2 (beginning July 1, 2009)**

NOTE: Below are short abstracts for projects funded during the 2009 Legislative Session and ending during 2011-2012. The final date of completion for these projects is listed at the end of the abstract. Final Reports for all completed projects are available at http://www.lccmr.leg.mn/projects/2009-index.html or by contacting the LCCMR office.

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**Subd. 03 Natural Resource Data and Information**

03a Minnesota County Biological Survey
03b County Geologic Atlas and South-Central Minnesota Groundwater
03c Soil Survey
03d Springshed Mapping for Trout Stream Management
03e Restorable Wetlands Inventory

**Subd. 04 Land, Habitat, and Recreation**

04a State Parks Acquisition
04b State Trail Acquisition
04d Statewide Scientific and Natural Area Acquisition and Restoration
04e Minnesota's Habitat Conservation Partnership (HCP) - Phase VI
04f Metro Conservation Corridors (MeCC) - Phase V
04g Statewide Ecological Ranking of Conservation Reserve Program (CRP) and Other Critical Lands
04h Protection of Granite Rock Outcrop Ecosystem
04i MN Farm Bill Assistance Project

**Subd. 05 Water Resources**

05d Intensified Tile Drainage Evaluation - RESEARCH
05e Citizen-Based Stormwater Management
05f Minnesota Drainage Law Analysis and Evaluation

**Subd. 06 Aquatic and Terrestrial Invasive Species**

06a Ballast Water Sampling Method Development and Treatment Technology - RESEARCH
06b Emergency Delivery System Development for Disinfecting Ballast Water - RESEARCH
06c Improving Emerging Fish Disease Surveillance in Minnesota - RESEARCH

**Subd. 07 Energy**

07b Projecting Environmental Trajectories for Energy-Water-Habitat Planning
07c Energy Efficient Cities

**Subd. 08 Administration and Other**

08a Contract Management
08b Legislative-Citizen Commission on Minnesota Resources (LCCMR)

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**SUBD. 03 NATURAL RESOURCE DATA AND INFORMATION**

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**Minnesota County Biological Survey**
Subd. 03a $2,100,000

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**Appropriation Language**
$2,100,000 is from the trust fund to the commissioner of natural resources for continuation of the Minnesota county biological survey to provide a foundation for conserving biological diversity by systematically collecting, interpreting, and delivering data on plant and animal distribution and ecology, native plant communities, and functional landscapes.

**Overall Project Outcome and Results**
Since 1987 the Minnesota County Biological Survey (MCBS) has systematically collected, interpreted and delivered baseline data on the distribution and ecology of plants, animals, native plant communities, and functional landscapes in 81 of 87 counties. MCBS has added 19,089 new records to the Rare Features Database and contributed 4,544 of the 9,634 total database records to the Releve (vegetation sampling) Database. Rare aquatic plant and vegetation surveys were completed for 1,764 lakes. Statewide 9,713 MCBS Sites of Biodiversity Significance and 58,957 polygons of native plant communities are now publically available on DNR's Data Deli.

During this project period, northeastern surveys documented features within large functional landscapes of fire-dependent forests, cliff and talus complexes, and undeveloped lakes. Surveys began in a portion of the northern patterned peatlands, one of the state's largest (about 2.5 million acres) and most inaccessible ecological systems. Surveys included successful collaboration with Red Lake Reservation DNR managers and University of Minnesota researchers.

New range distributional data were recorded for Braun's holly fern (Polystichum braunii), Laurentian tiger beetle (Cicindela denikei), Black-throated Blue Warblers (Setophaga caerulescens) and three species of mosses.

MCBS data on the locations of native prairie were a centerpiece of a plan: Minnesota prairie conservation plan 2010: a habitat plan for native prairie, grassland, and wetlands in the Prairie Region of western Minnesota. See also: Minnesota's Remaining Native Prairie 100 Years After the Public Land Survey.

MCBS provided data and interpretation to inform management and monitoring activities in the Manitou and Sand Lake Seven Beavers Collaboratives- two large multi-jurisdictional landscapes.

DNR's Forest Certification implementation used a MCBS data access tool to assist in evaluation of data related to High Conservation Value Forests.

Maps of the Minnesota locations of 242 breeding birds based on observations by MCBS are on the web: Bird Distribution Maps.

**Project Results Use and Dissemination**
Data delivery includes delivery of information to local units of government, presentations and field trips, publications and web products. Several examples of recipients of data during this period include: St Louis County, Becker County, State Parks, northeast Landscape Collaboratives, Potlatch, Hamden Slough National Wildlife Refuge, Voyageurs National Park, Heron Lake Watershed District, and private landowners near the Chandler, MN Chanarambie Creek Prairies. See Final Report for additional information.

**Project completed:** 06/30/2011

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**County Geologic Atlas and South-Central Minnesota Groundwater**
Subd. 03b $2,695,000

**Part 1: County Geologic Atlas and South-Central Minnesota Groundwater ($820,000)**
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**Part 2: County Geologic Atlas and South-Central Minnesota Groundwater ($1,875,000)**
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**Appropriation Language**
$2,695,000 is from the trust fund for collection and interpretation of subsurface geological information and acceleration of the county geologic atlas program. $820,000 of this appropriation is to the Board of Regents of the University of Minnesota for the geological survey to continue and to initiate the production of county geologic atlases. $1,875,000 of this appropriation is to the commissioner of natural resources to investigate the physical and recharge characteristics of the Mt. Simon aquifer.

This appropriation represents a continuing effort to complete the county geologic atlases throughout

the state. This appropriation is available until June 30, 2012, at which time the project must be completed and final products delivered, unless an earlier date is specified in the work program.

**PART 1: Minnesota Geological Survey**

**Overall Project Outcome and Results**
County geologic atlases support water and mineral resource management and education. An atlas provides maps and databases at scales appropriate for land use planning and water management decisions. An atlas greatly improves our ability to monitor the resource, to predict the effects of pumping, and to respond effectively to contamination. This project created atlases for Anoka and Wright counties in paper, digital, and web-accessible formats. Copies will be provided to LCCMR and the counties, and workshops will be held to train users.

Geologic maps describe the distribution of earth materials that determine where water can enter the ground (become ground water), where it can be taken from the ground (aquifers), and how aquifers connect to rivers, lakes, and wetlands. Each geologic atlas contains these parts:

1. Database map: shows the location of all well records, borings, scientific drilling, natural exposures, and geophysical measurements used to support the atlas. The databases are also provided.
2. Surficial Geology map: shows the earth materials immediately beneath the soil zone, and describes their composition and ability to convey water. The surface described by this map is the interface between human activities and ground water. Its character determines to a great degree the sensitivity of ground water to contamination.
3. Glacial Stratigraphy and Sand Distribution Model: A series of maps show the location, depth, and thickness of sand or gravel bodies (aquifers) in glacial materials. This map is useful in finding a water source, determining pumping effects, and in understanding the results of water monitoring.
4. Bedrock Geology map, bedrock topography map: These maps describe the location and type of bedrock present, and its ability to host and transmit groundwater. The contacts between layers of sedimentary rock are mapped as digital surfaces and this enables numerical simulations of the ground water system that can predict the effects of pumping before wells are drilled.

**Project Results Use and Dissemination**
Geologic atlases support informed decision-making. They are applied to wellhead protection, water appropriation decisions, well field design, onsite water treatment design, facility siting, monitoring, and remediation of contamination. The atlases are printed, and also provided in several digital formats for electronic use including geographic information systems. When the atlases are complete we hold workshops in the county to explain the products and their uses.

**Project completed:** 06/30/2012

**PART 2: MN Department of Natural Resources**

**Overall Project Outcome and Results**
Most data collected for the Mt. Simon - Hinckley aquifer Phase 2 study were derived from 16 wells installed at 10 locations to depths of 100 to 695 feet in McLeod, Wright, Hennepin, Sherburne, Anoka, and Isanti counties. In the Phase 2 area chemical residence time indicators from the Mt. Simon aquifer indicate groundwater ages less than approximately 1,000 years in eastern Wright and Sherburne

counties and northern Isanti County. These relatively young groundwater ages are consistent with water level and stratigraphic information that indicate both direct and indirect connection of surface water to the Mt. Simon- Hinckley aquifer through localized focused recharge.

This project has shown that the most critical recharge area for the Mt. Simon-Hinckley aquifer and Minneapolis-St. Paul metropolitan area water supply includes portions of Wright, Sherburne, and Isanti counties. Protection of this region from water pollution should be a high priority for all levels of government. Continued monitoring of wells installed for this investigation will create a long term record that can be used to interpret changes in local and regional water supply due to water use or climate changes.

The County Geologic Atlas, Part B, portion of this project supported the completion of three and the initiation of six Part B atlases in the County Geologic Atlas series that the DNR prepares in collaboration with the Minnesota Geological Survey. Each Part B atlas provides groundwater maps, data describing aquifer properties and use, analytical results of groundwater chemistry sampling including age-dating samples, and interpretation of pollution sensitivity. All of these maps and data are used to meet many environmental information and protection needs, including resource protection planning, water resource management, water appropriation permitting, contamination mitigation, education, among others. The Todd, Carlton, and Benton Part B atlases were completed and the Carver, McLeod, Chisago, Blue Earth, Nicollet, and Sibley Part B atlases were initiated.

**Project Results Use and Dissemination**
The reports from this project have been available on the DNR website since the summer of 2012. The Mt. Simon project was presented as a poster at the Midwest Groundwater Association meeting in Minneapolis in October 2012. We are currently producing a short (15 minute) video highlighting some of the results of the project for presentation at future meetings and for general viewing on the internet. In addition, a summary of the project will be submitted to the Minnesota Groundwater Association for inclusion in the quarterly newsletter.

The well log and well construction information is currently available in the project report and the Minnesota Department of Health County Well Index (http://mdh-agua.health.state.mn.us/cwi/cwiViewer.htm). The wells have become part of the DNR observation well network. Water level data is currently available at: http://climate.umn.edu/ground_water_level/.

Publication of Part B atlas reports include preparation and printing of the County Geologic Atlases, Part B, and delivery of printed reports to the county; preparation and delivery of Part B materials to MGS for inclusion in a DVD version of each completed project that incorporates geographic information system (GIS) files, database files, pdfs, and additional digital products. When each atlas Part B is completed a training workshop for the county and local users is held to explain the results and how the maps, data, and other information can be used to assist local water resource programs. To reach other users and audiences program staff contributed newsletter articles and presented talks and posters at conferences. Completed digital products are posted on DNR webspace at http://www.dnr.state.mn.us/waters/groundwater_section/mapping/status.html. Printed reports are available for sale through MGS Map Sales at http://www.mngs.umn.edu/mapsales.html.

**Project Publication:**
South-Central Minnesota Groundwater Monitoring of the Mt. Simon Aquifer - Phase 2

**Project completed:** 06/30/2012

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**Soil Survey**
Subd. 03c $400,000

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**Appropriation Language**
$400,000 is from the trust fund to the Board of Water and Soil Resources to accelerate the county soil survey mapping and Web-based data delivery. This appropriation represents a continuing effort to complete the mapping. The soil surveys must be done on a cost-share basis with local and federal funds.

**Overall Project Outcome and Results**
Accurate soils information is essential for evaluating the potential for land to support development, crop and forest production, and for identifying the most suitable locations for conservation practices and other land uses. Readily accessible local soil information is critical to informing conservation decisions and provides a foundation for sustainable land use planning. The soil survey is the mechanism for how this basic natural resource information is made available to land use authorities and landowners to make the best land use decisions.

In the ongoing, multi-year project to map, classify, interpret, and Web-publish an inventory of the soils of Minnesota, this two-year phase of the project focused on accelerating the completion of a Statewide soil survey, increase soil mapping in targeted areas, and enhancing soils data through increased sample collection, availability and interpretation. Specifically:

- 330,000 acres mapped in Crow Wing County;
- 32,000 acres mapped in Pine County;
- 85,000 acres mapped in Koochiching County;
- 80,000 acres mapped in the Crane Lake subset of St. Louis County;
- 219,000 acres mapped in Lake County;
- 114,000 acres mapped in Cook County;
- Data from 1,000 soil samples (some dating back to the 1970's) were interpreted for the first time and incorporated into Soil Surveys for many Minnesota counties;
- Land use effects on soil carbon were determined on 122 sites in 14 counties throughout the State; this data can be used to develop soil carbon management guidance.

The soil survey project was extremely successful and many of the mapping goals were exceeded. Mapping surpassed initial acreage goals in both Crow Wing, Lake, Cook and Pine Counties, and the soil surveys for Koochiching and St. Louis Counties were completed 1 year ahead of schedule. A report

detailing the results of re-analysis of lab samples from the 1970's highlighting land use impacts on soil carbon is available below and on BWSR's State Soil Office website.

**Project Results Use and Dissemination**
The Soil Survey project funded by the Minnesota Environment and Natural Resources Trust Fund is highlighted as a BWSR feature project on the Agency's home page. All the data, mapping information, and interpretations are available on the Web Soil Survey as a user-friendly, GIS-based application. Web Soil Survey provides soil data and information produced by the National Cooperative Soil Survey. It is operated by the USDA Natural Resources Conservation Service (NRCS) and provides access to the largest natural resource information system in the world.

**Project Publication:**
Historical C Project Report on land use impacts on soil carbon

**Project completed:** 06/30/2011

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**Springshed Mapping for Trout Stream Management**
Subd. 03d $500,000

**Part 1: Springshed Mapping for Trout Stream Management ($250,000)**
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**Appropriation Language**
$500,000 is from the trust fund to continue to identify and delineate supply areas and springsheds for springs serving as coldwater sources for trout streams and to assess the impacts from development and water appropriations. Of this appropriation, $250,000 is to the Board of Regents of the University of Minnesota and $250,000 is to the commissioner of natural resources.

**PART 1: University of Minnesota**

**Overall Project Outcome and Results**
Native trout require clean, cold water that usually originates from springs, but the springs feeding the 173 designated trout streams in southeastern Minnesota are under increasing pressure from current and expected changes in land use. This joint effort by the University of Minnesota and the Minnesota Department of Natural Resources continued an ongoing effort begun in 2007 that is working to identify and map the springs and the areas that feed water to these springs and to learn how these waters might be affected by development and water use.

Springshed delineation provides critical information for the protection and management of the springs that form the coldwater streams of southeast Minnesota. Our primary tool is fluorescent dye tracing. During the two-year period of Phase II, the U of M in collaboration with the DNR conducted 26 traces in Fillmore, Houston, Winona and Wabasha counties that mapped over 12,000 acres. Each individual trace typically has involved two or more different tracers with up to five different tracers employed in one trace. These traces are expanding the tools available for the springshed mapping, while defining new springsheds and refining the boundaries of known springsheds. These traces have been conducted in the Galena, Prairie du Chien and St. Lawrence springshed areas. Additionally, data monitoring equipment was also added as an additional component in this phase. The availability of new, high resolution LiDAR data also provided an important new tool that is being utilized to locate sinkholes, sinking streams, and spring as part of the springshed mapping effort.

We coordinated our efforts with other LCCMR funded programs in SE Minnesota and with ongoing resource management efforts by the DNR, MPCA and Agriculture Department State agencies. Six of the dye traces were done in coordination with local governmental staff in order to support the Root River pilot project of the Mississippi River Basin Initiative (MRBI) in Minnesota. We are working with the MPCA's TMDL efforts in SE Minnesota.

**Project Results Use and Dissemination**
The dissemination of the results of this project proceeded at several levels. We provided interim results to local landowners and to local, county, regional, and state agency staff and resource managers. MPCA staff, for example, routinely contact us with questions about karst features in SE Minn. We worked synergistically with other LCCMR funded research projects and with a range of resource management efforts. The generation and dissemination of the maps and written reports was part student educational projects - including local high school students, university students, interns, graduate student theses, post Doctoral researchers, and various colleagues. We lead and participated in fieldtrips sponsored by LCCMR, the MGWA, and other groups focused on protecting SE MN trout streams and water resources. We worked collaboratively with MPCA, DNR, Department of Agriculture and other agencies to expand and complement the LCCMR funded work. A dozen reports on the interim results of this project were presented at state and national scientific meetings.

**Project completed:** 06/30/2011

**PART 2: MN Department of Natural Resources**

**Overall Project Outcome and Results**
Springshed delineation provides critical information for the protection and management of the springs that form the coldwater streams of southeast Minnesota. Our primary tool is fluorescent dye tracing. During the two-year period of Phase II, DNR (in cooperation with the U of M) conducted 26 traces in Fillmore, Houston, Winona and Wabasha counties that mapped over 12,000 acres.

The Fillmore County traces were in the Galena Formation. We discovered three previously unmapped springsheds and expanded the boundaries of five known springsheds. The expanded boundary springsheds were in the Watson Creek and South Fork Root watersheds, target areas for the local, state and federal Root River Initiative. The new springsheds are in the Crystal Creek watershed. These traces enhanced MDA watershed research and education efforts.

The traces in Houston, Winona and Wabasha were in the St. Lawrence Formation. This work expanded the geographic range of St. Lawrence traces and demonstrated that conduit flow in the St. Lawrence (a confining unit in the state well code) is a regional phenomenon. Four new springsheds were located in the St. Lawrence. Two of the traces in Houston County were run from streams that do not disappear into the St. Lawrence but flow continually across it. Both of those traces were detected at springs and one was detected in a private well. This indicates that St. Lawrence groundwater across southeast Minnesota could be impacted by the surface water quality of streams crossing the formation in shallow conditions.

Solinst level-temperature-conductivity loggers were purchased in the second year of the project. The data from them has shown that Prairie du Chien formation springs can be monitored for minor temperature fluctuations. Detecting these fluctuations has allowed us to conclude that the monitored springs are affected by snowmelt runoff. This information will be used for spring assessment protocol development.

**Project Results Use and Dissemination**
The project manager has spoken about the project and its results to local, state and federal officials, citizen groups, anglers, local, state and federal agency staff, and met one-on-one with numerous landowners. Project results are part of the base data for Root River Initiative watershed management efforts in the Watson Creek and Rush Pine watersheds. MPCA staff are using the maps as part of their nitrate-TMDL development. MDA staff are using the springshed maps to modify their watershed research in the Crystal Creek watershed. The project was featured on MPR when a reporter accompanied the project manager on a spring snowmelt runoff dye trace near Canton, MN. Two traces were conducted in cooperation with the earth science class at Fillmore Central High School in Harmony. The students assisted with dye input and sampling.

**Project completed:** 06/30/2011

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**Restorable Wetlands Inventory**
Subd. 03e $300,000

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**Appropriation Language**
$300,000 is from the trust fund to the commissioner of natural resources for an agreement with Ducks Unlimited, Inc., to complete the inventory, mapping, and digitizing of drained restorable wetlands in Minnesota. This appropriation is available until June 30, 2012, at which time the project must be completed and final products delivered, unless an earlier date is specified in the work program.

**Overall Project Outcome and Results**
The Restorable Wetlands Inventory (RWI) is a complement to the National Wetlands Inventory (NWI) completed in late-1980s by the U.S. Fish & Wildlife Service. An administrative decision was made developing the original NWI not to map wetland basins in Minnesota identified as completely drained. The number and acreage of completely drained wetlands that were not mapped by the NWI process is significant. In Pope County alone, 25,000 acres of completely drained wetland acres were missed in the NWI mapping process - nearly 19% of the total wetland resources in that county. The RWI project identifies and digitizes the completely-drained depressional wetlands that were not mapped by the NWI process. Restorable wetlands mapping is based upon protocols established for NWI allowing seamless integration of the two datasets.

The 2009 Environment and Natural Resources Trust Fund appropriation provided the last project funding needed to complete, remaining RWI mapping for the glaciated, tallgrass prairie region of Minnesota - an additional 6,120 square miles. The mapping occurred in approximately 178 townships in Clay, Mahnomen, McLeod, Meeker, Nicollet, Norman, Renville, Sibley, Wilkin, and Wright Counties.

In the Red River Valley Complex, over 132,000 individual restorable wetland basins were identified and mapped. In the Prairie-Hardwood Complex, almost 131,000 individual restorable wetland basins were identified and mapped.

As in previous phase of the mapping project, partners included the LCCMR, Ducks Unlimited, Inc., and the U.S. Fish and Wildlife Service. The photo-interpretation and digitization work was contracted to the GIS Lab at South Dakota State University.

The attached "Restorable Wetlands Inventory: Final Status Map" displays the counties and townships that were completed under the M.L. 2008, M.L. 2009, and prior appropriations.

Data will be distributed on the web via the Minnesota GIS Data Deli (http://deli.dnr.state.mn.us) and the Ducks Unlimited, Inc. (http://www.ducks.org) websites.

**Project completed:** 06/30/2012

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**SUBD. 04 LAND, HABITAT, AND RECREATION**

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**State Parks Acquisition**
Subd. 04a $590,000

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**Appropriation Language**
$590,000 is from the trust fund to the commissioner of natural resources to acquire in-holdings for state parks. Land acquired with this appropriation must be sufficiently improved to meet at least minimum management standards as determined by the commissioner of natural resources. A list of proposed acquisitions must be provided as part of the required work program.

**Overall Project Outcome and Results**
The Environment and Natural Resources Trust Fund funding allowed for the following:

- Ownership of approximately 87 acres in the Cuyuna Country State Recreation Area. Acquisition of this parcel provides for unified ownership of park-managed land and includes a key access point into the recreation area. This parcel also has over one mile of water frontage on three lakes within the recreation area.
- Ownership of a 17-acre parcel in Whitewater State Park. Acquisition of this parcel provides protection on the Whitewater River and adjacent to the park visitor center. The current trail system lies close to the boundary and could now be extended for additional river resource interpretation. The parcel also provides a natural buffer between the visitor center and private development.
- Ownership of approximately 20 acres of land in Nerstrand Big Woods State Park due to partially funding from the Trust Fund. This property is identified by Minnesota County Biological Survey as having outstanding biodiversity significance and has not been logged in over 100 years. The spring ephemerals prevalent in this area of the park are now protected. The site is also key to maintaining the closed canopy and diverse understory characteristic of 'big woods' in Nerstrand Big Woods State Park.

All acquisitions were from willing sellers, and located within the statutory boundary of state parks.

**Project completed:** 06/30/2012

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**State Trail Acquisition**
Subd. 04b $1,000,000

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**Appropriation Language**
$1,000,000 is from the trust fund to the commissioner of natural resources to assist in the acquisition of

the Brown's Creek Segment of the Willard Munger Trail in Washington County and Paul Bunyan State Trail in the city of Bemidji.

**Overall Project Outcome and Results**
The Environment and Natural Resources Trust Fund funding allowed for the following:

- Ownership of approximately 1.25 miles of the Paul Bunyan State Trail. Acquisition of this property provided for the necessary connection to the Paul Bunyan State Trailhead on the southeastern corner of Lake Bemidji. The property is comprised entirely of former industrial property, located adjacent to the shoreline of Lake Bemidji. The 2009 Trust Fund appropriation amount partially funded this acquisition.
- Ownership of approximately 6 miles of the Browns Creek Segment of Munger State Trail. The property is comprised entirely of the right-of-way of the former Minnesota Zephyr Dinner Trail and traverses the margins of the St. Croix River floodplain adjacent to T.H. 95, the gently to steeply sloping bluffs of the river valley and gently rolling uplands that are interspersed with residential and commercial development. The 2009 Trust Fund appropriation amount partially funded this acquisition.

**Project completed:** 06/30/2012

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**Statewide Scientific and Natural Area Acquisition and Restoration**
Subd. 04d $590,000

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**Appropriation Language**
$590,000 is from the trust fund to the commissioner of natural resources to acquire high quality native plant communities and rare features and restore parts of scientific and natural areas as provided in Minnesota Statutes, section 86A.05, subdivision 5. A list of proposed acquisitions must be provided as part of the required work program.

**Overall Project Outcome and Results**
Acquisition and SNA designation of five properties at three SNAs was completed permanently protecting and providing for public use of 207.32 acres (pro-rated as 106.4 acres with this appropriation). Acquisitions include the following:

- A new SNA was established with acquisition of the 14.72-acre Morton Outcrops SNA - the heart of a 65-acre exceptional and geologically significant Minnesota River valley rock outcrop site with seven rare species - located in Redwood County.
- Two additions totaling 105.7 acres (pro-rated as 50.3 acres for this appropriation) to the Hastings Sand Coulee SNA were acquired; along with a 78-acre adjoining tract transferred from

DNR Wildlife, these acquisitions mean that 267 acres is now protected as SNA out of the ~500-acre sand coulee area which is the largest remaining sand prairie complex in Dakota County and is home to 14 rare species including three snakes and two butterflies.

- Two native prairie sites were added to Blanket Flower Prairie SNA in Clay County which now protects about 430 acres of habitat for 106 bird species including the greater prairie chicken: a 14-acre addition was acquired with this appropriation; and the 135.9-acre Ole Huseby Homestead addition to Blanket Flower Prairie SNA was acquired in part with this funding (pro-rated as 27.4 acres for this appropriation).

A total of 563 acres at 27 SNAs across the state received restoration and enhancement work, plus development projects were completed at 17 SNAs, thus increasing the native habitat quality and public use of these SNAs. In summary:

- One 11-acre prairie reconstruction project was completed.
- Woody invasive/non-native species were removed on 202 acres at 11 SNAs and herbaceous or seedling invasive species were removed at another 44 acres at four SNAs.
- Prescribed burning was completed on 317 acres at nine SNAs.
- New Adaptive Management Plans were completed for two sites.

Conservation Corps Minnesota (CCM) was involved in these projects at ten SNAs.

**Project Results Use and Dissemination**
Information about Scientific and Natural Area (SNA) sites, including those SNAs with new acquisition, restoration, enhancement and development activities through this appropriation, is available on the DNR website (www.mndnr.gov/snas). DNR-sponsored volunteer events are regularly posted at: www.dnr.state.mn.us/volunteering/sna/index. The Hastings Sand Coulee SNA acquisition was referenced in articles in the Hastings Gazette and the Friends of the Mississippi River website.

**Project completed:** 06/30/2012

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**Minnesota's Habitat Conservation Partnership (HCP) - Phase VI**
Subd. 04e $3,375,000

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**Appropriation Language**
$3,375,000 is from the trust fund to the commissioner of natural resources for the sixth appropriation for acceleration of agency programs and cooperative agreements. Of this appropriation, $770,000 is for the Department of Natural Resources agency programs and $2,605,000 is for agreements as follows: $450,000 with Pheasants Forever; $50,000 with Minnesota Deer Hunters Association; $895,000 with Ducks Unlimited, Inc.; $85,000 with National Wild Turkey Federation; $365,000 with the Nature Conservancy; $210,000 with Minnesota Land Trust; $350,000 with the Trust for Public Land; $100,000 with Minnesota Valley National Wildlife Refuge Trust, Inc.; $50,000 with the United States Fish and

Wildlife Service; and $50,000 with Friends of Detroit Lakes Watershed Management District to plan, restore, and acquire fragmented landscape corridors that connect areas of quality habitat to sustain fish, wildlife, and plants. The United States Department of Agriculture-Natural Resources Conservation Service is a cooperating partner in the appropriation. Expenditures are limited to the project corridor areas as defined in the work program. Land acquired with this appropriation must be sufficiently improved to meet at least minimum habitat and facility management standards as determined by the commissioner of natural resources. This appropriation may not be used for the purchase of residential structures, unless expressly approved in the work program. All conservation easements must be perpetual and have a natural resource management plan. Any land acquired in fee title by the commissioner of natural resources with money from this appropriation must be designated as an outdoor recreation unit under Minnesota Statutes, section 86A.07. The commissioner may similarly designate any lands acquired in less than fee title. A list of proposed restorations and fee title and easement acquisitions must be provided as part of the required work program. All funding for conservation easements must include a long-term stewardship plan and funding for monitoring and enforcing the agreement. To the maximum extent practical, consistent with contractual easement or fee acquisition obligations, the recipients shall utilize staff resources to identify future projects and shall maximize the implementation of biodiverse, quality restoration projects in the project proposal into the first half of the 2010 fiscal year.

**OVERALL PROJECT OUTCOMES AND RESULTS**

During the period between July 1st, 2009 and June 30th, 2011, Minnesota's Habitat Conservation Partnership (HCP) collectively expended $10,849,598 of funds to restore, enhance or protect a total of 10,350 acres of habitat and 32,957 feet of shoreline and riparian areas within the defined HCP project areas. More specifically, 5,732 acres of habitat and 16,461 feet of shoreline and riparian areas were restored, enhanced or protected with $2,973,871 of Environment and Natural Resources Trust Funds (ENRTF) that leveraged an additional $5,217,069 of other non-state funds to restore, enhance, or protect 3,896 acres of habitat and 1,415 feet of shoreline and riparian areas.

In total, partners expended $1,913,371 ($1,158,226 ENRTF) to restore/enhance a total 6,100 acres (4,874acres ENRTF). Work included 4,805 acres of grassland restoration/enhancement, 578 acres of wetland restoration/enhancement, 125 acres of woodland restoration, and 4,740 feet of shoreline restoration. Other accomplishments included 71 shallow lake surveys and designs, dam modifications, and site access/development.

Partners acquired a total of 3,463 acres (649 acres ENRTF) of perpetual conservation easements. Grassland/wetlands continued to be a priority for HCP partners working on easements, with 3,071.7 acres protected. Shoreline/riparian areas were also a priority with 13,216 feet protected. In addition, 335.6 acres of woodland was also permanently protected.

Partners permanently protected 787.6 acres in fee-title acquisition with total funding of $2,499,610 ($897,368 ENRTF and $568,517 of other non-state funds). In total, HCP partners permanently protected 600.5 acres of new WMAs, 56.3 acres of AMAs, 52.3 acres of TNC preserve, and 78.5 acres of WPAs.

For complete information, go to http://www.mnhabitatcorridors.org.

HCP Partners include: Ducks Unlimited, Friends of the Detroit Lakes Wetland Management District, MN Deer Hunters Association, MN Department of Natural Resources, MN Land Trust, MN Valley National Wildlife Refuge Trust, Inc, National Wild Turkey Federation, Pheasants Forever, The Nature Conservancy,

Trust for Public Land, U.S. Fish and Wildlife Service, U.S. Natural Resources Conservation Service.

**OVERALL PROJECT RESULTS USE AND DISSEMINATION**
The partnership acknowledges funding from the Minnesota Environment and Natural Resources Trust Fund. Accomplishment report information, mapping products, and project information can be found at www.mnhabitatcorridors.org.

**Project completed:** 6/30/2011

**ABSTRACTS AND FINAL REPORTS OF INDIVIDUAL PARTNER PROJECTS** (Click project # to go to listing for that project)

1a - HCP VI - Project Coordination and Mapping - Pheasants Forever ($100,000)
2a - HCP VI - Hides for Habitat Restoration - Minnesota Deer Hunters Association ($50,000)
2b - HCP VI - Partners for Wildlife U.S. Fish and Wildlife Service ($50,000)
2c - HCP VI - Shallow Lake Enhancement - Ducks Unlimited, Inc. ($225,000)
2d - HCP VI - Shallow Lake Assessment - MN DNR ($145,000)
2g - HCP VI - Wildlife Areas Management - MN DNR ($50,000)
2h - HCP VI - Fisheries Habitat Restoration - MN DNR ($100,000)
2i - HCP VI - Set Out Seedlings/Bluffland Restoration - National Wild Turkey Federation ($85,000)
2j - HCP VI - Lakescaping for Wildlife and Water Quality - MN DNR ($75,000)
2k - HCP VI - Prairie Management - MN DNR ($75,000)
2n - HCP VI - Campaign for Conservation - Restoration - The Nature Conservancy ($315,000)
2o - HCP VI - Prairie Landscape Restoration: Oak, Savanna, Grasslands, and Wetlands - Friends of the Detroit Lakes Wetland Management District ($50,000)
3a - HCP VI - Shoreland Protection Program - Minnesota Land Trust ($210,000)
3c - HCP VI - Shallow Lake Easements - Ducks Unlimited, Inc. ($250,000)
3d - HCP VI - Wetland Reserve Program - Ducks Unlimited, Inc. and USDA Natural Resource Conservation Services ($420,000)
4a - HCP VI - Critical Lands Conservation Initiative - Pheasants Forever ($350,000)
4b - HCP VI - Fisheries Land Acquisition - MN DNR ($300,000)
4c - HCP VI - Critical Lands Protection Program - Trust for Public Land ($350,000)
4f - HCP VI - Campaign for Conservation - Acquisition - The Nature Conservancy ($50,000)
4h - HCP VI - Habitat Acquisition for Minnesota Valley Wetland Management - Minnesota Land Trust ($100,000)
4i - HCP VI - Professional Services - MN DNR ($25,000)

**1a FINAL REPORT - HCP VI - Project Coordination and Mapping - Pheasants Forever ($100,000)**
***Overall Project Outcome and Results***
Duties assigned to the project coordinator under this work program and as outlined and approved by the Habitat Conservation Partnership were to:

1. Coordinate partners, projects and cultivate partnerships,
2. Manage project data and contract/coordinate mapping service,
3. Solicit & compile partner information & provide reports to LCCMR and partners,
4. Schedule, coordinate, and chair meetings & provide meeting minutes,
5. Coordinate public relations outreach to media,
6. Serve as primary contact for LCCMR,
7. Facilitate executive & full committee meetings & coordinate subcommittee meetings, and
8. Manage contract for administration and mapping components of the Partnership.

We expended a total of $38,267 of Environment and Natural Resources Trust Fund (ENRTF) funds. Pheasants Forever, Inc. completed the above-referenced tasks successfully so that the outstanding habitat work detailed in this report could be completed, reported, and promoted. Work included full partnership meetings, executive committee meetings, and the required full partnership update reports which included coordination between all funded partners, LCCMR, and Community GIS Services. Promotion of individual partnership accomplishments and overall accomplishments was encouraged and several positive articles and events occurred and were shared as a result. ENRTF expenditures for personnel (Project Coordinator and accounting staff) and project coordinator travel totaled $2,242. A total of $25,758 within the personnel budget item was not needed to achieve our results and remains unspent. In addition, $36,025 of ENRTF funds were expended to manage data, operate the online reporting system from which all partner reports are generated, and map all partner projects. Pheasants Forever, Inc. contracted the mapping and data management services for the Phase VI Habitat Conservation Partnership with Community GIS Services of Duluth, Minnesota.

Community GIS has made several improvements to the operability of the reporting and mapping system. These updates include identifying free-text fields from the reporting website, and creating pre-populated drop down lists for them. As part of this exercise, all mapping fields were inspected to ensure minimal data duplication within the geodatabase. Metadata was created for the geodatabase at this time as well, which helps to define the fields being used. All HCP project accomplishments and expenditures are accounted for and fully described within the online reporting system and report generation. Anyone can access the Phase VI data electronically from the HCP website.

***Project Results Use and Dissemination***
The partnership acknowledges funding from the Minnesota Environment and Natural Resources Trust Fund. Accomplishment report information, mapping products, and project information can be found at www.mnhabitatcorridors.org. Other forms of information can be obtained by contacting Joe Pavelko, the HCP Coordinator, at (612) 532-3800.

**Project completed:** 6/30/2011

**2a FINAL REPORT - HCP VI - Hides for Habitat Restoration - Minnesota Deer Hunters Association ($50,000)**
***Overall Project Outcome and Results***
MDHA funding restored a total of two oak savannahs (grassland enhancement) consisting of 35 acres on the Winger Waterfowl Production Area (WPA). Federal WPA's are managed for waterfowl production and are open to public hunting and other recreation consistent with the National Wildlife Refuge System. This restoration to the oak savannahs will create suitable habitat for deer, turkey, ruffed grouse, and other cavity nesting birds.

Specifically, on the Winger WPA (Polk County Winger Township 147, Range 42, Section 2) we restored two oak savannahs for 35 acres by shearing and piling undesirable trees such as boxelder, cottonwood, willow, and aspen which opened the landscape to promote savannah habitat. Large and small oak trees were not cut and the seedlings were flagged to prevent accidental damage.

All work was done in partnership with the USFWS Detroit Lakes Wetland Management District and other funds were secured and provided by the Minnesota Deer Hunters Association Hides for Habitat funds.

***Project Results Use and Dissemination***
MDHA has restored a total of two oak savannahs (35 acres total) on public land that is permanently protected and open to public hunting. These restored oak savannahs provide upland habitat for a variety of wildlife with a large scale benefit to hundreds of acres on the Winger WPA as well as the surrounding private land habitats. Future management of grasslands will be conducted by the USFWS Detroit Lakes Wetland Management District.

Since this initial project was submitted, MDHA changed project managers from Phase IV. In phase V our funds from matching came mostly from the Hides for Habitat funds through MDHA which is why there are less "other funds" contributed to this Phase V work plan. MDHA strives to identify projects that capitalize on our chapter system and will improve on this into the future.

**Project completed:** 6/30/2011

**2b FINAL REPORT - HCP VI - Partners for Wildlife U.S. Fish and Wildlife Service ($50,000)**
***Overall Project Outcome and Results***
Since 1987, the USFWS's Partners for Fish and Wildlife Program (Partners) has restored more than 16,280 drained wetlands (74,300 acres) and more than 1,240 upland sites (54,100 acres) to native grasses and forbs, on private lands in Minnesota. Through its Partners Program, the USFWS works with other federal and state agencies, local units of government, tribal entities, conservation organizations, and individual landowners to restore or enhance fish and wildlife habitats on private land. This program emphasizes restoring habitats and native vegetation for fish and wildlife in concert with the goals of individual private landowners. These projects also benefit the general public by providing habitat for fish, wildlife and plants, improving water quality and watershed health, reducing non-point source pollution, and creating opportunities for outdoor recreation and education.

The $50,000.00 of Minnesota Environment and Natural Resources Trust Fund (ENRTF) funding obtained through this work program, accelerated the USFWS' existing Partners Program with an additional voluntary restoration or enhancement of 38 wetland basins covering 54 acres of wetland habitat and five grassland sites covering 491 acres of upland habitat. With this funding, a total of 6 projects were completed on private land within HCP Project Area 12. The ENRTF funds were expended from July 2009 through June 2011. The USFWS Partners Program provided $33,138.00 of Other Funds cost-sharing to complete these projects.

The USFWS Partners Program also provided $13,400.00 of Other Funds to complete two additional upland enhancement projects totaling 43 acres.

Under the Partners Program, wetlands are restored or enhanced by plugging or filling drainage ditches, removing excess sediment, breaking up sub-surface tile systems, embankment construction, and/or installing water control structures. Upland grassland areas are restored or enhanced by removing invasive woody vegetation and re-seeding former cropland to a native prairie seed mixture. All seeded areas complied with requirements to utilize local native ecotype seed as available.

Project selection for ENRTF cost-share via the Partners Program is based on the project's contribution to building wetland and upland habitat complexes or corridors and/or restoring or enhancing native habitats in the focus project areas.

***Project Results Use and Dissemination***

These projects were completed within the nine HCP Project Areas across the state of Minnesota. Without the willingness of the landowners involved, and the variety of other partners, this important wetland, upland and river/riparian wildlife habitat would not be restored.

Numerous presentations including information about ENRTF habitat restorations have been made over the past ten years at various meetings - i.e., Minnesota State Private Lands Meeting, the Wetland Summit, the Shallow Lakes Forum, MNDNR Roundtable, and at Kiwanis, Rotary, and Lion's Club presentations. One project completed with ENRTF dollars was also featured on the Minnesota Bound television program hosted by Ron Schara.

**Project completed:** 6/30/2011

**2c FINAL REPORT - HCP VI - Shallow Lake Enhancement - Ducks Unlimited, Inc. ($225,000)**

***Overall Project Outcome and Results***

The objective of this project was to accelerate Ducks Unlimited (DU) bio-engineering assistance to help agencies design and construct enhancement projects on shallow lakes for waterfowl using water control structures. DU biologists and engineers provided technical assistance to Minnesota DNR, U.S. Fish & Wildlife Service, and private landowners around shallow lakes with a goal of:

- Enhancing at least one shallow lake totaling 100 wetland acres with a new water control structure and/or fish barrier,
- Engineering at least four new shallow lake enhancement structure projects for DNR on designated shallow lakes or basins within state Wildlife Management Areas (WMAs) and for the Service on federal Waterfowl Production Areas (WPA), and
- Providing technical assistance to agency field staff on other shallow lake projects throughout HCP project areas.

Through this grant project, DU biologists and engineers surveyed and designed six new water control structures for the Minnesota DNR and US Fish & Wildlife Service, including Sandborn Lake in LeSueur County, Lindsey Lake in Becker County, Everglade Wildlife Management Area in Stevens County, Harder Lake and Wolf Lake Waterfowl Production Areas (WPA) in Cottonwood County, and Henjum WPA in Kandiyohi County. These six bio-engineering projects will be implemented in the future as permits and easements are secured. In addition, DU enhanced 453 wetland acres by constructing previously designed water control structures on the outlets of three shallow lakes, including Block WPA in Grant County, Perch Lake in Blue Earth County on Perch Lake WPA, and Gislason Lake in Lincoln County on the Northern Tallgrass Prairie National Wildlife Refuge. This far surpasses our target goal of enhancing at least one shallow lake totaling 100 wetland acres or more. Finally, DU shallow lakes field biologist provided ongoing technical assistance to Minnesota DNR and the Service on 30 shallow lake projects in HCP Project Areas to help assess and develop new projects for future possible bio-engineering, implementation, and management by those conservation agencies.

DU's total cost to provide these bio-engineering services to enhance shallow lakes was $526,225, and included reimbursement of $225,000 from the Environment & Natural Resources Trust Fund through this grant, and the expenditure of $1,249 in Other State Funds and $299,977 in Other Funds (DU and federal funds) that far exceeds the $100,000 in Other Funds that we originally proposed to spend.

***Project Results Use and Dissemination***

This grant helped DU, DNR, and the Service accelerate the assessment and enhancement of shallow lakes throughout southern, central and western Minnesota. DU provided six detailed engineering design

plans to state and federal agency staff, and informed the public of shallow lake improvement projects through public meetings, news releases sent to the media, and in articles in DU publications. Shallow lake assessment data collected by DU biologists was provided to DNR's shallow lake program and area wildlife managers, and shared with MPCA to aid in their impaired waters assessment.

**Project completed:** 6/30/2011

**2d FINAL REPORT - HCP VI - Shallow Lake Assessment - MN DNR ($145,000)**

***Overall Project Outcome and Results***

DNR spent $140,689 to continue on-site field investigations to accelerate management of shallow lakes and adjacent wetland complexes and support the accomplishments of Ducks Unlimited through HCP 2c and 3c. Temporary field personnel (1 full time and up to 6 temporary) documented shallow lake habitat occurrence and quality. Habitat surveys were conducted on 171 lakes within seven HCP project areas. The lakes surveyed totaled over 82,831acres. The surveys were distributed more broadly than in the past with:

- 9 surveys conducted within Area 1,
- 9 surveys conducted within Area 2,
- 71 surveys conducted within Area 3,
- 15 surveys conducted within Area 4,
- 11 surveys conducted within Area 6,
- 30 surveys conducted within Area 9, and
- 26 surveys conducted within Area 10.

Data was entered into the DNR Shallow Lake Database, checked and verified.

***Project Results Use and Dissemination***

The habitat survey information was used to support DNR's shallow lake management efforts identified in the 2006 Duck Recovery Plan and Ducks Unlimited's efforts under Restoring Minnesota's Fish and Wildlife Habitat Corridors IV - Wildlife Shallow Lakes Enhancement 2(c). Dissemination of project accomplishments will be through the LCCMR reporting process and normal DNR budgeting and accomplishment reporting. Data collected on the habitat quality of shallow lakes will be available as part of the DNR shallow lakes database managed by Division of Fish and Wildlife staff in Brainerd.

**Project completed:** 6/30/2011

**2g FINAL REPORT - HCP VI - Wildlife Areas Management - MN DNR ($50,000)**

***Overall Project Outcome and Results***

Through this project DNR-Wildlife provides oversight for infrastructure management and habitat restoration on lands acquired by Habitat Conservation Partners (HCP). Partners acquire priority land and transfer it to the DNR for long term management as Wildlife Management Areas. This funding source ensures DNR will not incur a significant short-term liability for initial site development from these acquired lands. Temporary project staff or intermittent labor is hired as needed to implement development on lands acquired. Infrastructure management may include but is not limited to boundary surveys, boundary signing, professional services, public access, parking lots and user facilities, and clean up of old buildings or wells. Habitat restoration may include but is not limited to grassland development or improvement, wetland restoration or impoundment development, forest or woody cover development or improvement, brush land management, professional services, and food plot development. Digital boundary, habitat inventory and facilities files will be developed as part of the management plans. DNR cannot start work until the Partners have completed acquisition on each

parcel. Once the new acquisitions are transferred to the DNR site development and habitat restoration work can occur.

Specifically in this phase, $6,128 was expended on habitat and development work at Benderberg WMA, including thirty acres of former cropland that were site prepped, seeded, and mowed. $43,872 went unspent due to when acquisitions were transferred to DNR, season for habitat work, and field staff availability.

Citizens of the state of Minnesota benefit from this project by having more public hunting and recreation land available in high priority landscapes throughout the state. These new public lands are managed as State Wildlife Management Areas (WMAs) by the Minnesota Department of Natural Resources (DNR) - Section of Wildlife for wildlife habitat.

***Project Results Use and Dissemination***
Information on HCP project results have been shared and disseminated through all partner organizations. Signs are posted on completed project sites identifying the ENRTF funding source. These signs provide information to the general public on how the lottery funds are spent for natural resource activities.

**Project completed:** 6/30/2011

**2h FINAL REPORT - HCP VI - Fisheries Habitat Restoration - MN DNR ($100,000)**
***Overall Project Outcome and Results***
Citizens of the state of Minnesota benefit from this project by having a better fish community structure in Mills Lake, Blue Earth Co, and Horseshoe Lake, Rice County. They also benefit from improved stream habitat for trout on Winnebago Creek, Houston Co. This then creates better fishing and recreation available in high priority waterbodies. The portions of the work that the DNR was responsible for was completed on June 30, 2011. Design and planning for two barriers to prevent carp migration was the basis for these two projects. The projects were installed with the assistance of partners. The Horseshoe Lake barrier is completed while high water resulted in the Mills Lake installation being delayed until this fall. Once both are completed, we will have enhanced approximately 654 acres total. Another project done was plans, designs, and purchase of materials to restore 3,200 feet of trout waters on Winnebago Creek. Due to high waters, the partners will finish the installation this fall. Long term maintenance of these projects is going to be shared with the partners. These funds were also used to get the designs done for the Hartley Lake fish passage project.

***Project Results Use and Dissemination***
Information on HCP project results have been shared and disseminated through all partner organizations. The Environmental Trust Fund provides information to the general public on how the lottery funds are spent for natural resource activities.

**Project completed:** 6/30/2011

**2i FINAL REPORT - HCP VI - Set Out Seedlings/Bluffland Restoration - National Wild Turkey Federation ($85,000)**
***Overall Project Outcome and Results***
This project contained two types of habitat enhancement that resulted in the enhancement of a total of 72 acres of habitat.

In Habitat Corridor Area 11 in southeastern Minnesota, we contracted to have invasive eastern red cedar and buckthorn removed and controlled on south-facing blufftops on 60.75 acres of private land (5 parcels). These "goat prairies" were historically maintained by wind, freeze/thaw cycles, thin soils, and frequent wildfires. Fire suppression has allowed trees, shrubs, and exotic species to encroach upon the prairies. The contractor hand cut, piled, and burned trees and shrubs, and treated invasive species to ensure they would not resprout. This project enhanced prairie and outcrop habitat for state-threatened timber rattlesnakes, as well as three other at-risk snake species and numerous at-risk plant species found in this unique habitat. The resulting open grasslands will also be used as nesting and brood-rearing habitat for wild turkeys and other birds. Participating landowners have signed a 10-year maintenance agreement. Project cost was $67,259.50.

In Habitat Corridor 9, we purchased seedlings to plant 150 bur oak, 150 black walnut, and 175 hackberry trees on 11 acres on the Talcot Lake WMA. These trees were protected from herbivory by tree shelters and weed mats. In addition, we purchased 475 seedlings of each of the following fruiting shrubs - chokecherry, red osier dogwood, elderberry, and American plum. All seedlings were planted by DNR staff. This project restored oak savanna and lowland hardwood forest to provide roosting sites for wild turkeys along southwestern Minnesota river corridors, and provided natural winter food resources by planting fruit-bearing shrubs. Project cost was $7,070.23. We had hoped to accomplish more tree planting, but a staff change near the end of the project prevented us from finding a suitable location and order materials before the project deadline.

***Project Results Use and Dissemination***
Our intention is to make NWTF Chapters and volunteers aware of the accomplishments of this Environmental Trust Fund project by posting an article on our website and Facebook page. In addition, we plan to release a press statement announcing the completion of the project to the general public.

**Project completed:** 6/30/2011

**2j FINAL REPORT - HCP VI - Lakescaping for Wildlife and Water Quality - MN DNR ($75,000)**
***Overall Project Outcome and Results***
For Phase 6 of the Habitat Corridors Partnership project a total of eight lakescaping buffer zones were proposed for selection, planning, and installation in habitat corridors 3, 4, 7, and 9. This project exceeded that goal for a total of nine buffer zones, which were completed on schedule and under budget, totaling 1298 frontage feet of shoreline. This equates to an average cost of $55.82 per foot for planning, installing, and maintaining these shoreline buffer zones which are designed to improve water quality and fish and wildlife habitat.

In addition to the buffer zones, two field days were provided for the public in 2010 to view buffer zones that had previously been installed. One field day was held near Grand Rapids and one was held in the Alexandria vicinity.

The final component of this activity was to collect native origin plant seeds and propagules in 2009 and 2010 for propagation and subsequent planting on buffer zone sites. The goal was to collect seeds for a total of 80 plant species. However, a total of 92 species of native plant seeds and propagules were collected and subsequently used in the plantings.

This has been a very successful effort and an excellent partnership between the DNR's Division of

Ecological and Water Resources and the Division of Fish and Wildlife to carry out this effort to promote stewardship of lakeshore habitat on private shorelands.

***Project Results Use and Dissemination***
Completion of Phase 6 brings to 73 the total number of lakescaping buffer zone demonstration areas that have been installed in 7 habitat corridors in 22 Minnesota counties since May of 2000 with LCMR and LCCMR support provided from the Minnesota Environment and Natural Resources Trust Fund. This initiative has been instrumental in promoting this concept of lakeshore stewardship not only throughout Minnesota but also in adjacent states and as far off as Washington state and South Carolina. The book Lakescaping for Wildlife and Water Quality and the new on-line version of Restore Your Shore provide a continuing source of information for people to learn how to plan and install their own buffer zones. Also, the DNR Shoreland Habitat Program continues to offer on-the-ground assistance to local lakeshore associations, landowners, and local and county units of government to initiate lakeshore buffer zones throughout the state. The LCCMR deserves considerable credit for providing funding to help promote this essential concept for stewardship of privately owned lakeshore in Minnesota.

**Project completed:** 6/30/2011

**2k FINAL REPORT - HCP VI - Prairie Management - MN DNR ($75,000)**
***Overall Project Outcome and Results***
A total of 536 acres of native and reconstructed prairie (largely native) were prescribed burned. This includes 318 acres on Scientific and Natural Areas (SNA) and 218 acres on perpetual Native Prairie Bank (NPB) easements. Due to a lack of qualified prescribed burn vendors, most burns were implemented by agency crews. Invasive species control treatments were completed on a total of 113 acres, including 48 acres on SNAs and 65 acres on NPB lands. Invasive species treated include buckthorn, siberian elm, red cedar, knapweed, leafy spurge, and cow-vetch. Due to the availability of qualified contractors, many woody invasive species projects were contracted. One reconstruction project totaling 30 acres was completed on the Zilmer WMA, which is part of the larger Felton Prairie Complex. Seed for the reconstruction was collected from surrounding lands. In total, 679 acres of prairie habitat was improved during this project.

***Project Results Use and Dissemination***
Ecological and Water Resources invests considerable time in publishing and distributing results in a variety of formats for various audiences. SNA Program staff make presentations that describe prairie management methodologies and results to a wide range of audiences including county boards, local planning groups, land managers, citizen and technical advisory groups, and at professional meetings.

**Project completed:** 6/30/2011

**2n FINAL REPORT - HCP VI - Campaign for Conservation - Restoration - The Nature Conservancy ($315,000)**
***Overall Project Outcome and Results***
The Nature Conservancy's (TNC) 2009 work program focused on 6 habitat restoration projects totaling 3,664 acres (3,118-ENRTF funds; 546-other funds). Additional details, beyond the short summary below, are found in the more detailed reporting provided for each project.

Northern Tallgrass Prairie: Prairie was restored on 183 acres (88 acres-ENRTF; 95 acres-other funds) of TNC land on this key parcel for building connections within the Bluestem Prairie complex. Project

activities included seed collection, site preparation, sowing, and follow work to control invasives in the restoration area.

Western MN Invasives Control & Prescribed Fire: TNC accelerated management activities on 1,067 acres (798 acres-ENRTF; 269 acres-other funds) of TNC lands. Activities included planning/implementing prescribed fire on 1,060 acres, buckthorn removal, and a focused effort on controlling leafy spurge.

Prairie Coteau Restoration: Prairie was restored on 84 acres (all acres-ENRTF) of TNC land in a key parcel for connecting remaining areas of native prairie in the Lac qui Parle complex. Completed work included preparing and seeding 71 acres, clearing trees, buckthorn removal, and fence removal.

Prairie Forest Border Restoration: This project accelerated prescribed fire and invasives management on 2,091 acres (1,932 acres-ENRTF; 159 acres-other funds) of TNC and public grassland, wetland and forest at 7 sites in Central and Southeastern Minnesota. Individual activities included planning/implementing prescribed fire on 1,392 acres, invasive surveys/treatment on 560 acres, brush removal on 135 acres, and buckthorn removal on 19 acres.

NE MN Conifer Restoration: 114 acres (all acres-ENRTF) of TNC and public land was managed to encourage the regeneration of conifers in Northeast Minnesota. Project tasks included installing exclosures and budcaps to prevent browsing and using brush saws, grass mats, and grubbing to control competing vegetation.

Sand Prairie Restoration: Prairie was restored on 90 acres and existing habitat was enhanced on an additional 35 acres of TNC land buffering the outstanding native prairie on the adjoining Weaver Dunes SNA (102 acres-ENRTF; 23 acres-other funds). Project activities included seed collection, site preparation, three rounds of sowing with a high-diversity 115-species mix, brush clearing, and surveying/treating invasive species.

One thing to note when reviewing detailed information on the individual projects: the completed acres shown for each project may be lower than the number of acres listed for the separate restoration activities. The lower total reflects the fact that multiple activities may have been done on the same acres.

***Project Results Use and Dissemination***
All restored lands are open to the public. TNC continues to coordinate with public and private partners to apply lessons learned from this project to work at these and other sites.

**Project completed:** 6/30/2011

**2o FINAL REPORT - HCP VI - Prairie Landscape Restoration: Oak, Savanna, Grasslands, and Wetlands - Friends of the Detroit Lakes Wetland Management District ($50,000)**
***Overall Project Outcome and Results***
This project restored approximately 40 acres of oak savanna on Kruger Waterfowl Production Area. Oak savanna is even rarer in Minnesota than tallgrass prairie and there are numerous plant and wildlife species that depend on this habitat. We removed invasive trees from these areas, restored an open, park-like structure to the vegetation, and created enough light gaps in the tree canopy to support a herbaceous understory. The biomass we removed was stacked and is drying. This fall the biomass will be chipped, hauled to the biomass burning plant in Benson, and converted to electrical power. This was a

significant savings. Money that would have been spent burning or removing the biomass from the site was used for additional habitat work. After all the equipment is done at the site, FWS staff will overseed the areas where the trees were removed and any place equipment damaged the soil with a diverse mix of local ecotype grass and forb seed. The long-term maintenance of the site will be done through the FWS's fire management program.1

Originally we planned to do both wetland and oak savanna restoration at the site. However, with the persistent rains over the period of this grant, we were not able to get heavy equipment into the wetlands to restore them. Therefore, we requested and were granted an amendment to spend the wetland funds on additional oak savanna work at the site.1

**Project completed:** 6/30/2011

**3a FINAL REPORT - HCP VI - Shoreland Protection Program - Minnesota Land Trust ($210,000)**
***Overall Project Outcome and Results***
In the sixth phase of our Shorelands Protection project, the Minnesota Land Trust continued to work with landowners to secure permanent conservation easements on quality habitat along or containing critical riparian lands. We initiated or continued contact with more than 50 landowners and completed five conservation easements. Collectively, these easements preserve 566 acres of land (508 acres-ENRTF; 58 acres-other funds)- exceeding our original goal of 300 to 500 acres - and protect nearly 17,000 feet of fragile shoreline. Two of the five easements completed involved significant bargain purchases, while the other three projects were donated easements:

- Rabbit Lake in Aitkin County: 171 acres (all acres-ENRTF) containing forest, wetland, grassland, and hay field being restored to prairie.
- Blackhoof River in Carlton County: 248 acres (all acres-ENRTF) containing a mix of forest, wetlands, grasslands, and woodlands.
- Encampment River in Lake County: 88 acres (40 acres-ENRTF; 48 acres-other funds) containing a mature conifer forest with black ash lowlands and wetlands along the Encampment River.
- Blacklock Nature Sanctuary along Lake Superior in Lake County: 11 acres (1 acre-ENRTF; 10 acres-other funds) containing forest and cobblestone beach along Lake Superior.
- Lake Elysian in Waseca County: 48 acres (all acres-ENRTF) containing oak savanna and big woods.

All five projects met the following selection criteria:

1. Habitat: quality and quantity of existing habitat on site; protects riparian areas and buffers water resources
2. Context: proximity and relationship to other protected lands
3. Opportunity cost-benefit ratio: which landowners will participate now
4. Other Benefits: meeting multiple objectives, including visual and physical access, forestry goals, water quality, etc.

Additionally, the Land Trust prepared baseline property reports for each easement, detailing the condition of the property for future monitoring and enforcement. To fund this required perpetual obligation, the Land Trust dedicated funds to its segregated Stewardship and Enforcement Fund for several completed projects. For these projects, we estimated the anticipated annual expenses of each project and the investment needed to generate annual income sufficient to cover these expenses in perpetuity - all in accordance with our internal policies and procedures as approved by LCCMR. We will report to LCCMR annually on the status of the Stewardship and Enforcement Fund and the easements

acquired with funds from this grant.

The value is known for only one of the easements. The donated value of this easement is $515,000. The cost to the State of Minnesota to complete the five projects completed under this phase of the grant was just over $370 per acre.

Cumulatively, across all phases of the HCP program, the Land Trust has protected 7,461 acres of critical habitat and more than 218,000 feet of shoreline, at a cost to the State of $283 per acre.

The Land Trust's work on this project continues to demonstrate the cost effectiveness of working with conservation easements to protect natural and scenic resources along Minnesota's lakes, rivers, and streams, as the cost to the State was well below the cost to purchase land along our increasingly threatened shorelines. This grant continued to generate interest among landowners, and therefore, ongoing funding will be important to sustained success. Additionally, our experiences during this phase of the grant indicate that funds to purchase easements will be necessary in the future as work becomes more targeted, selective, and focused on building complexes of protected land.

***Project Results Use and Dissemination***
The Land Trust disseminated information about the specific land protection projects completed under this grant though our newsletter, email updates, web site, and press releases. The Land Trust also shared information about conservation easements generally and our experience with our partner organizations, other easement holders, local communities, as well as policy makers including members of the LCCMR and L-SOHC.

**Project completed:** 6/30/2011

**3c FINAL REPORT - HCP VI - Shallow Lake Easements - Ducks Unlimited, Inc. ($250,000)**
***Overall Project Outcome and Results***
The objective of this project was to accelerate Ducks Unlimited (DU) efforts to help improve and protect shallow lakes managed for waterfowl. To protect shallow lakes, DU worked with private shallow lake shoreline landowners to secure permanent conservation easements on managed shallow lakes prioritized by DU for their importance to waterfowl and threat of development. The goal was to permanently protect at least 200 shallow lake shoreland acres.

DU land protection staff worked with several private landowners on multiple shallow lakes over the course of this two year grant, and eventually began negotiations with five landowners on four different shallow lakes who expressed a desire to proceed with appraisals and discuss easement terms. Through that process, two of the five easement negotiations were successful and became viable land protection deals. DU subsequently proceeded to close on a fully purchased conservation easement on 76 acres on Fish Lake in Stearns County in February 2011. DU then proceeded to seek approval to split the cost of a second larger easement of 150 acres on Garden and Johnson Lakes in Crow Wing County using the remaining funds from this 2009 Trust Fund appropriation (60%) and a related 2010 Trust Fund appropriation (40%). Overall, DU successfully closed two conservation easements through this grant and permanently protected 226 acres in total, which was slightly more than our 200-acre goal.

The total project cost to protect shallow lakes through conservation easements was $353,532, which includes reimbursement of $250,000 from the Trust Fund through this grant plus the expenditure of $61,532 in Other Funds by DU and $42,000 donated to DU for easement stewardship.

***Project Results Use and Dissemination***
This grant helped DU accelerate the protection of shallow lakes by working with private landowners to secure conservation easements and promote conservation easement concepts. Conservation easements with private landowners are sensitive land deals that don't lend themselves to widespread publicity, however, DU has recognized individual landowners and has publicized our work to protect shallow lake shorelines and shoreland locally through local conservation groups, soil and water districts, and tribal organizations supportive of our work to protect wild rice lakes. DU also informed the foundations supporting our Living Lakes Initiative of our conservation accomplishments. The accomplishment of securing two new permanent conservation easements through this grant has helped encourage other private landowners to consider working with DU to protect their shorelines, and news of our progress may be further disseminated through DU news releases and articles DU publications in the future.

**Project completed:** 6/30/2011

**3d FINAL REPORT - HCP VI - Wetland Reserve Program - Ducks Unlimited, Inc. and USDA Natural Resource Conservation Services ($420,000)**
***Overall Project Outcome and Results***
In partnership with the USDA's Natural Resources Conservation Service (NRCS), Ducks Unlimited (DU) contracted with six Wetlands Reserve Program (WRP) technicians that began HCP Phase 6 work on September 10, 2009 with combined funding support from Environment and Natural Resources Trust Fund funds and NRCS grants. The purpose of these contracted technicians was to provide technical assistance to private landowners and USDA - NRCS complete applications and enroll new lands into the WRP, and to help USDA-NRCS and private landowners plan, design, and implement restoration measures on lands previously enrolled in the WRP. The delivery goal for these technicians was to provide Technical Assistance (TA) to help NRCS protect 1,000 acres through new WRP easements and help restore wetlands and associated upland habitat on WRP easements in prairie Habitat Conservation Partnership (HCP) project areas at an estimated Other Funds cost of $1,500,000 to NRCS.

During the life of this grant, the contract specialists made 275 landowner contacts, helped process 80 applications, developed 96 easement conservation plans, completed 21 wetland restoration designs, and managed construction of 55 wetland restoration projects. Overall, NRCS closed (purchased) 25 new WRP easements protecting 2,721 acres with the assistance of these six contracted wetland specialists funded through this grant, which exceeds the easement acre goal of this project. This includes WRP easements protecting 1,031 acres of wetlands and 1,690 acres of adjacent uplands. Other Fund expense incurred by NRCS to purchase these easements and by DU to hire and manage the contractors totals $3,923,321 in non-state funding, more than double our Other Funds expense pledge of $1.5 million.

***Project Results Use and Dissemination***
Information on the WRP signups has been publicized through news releases from the USDA's NRCS and local Soil and Water Conservation Districts, and through hundreds of individual landowner contacts made by DU wetland restoration specialists. Additional announcements and landowner contacts continue to be made and publicized by DU and USDA's NRCS.

**Project completed:** 6/30/2011

**4a FINAL REPORT - HCP VI - Critical Lands Conservation Initiative - Pheasants Forever ($350,000)**
***Overall Project Outcome and Results***

To help slow the loss of habitat and declining wildlife populations, Pheasants Forever purchased in fee-title two parcels totaling 93 acres to permanently protect quality wildlife habitat lands within Chippewa and Lac Qui Parle Counties, MN. Of the 93 acres, 38 acres were acquired with $72,987 from the Environment and Natural Resources Trust Fund (ENRTF) and the other 55 acres with $56,000 in non-state funds. These lands have been or are in the process of being enrolled into the state Wildlife Management Area System and will be protected and managed in perpetuity by the Minnesota Department of Natural Resources. In addition, these newly acquired WMAs will provide access and recreational opportunities for all Minnesotans.

Of the total 93 acres, 49 acres are grassland (including native prairie) and 43 acres hold wetlands. Striving to build landscape level habitat complexes that will protect and sustain wildlife populations, both projects are additions to existing WMAs and build upon past investments in wildlife habitat conservation.

Due to the volatile real estate market and county board approval requirements, a balance of $277,013 was left unspent and returned to the ENRTF. A project by project accounting and supporting context can be found in the final work program report and all accomplishment reports are available at www.mnhabitatcorridors.org.

Accomplishments were achieved by working with many local, state, and federal partners. Effective partnerships are the backbone of conservation in Minnesota. Through this project we have continued the effort to build and enhance effective conservation partnerships that provide wildlife and recreation benefits to all Minnesotans.

***Project Results Use and Dissemination***
All projects acquired through the Habitat Conservation Partnership acknowledge the funding from the Minnesota Environment & Natural Resources Trust Fund. These new public land additions will be incorporated into the DNR Wildlife Management Area System and will be added to appropriate maps, websites, and other WMA information dissemination outlets. Detailed accomplishment report information is available at www.mnhabitatcorridors.org..

**Project completed:** 6/30/2011

**4b FINAL REPORT - HCP VI - Fisheries Land Acquisition - MN DNR ($300,000)**
***Overall Project Outcome and Results***
This project focused on the acquisition of habitat linkages that provided environmental protection of the shoreline and riparian zone, exhibited a high risk of development, supplied angler access, and afforded management access necessary for implementing habitat improvement projects.

Project goals were to protect 120 acres (1.4 miles of lake and stream shoreline) with the help of partner and other state funding. Partner funding includes donations of land value and cash.

This project resulted in the acquisition of four parcels with a grand total of approximately 54.2 acres and 1.3 miles of lake and stream shoreline. Because of the extreme variation in shoreline values it is hard to accurately predict a reliable acre benchmark. Most years, including the 2008 Environment and Natural Resources Trust Fund (ENRTF) appropriation, we far exceeded our acres goal. For the 2009 ENRTF appropriation, we fell short of the acres goal, but nearly reached our "miles of shoreline" goal. ENRTF dollars directly acquired approximately 35.12 acres of the total, including 0.4 miles of lake and stream

shoreline. Donations of land value ("other funds" $396,600) and resulting Reinvest In Minnesota Critical Habitat match ("other state monies" $165,000), leveraged with trust dollars, totaled $561,600. These contributions helped acquire the remaining acres of the grand total, including 4.0 acres and 0.2 shoreline miles using other state dollars and 8.5 acres and 0.4 shoreline miles from donations of land value. Preece Point was acquired jointly using both 2009 and 2010 Supplemental grants to Minnesota's Habitat Conservation Partnership - Fish and Wildlife Acquisition (4b). Results for Preece Point were proportionately distributed for each grant.

As a result of this project, 54.2 acres, including 1.3 miles of critical shoreline fish and wildlife habitat are now permanently protected and open to public angling and/or hunting - as well as other light use recreational activities. Acquired parcels are now designated and managed as Aquatic Management Areas (AMAs).

***Project Results Use and Dissemination***
Accomplishment Reports and press releases are available at www.mnhabitatcorridors.org., and all AMAs will be added to DNR's Public Recreational Information Maps (PRIM).

**Project completed:** 6/30/2011

**4c FINAL REPORT - HCP VI - Critical Lands Protection Program - Trust for Public Land ($350,000)**
***Overall Project Outcome and Results***
On September 30, 2011, the Trust for Public Land (TPL) acquired 510 acres in Le Sueur County containing high-quality wetlands and 1.64 miles of naturally flowing Cannon River just upstream from a concentration of rare freshwater mussels. Of the 510 acres, 104 acres were acquired with $350,000 from the Environment and Natural Resources Trust Fund (ENRTF) and the other 406 acres with $1,369,493 in other state funds. TPL immediately conveyed the property to the Department of Natural Resources (DNR) who will manage the land as a new Wildlife Management Area ("Dora Lake WMA"). In addition to conserving a large area of Minnesota County Biological Survey (MCBS) identified native habitat, acquisition of these tracts provides an opportunity to restore approximately 200 acres of tilled land in a sensitive water quality area. The DNR will restore them to wetlands, grassland and eventual guided succession to Big Woods. Protection of the property ensures habitat for fish, game and wildlife in the Cannon River watershed.

***Project Results Use and Dissemination***
Accomplishment Reports and press releases about the overall Habitat Conservation Partnership are available at www.mnhabitatcorridors.org.. Information about this acquisition and the Cannon River Headwaters Habitat Complex effort will be posted on TPL's website: www.tpl.org. Information about the Cannon River Headwaters Habitat Complex effort has also been disseminated through its network of supporters which include: the Cannon River Watershed Partnership, the Tri-Lake Sports Club, the Dark House Anglers Southern Chapter, Minnesota Deer Hunters Association South Central Prairieland Bucks Chapter (Le Sueur, Rice, Waseca, and Steele Counties), Waterville Sportsman's Club, Montgomery Sportsmen's Club, Minnesota Waterfowl Association Scott- LeSueur Chapter, the Izaak Walton League Owatonna Chapter, and the Minnesota Department of Natural Resources.

**Project completed:** 9/30/2011

**4f FINAL REPORT - HCP VI - Campaign for Conservation - Acquisition - The Nature Conservancy ($50,000)**

***Overall Project Outcome and Results***

In this phase, The Nature Conservancy's (TNC) proposed acquiring fee title to 115 acres of habitat with Environment and Natural Resources Trust Fund (ENRTF) and other funds. These projects would emphasize protecting and linking existing public and private conservation lands, helping to build larger, more sustainable areas of habitat.

Using ENRTF and private funds, TNC purchased two parcels adjoining Weaver Dunes SNA. The Conservancy purchased the Cox tract (30.6 acres) on November 16, 2010 and the Carroll-Fitzgerald tract (21.7 acres) on December 10, 2010. Together, these parcels total 52.3 acres.

Both parcels are located in an area identified as critical in both TNC's and the Habitat Conservation Partnership's planning processes. As part of the Conservation by Design process, The Conservancy develops a Conservation Area Plan (CAP) and Rapid Protection Plan (RPP) for each landscape where we are active. These plans define conservation objectives, management strategies, and areas targeted for action. Both parcels were identified as targets in TNC 's 2007 Conservation Area and Rapid Protection Plans for the Weaver Dunes-Zumbro Delta landscape.

Purchasing these parcels protects the native prairie found on portions of both properties. These prairies were ranked as having outstanding biodiversity significance by the Minnesota County Biological Survey. The protection and restoration of the remaining areas of converted or degraded prairie on these tracts will provide a valuable buffer to the large areas of outstanding native prairie on the 6,000 acres of adjoining TNC-, state-, and federally-protected lands.

The Conservancy will retain ownership and manage both properties as additions to the Weaver Dunes SNA. Funds for the continuing management of these acquisitions were ensured by placing 20% of the fair market value of the properties in a dedicated stewardship endowment. The income from this endowment provides the resources for approximately 50% of the ongoing costs of land management. The remaining 50% of future funding needs will be raised through private fundraising and private and public grants.

TNC was unable to reach our original goal for acres protected. The relatively -high cost of land in Southeastern Minnesota where these tracts are located and the continuing state-wide escalation in rural land prices made this difficult to achieve.

The Conservancy spent an additional $235,754.57 of its private funds in transaction-related expenses for these fee title acquisition projects. For more details on the purchases, the associated costs, and their conservation significance, see the Transaction Cost Reporting Guidelines memo submitted to LCCMR on January 14, 2011.

***Project Results Use and Dissemination***

All acquired lands are open to the public. The Conservancy publicizes its work on these projects via press releases, membership publications, presentations and/or the Conservancy's website. TNC has also participated in publicizing the overall accomplishments of the Habitat Corridors Partnership project as it has reached significant milestones.

**Project completed:** 6/30/2011

**4h FINAL REPORT - HCP VI - Habitat Acquisition for Minnesota Valley Wetland Management -**

**Minnesota Land Trust ($100,000)**

***Overall Project Outcome and Results***

The Minnesota Valley Trust acquired 78.5 acres of priority lands in Lincoln Township of Blue Earth County to expand the Lincoln Waterfowl Production Area for the Minnesota Valley Refuge and Wetland Management District, US Fish and Wildlife Service. Of the 78.5 acres, 21 acres were acquired with Environment and Natural Resources Trust Fund; the other 56.5 acres were acquired with nonprofit / other, non-state funds.

This acquisition expands upon prior acquisitions for the Lincoln WPA that were funded in part by the Environment and Natural Resources Trust Fund in HCP Phases III and V, as recommended by the LCCMR. This and another acquisition completed concurrently by the Trust bring the total acreage of the Lincoln WPA to approximately 720 acres.

All parcels acquired to create the Lincoln Waterfowl Production Area, including this one, were identified by the US Fish and Wildlife Service as a high priority within an established USFWS Focus Area. Acquisition and restoration will complete USFWS objectives in the area for a host of waterfowl species.

After wetland and upland restoration on the lands is completed, the lands will be donated to the US Fish and Wildlife Service for perpetual management as part of the Minnesota Valley Wetland Management District. They will be managed for wildlife and wildlife-dependent recreation, including hunting, fishing, wildlife observation, photography, wildlife interpretation and environmental education.

***Project Results Use and Dissemination***

The Minnesota Valley Trust will publicize the completion of this project through its website and news releases. All funding partners will be acknowledged on Refuge kiosks, including the Environment and Natural Resources Trust Fund, as recommended by the Legislative Citizen Commission on Minnesota Resources.

**Project completed:** 6/30/2011

**4i FINAL REPORT - HCP VI - Professional Services - MN DNR ($25,000)**

***Overall Project Outcome and Results***

This project focused on paying professional services related to the conveyance of habitat corridor lands to the DNR by HCP partners. Parcels acquired from HCP partners will be placed in public ownership and administered as State Wildlife Management Areas.

Project goals were to pay professional services as parcels are conveyed to DNR by nonprofit HCP partners. During this appropriation only Pheasants Forever (PF) projects were conveyed to DNR.

This project resulted in professional services being paid on 15 different parcels as they were processed for conveyance to DNR by HCP Partners. Project funding by PF changed as time went by, with some projects not being acquired with Environment and Natural Resources Trust Fund (ENRTF) dollars at closing, and other unanticipated parcels changing to ENRTF dollars at closing. Some of these PF projects were closed last year, but continued to have residual professional services for closing the project out. Some projects have just started the acquisition process and will continue into the next phase of 4i: Habitat Acquisition - Professional Services. Consequently the range of dollars spent on projects varied greatly, but ranged from $20 to $3,700.

As a result of this project, DNR was able to pay for professional services and processing costs related to land acquisition transfers to the DNR from HCP partners. Costs include the following: staff time for Division of Lands and Minerals ($83/hour) and the Attorney General's Office ($110/hour), survey costs, recording and abstracting fees, and deed tax.

***Project Results Use and Dissemination***
Accomplishment Reports and press releases are available at www.mnhabitatcorridors.org. and all WMAs acquired with professional services funds will be added to DNR's Public Recreational Information Maps (PRIM).

**Project completed:** 6/30/2011

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**Metro Conservation Corridors (MeCC) - Phase V**
Subd. 04f $3,375,000

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**Appropriation Language**
$3,375,000 is from the trust fund to the commissioner of natural resources for the fifth appropriation for acceleration of agency programs and cooperative agreements. Of this appropriation, $2,185,000 is for Department of Natural Resources agency programs and $1,190,000 is for agreements as follows: $380,000 with the Trust for Public Land; $90,000 with Friends of the Mississippi River; $155,000 with Great River Greening; $250,000 with Minnesota Land Trust; $225,000 with Minnesota Valley National Wildlife Refuge Trust, Inc.; and $90,000 with Friends of the Minnesota Valley for the purposes of planning, restoring, and protecting important natural areas in the metropolitan area, as defined under Minnesota Statutes, section 473.121, subdivision 2, and portions of the surrounding counties, through grants, contracted services, technical assistance, conservation easements, and fee title acquisition. Land acquired with this appropriation must be sufficiently improved to meet at least minimum management standards as determined by the commissioner of natural resources. Expenditures are limited to the identified project corridor areas as defined in the work program. This appropriation may not be used for the purchase of residential structures, unless expressly approved in the work program. All conservation easements must be perpetual and have a natural resource management plan. Any land acquired in fee title by the commissioner of natural resources with money from this appropriation must be designated as an outdoor recreation unit under Minnesota Statutes, section 86A.07. The commissioner may similarly designate any lands acquired in less than fee title. A list of proposed restorations and fee title and easement acquisitions must be provided as part of the required work program. All funding for conservation easements must include a long-term stewardship plan and funding for monitoring and enforcing the agreement. To the maximum extent practical, consistent with contractual easement or fee acquisition obligations, the recipients shall utilize staff resources to identify future projects and shall maximize the implementation of biodiverse, quality restoration projects in the project proposal into the

first half of the 2010 fiscal year.

**OVERALL PROJECT OUTCOMES AND RESULTS**

During the fifth phase of the Metro Conservation Corridors project, the Metro Conservation Corridors Partners continued their work to accelerate protection and restoration of remaining high-quality natural lands in the greater Twin Cities Metropolitan Area by strategically coordinating and focusing conservation efforts within a connected and scientifically-identified network of critical lands. This corridor network stretches from the area's urban core to its rural perimeter, including portions of 16 counties. The Partners employed a multi-faceted approach, which included accomplishments in four specific result areas:

- Partnership and Program Coordination: Partners met several times a year to review project accomplishments and coordinate activity. With DNR support, Version 2 of the online database was refined and implemented to facilitate tracking and reporting of MeCC projects over time. Additionally, DNR and Minnesota Land Trust have worked together to complete cumulative accomplishment mapping, gathering as much information as possible from previous grant phases, which allows the partnership to conduct historical analysis of our collective work.
- Restore and Enhance Significant Habitat: Partners have restored and enhanced a total of 775 acres of significant habitat using Phase V funding plus an additional 450 acres with other funds.
- Acquire Significant Habitat: Partners protected 977 acres of land, including nearly 7 miles of shoreline through acquisition of fee title and conservation easements and leveraged an additional 585 acres of land and 0.4 miles of shoreline using other funds.
- Other Conservation Tools and Incentives: The Metro Greenways Program assisted eight cities, two counties, and one park district with the development and gathering of natural resources information to identify sites for protection or restoration and/or to implement conservation measures. Additionally, Metro Greenways organized and facilitated two annual events that brought all 25 DNR Community Assistance grantees together for a day of information-sharing and peer-to-peer learning, and also funded the development and offering of six new natural resource-based workshops for local government staff and appointed officials.

Since 2003, MeCC partners have protected more than 9,600 acres and restored more than 7,800 acres. These strategic and coordinated efforts address a number of recommendations of the Statewide Conservation and Preservation Plan, including, protecting priority land habitats, protecting critical shorelands of streams and lakes, restoring land, wetlands, and wetland-associated watersheds, and improving connectivity and access to outdoor recreation.

**OVERALL PROJECT RESULTS USE AND DISSEMINATION**

As projects were completed, the individual partners were encouraged to publicize accomplishments through press releases, organization newsletters, and websites. These efforts resulted in information being distributed to the public through websites, email lists, daily and weekly newspapers, newsletters, and other print materials. Additionally, an interactive public web map is now fully functional and shows the locations of MeCC projects over time. This web map can be accessed at: http://www.dnr.state.mn.us/maps/MeCC/mapper.html.

**Project completed:** 6/30/2011

**ABSTRACTS AND FINAL REPORTS OF INDIVIDUAL PARTNER PROJECTS**

1.1/1.2 - MeCC V - Mapping and Coordination - Minnesota Land Trust ($100,000)

2.3 - MeCC V - Restore and Enhance Significant Watershed Habitat - Friends of the Mississippi River

($90,000)
2.4 - MeCC V - Lower Minnesota River Watershed Restoration and Enhancement Friends of the Minnesota Valley ($90,000)
2.5 - MeCC V - Restore and Enhance Significant Habitat - Great River Greening ($155,000)
2.6/3.4/4.1 - MeCC VI - Metro Greenways Grants for Restoration, Acquisition, Easements, and Other Conservation Tools - MN DNR ($1,175,000)
2.7/3.6 - MeCC V - Scientific and Natural Area Restoration and Acquisition - MN DNR ($646,955)
2.9/3.5 - MeCC V - Fish and Wildlife Habitat Restoration and Acquisition - MN DNR ($500,000)
3.1 - MeCC V - TPL's Critical Land Protection Program - Trust for Public Land ($380,000)
3.2 - MeCC V - Protecting Significant Habitat by Acquiring Conservation Easements - Minnesota Land Trust ($250,000)
3.3 - MeCC V - Expansion of Minnesota Valley National Wildlife Refuge - Minnesota Valley National Wildlife Refuge Trust, Inc. ($225,000)

**1.1/1.2 FINAL REPORT - MeCC V - Mapping and Coordination - Minnesota Land Trust ($100,000)**
***Project Outcome and Results***
The Metro Conservation Corridors (MeCC) Partnership completed its fifth phase of work to accelerate protection and restoration of remaining high-quality natural lands in the greater Twin Cities metropolitan area. Work was accomplished by strategically coordinating and focusing conservation efforts within a connected network of critical lands that stretches from the area's urban core to its rural perimeter, including portions of 16 counties.

Projects and activities took place within science-based corridors and were guided by the Minnesota Statewide Conservation and Preservation Plan, Minnesota's Comprehensive Wildlife Conservation Strategy, as well as numerous local and resource-specific plans. This project addressed several recommendations of the Statewide Conservation and Preservation Plan:

- Protect priority land habitats
- Protect critical shorelands of streams and lakes
- Restore land, wetlands, and wetland-associated watersheds
- Improve connectivity and access to outdoor recreation

The Mapping and Coordination element of the MeCC Partnership provided coordination and leadership for the partnership by Minnesota Land Trust staff and improved prioritization through enhanced database development and mapping of the corridors by DNR staff.

During this phase of work, the coordination activity included regular meetings of the partners to share information and accomplishments, assisting partners with preparation of reports, compiling overall partnership results, and assisting DNR staff with the mapping, database development, and results tracking. The mapping activity included successful development and refinement of a GIS-based database to track historic and current MeCC projects. The database allows partners to generate tables and reports for status and accomplishment reporting for a variety of MeCC components - from project types, to funding sources, to activities, to partnerships, to location analysis. It also links to an interactive web map where the public can see the locations of completed projects.

Although we had originally hoped to complete a mini-evaluation of the MeCC Partnership, due to the time involved in mapping and compiling historic project data, there was not time to complete the evaluation.

***Project Results Use and Dissemination***
The Metro Conservation Corridors Partnership primarily distributed information through individual partners as projects were completed. Partners publicized accomplishments through press releases and organization newsletters and websites. Additionally, the Partnership now has a public web map where the public can view MeCC projects. This web map can be accessed at: http://www.dnr.state.mn.us/maps/MeCC/mapper.html.

**Project completed:** 6/30/2011

**2.3 FINAL REPORT - MeCC V - Restore and Enhance Significant Watershed Habitat - Friends of the Mississippi River ($90,000)**

***Project Outcome and Results***
The Twin Cities contains significant habitat areas. There is a concerted effort to protect, improve and link these areas. FMR's goal with this project was to partner with landowners to restore and enhance habitat at a number of these areas. During this phase of the MeCC project, FMR conducted activities at 9 distinct sites resulting in the restoration of a total of 287 acres, including 179 acres using Environment and Natural Resources Trust Fund funds and 108 acres using leveraged funds. A management plan exists for each site, which served as guide for the restoration and enhancement activities. These sites included:

1. Pine Bend Bluffs Natural Area: Spot treated weeds on a 17-acre restored prairie and conducted exotic brush control on 28 acres of woodland. Conducted follow up buckthorn control on 3-acres of woodland.
2. Sand Coulee Prairie. Conducted prescribed burns, mowing, and spot-spraying on 83- acres. Volunteers assisted in collecting seeds and removing weeds.
3. Rosemount Wildlife Preserve. Conducted a prescribed burn on 16 acres of woodland.
4. Wilmar. Mowed a 25-acre prairie restoration & treated exotic invasive plans in a 15-acre woodland.
5. Mississippi River Gorge. Volunteers installed native tree and shrubs on 2-acre and installed prairie plants to enhance a 4-acre prairie restoration within Crosby Park. Volunteers also hand weeded the site. At the Riverside Park in Minneapolis, volunteers installed native plants within 4-acre of woodland.
6. Hastings Riverflats Park. Applied basal bark treatment to buckthorn on 27 acres of floodplain forest.
7. Gores Pool Wildlife Management Area and Aquatic Management Area. Exotic brush was removed and sprouts treated on 67 acres of woodland. Native grass seed was broadcasted over this woodland. Prairie restoration activities took place on a 4-acre old field. A 4-acre reed canary grassland was treated as part of a re-forestation effort.
8. Ravenna Block Greenway-Dakota County. Buckthorn was removed from 12 acres of woodland, while a prescribed burn was conducted and native prairie seed was broadcasted on a 24-acre grassland.
9. Emrick. 22 acres of a former farm field were seeded to prairie, followed by a mowing. Nine acres of exotic dominated woodland were removed and chipped for biofuels.

***Project Results Use and Dissemination***
FMR organizes many tours and stewardship events at the sites where we conduct restoration activities. We share information about this project with the participants of these events. FMR also occasionally publishes articles in its paper and electronic newsletters regarding restoration projects that it is involved in.

**Project completed:** 6/30/2011

**2.4 FINAL REPORT - MeCC V - Lower Minnesota River Watershed Restoration and Enhancement Friends of the Minnesota Valley ($90,000)**

***Project Outcome and Results***

Friends of the Minnesota Valley (FMV) undertook restoration of habitat for the Lower Minnesota River Watershed portion of the Metropolitan Conservation Corridors Project (MeCC) as a continuation of our wildlife habitat restoration within the Minnesota Valley National Wildlife Refuge and Wetland Management District (Refuge) and within the Lower Minnesota River Watershed. FMV sought to restore native habitats within the Refuge and to work in concert with the U.S. Fish & Wildlife Service and other partners on critical, publicly-owned habitat on Refuge lands. During this phase of the MeCC project, FMV and our partners were able to successfully restore and enhance 17 acres of native wet prairie, 48 acres of native dry sand-gravel oak savanna, and 28 acres of native dray sand-gravel prairie with Environment and Natural Resources Trust Fund funds for a total acreage of 93 acres. We were also able to restore additional match acreage of 59 acres of native dry sand-gravel oak savanna with non-LCCMR, non-state funds, bringing total acres impacted by this project to 152 acres.

The FMV objectives were to complement and connect habitat restoration and management of Refuge lands with that being done by other entities. Restoration sites were selected to address primary management issues and challenges, including the need to restore hydrology within floodplain communities and to restore upland communities such as native oak savanna and wet and dry prairies. Public access to restored lands for recreation and education and the assurance of permanent protection were also primary factors. Due to persistent flooding, our access to wetland sites was severely limited and, as a result, we shifted our focus to upland restoration, as reflected in our amended work program.

All work was completed on four Refuge Units. Work included cutting and herbicide treatment of non-native woody brush species such as buckthorn, honeysuckle, prickly ash, eastern red cedar, and Siberian elm. Minnesotans will be able to access and appreciate the restored sites through the access and education provided to Minnesota Valley National Wildlife Refuge visitors. Our project data is publicly accessible by contacting FMV, through information disseminated through our newsletter and on our website, and through information provided by the MeCC Partnership.

***Project Results Use and Dissemination***

As projects were completed, Friends of the Minnesota Valley publicized project accomplishments through the Friends' quarterly newsletter, our annual report, publication of a habitat restoration prospectus, and the posting of projects on our website. Other dissemination of information occurred through the Metro Conservation Corridors partnership and on the Metro Corridors website.

**Project completed:** 6/30/2011

**2.5 FINAL REPORT - MeCC V - Restore and Enhance Significant Habitat - Great River Greening ($155,000)**

***Project Outcome and Results***

Great River Greening, along with our volunteers and partners, restored and enhanced a total of 204 acres of habitat with Environment and Natural Resources Trust Fund dollars, exceeding our goal of 155 acres, and an additional 140 acres with over $153,000 in leveraged non-state funds. Habitats included prairie, savanna, and forest, including nine native plant communities with biodiversity of statewide significance (as rated by Minnesota County Biological Survey), and habitat for 18 documented rare plant

species (1 invertebrate, 2 bird, and 15 plant species). Restorations/enhancements also occurred at sites in priority watersheds rich with rare terrestrial and aquatic rare species, including the St. Croix, Mississippi, and Minnesota; as well as Valley Creek and Eagle Creek trout stream watersheds. A total of 15 different sites were restored/enhanced.

Enhancement of native plant communities with existing significant biodiversity occurred at:

- Arcola Mills Historic Foundation (Stillwater);
- St Croix Valley Early Detection/Rapid Response Garlic Mustard (Taylors Falls and Marine locations);
- Spring Lake Regional Park (Scott Co);
- Spring Lake Park Reserve (Dakota Co);
- Hidden Valley Park (Savage);
- Snail Lake Regional Park (Shoreview);
- St. Croix Savanna SNA (Bayport);
- Lost Valley Prairie SNA (Denmark Township); and
- Pond Dakota Mission (Bloomington).

Restoration/enhancement of habitats in important and strategic locations were:

- prairie/savanna establishment at Pilot Knob Hill (Mendota Heights), located in an area identified by DNR as a top-tier township for habitat for Species of Greatest Conservation Need;
- a large prairie/savanna restoration/enhancement at Belwin Conservancy's Lake Edith site (Afton), in the Valley Creek watershed;
- early detection and control of garlic mustard at a Valley Creek watershed location;
- prairie restoration/enhancement at Central Corridor (Woodbury and Cottage Grove), historically connected to Lost Valley Prairie SNA;
- savanna maintenance at Eagle Creek AMA (Savage), a metro trout stream;/li>;
- floodplain forest enhancement at Heritage Village Park (Inver Grove Heights) to expand on existing significant floodplain forest on the banks of the Mississippi River;
- and a prairie reconstruction burn at OH Anderson Elementary (Mahtomedi), habitat that is also used extensively in classroom studies.

Volunteers contributed over 2500 hours to these habitat projects.

***Project Results Use and Dissemination***

In January, 2010, Great River Greening included a feature article on the ENRTF, LCCMR, and the Metro Conservation Corridors program and projects in our e-postcard, circulation 3200. A write up on the Metro Conservation Corridors program with features of select projects was included in our Spring 2011 Newsletter, and an article featuring the Pond Dakota Mission restoration was featured in our Fall 2010 newsletter. These are available for continued viewing at http://www.greatrivergreening.org/news.asp. In addition, project descriptions are included in our volunteer recruitment efforts to all the volunteers in our database. In addition, Greening is in active partnership with landowners and other land managers, resulting in a dynamic and timely exchange of information and results.

**Project completed:** 6/30/2011

**2.6/3.4/4.1 FINAL REPORT - MeCC VI - Metro Greenways Grants for Restoration, Acquisition, Easements, and Other Conservation Tools - MN DNR ($1,175,000)**

***Project Outcome and Results***

The DNR Metro Greenways Program has worked since its inception in 1998 toward the goals of protecting, restoring, and reconnecting remaining natural areas in the Twin Cities greater (12-county) metropolitan region. The principal strategies employed by the Program to achieve these goals included: 1) competitive grants to local and regional governments to restore degraded habitats; 2) competitive grants that support the acquisition of or conservation easements on strategically important parcels of terrestrial, wetland, or riparian habitat; 3) incentive grants to local governments to address other conservation needs such as land cover inventories, natural resource based land use decision tools, and ordinance revisions to support conservation efforts; and 4) natural resource based workshops on topics of interest to local government staff and officials.

The 2009 appropriation concludes DNR Central region's Metro Greenways Program, which is sun setting after 13 years. This final allotment of $1,175,000 was used to fund a total of 21 projects and to develop and offer six new natural resource-based workshops. Combined, the restoration and protection projects conserved an additional 375 total acres in the 12-county greater metropolitan region, almost meeting Metro Greenways' combined target of 385 acres of lands restored and protected:

- Five restoration grants totaling $90,000 were awarded to three counties and one city. In combination with other funds, a total of approximately 255 acres of city, county, and regional park lands were restored to native vegetation, primarily prairie and savanna. The newly restored acreage was over two times more than targeted for this result (120 acres).
- Six protection projects were awarded a total of $650,000. Only three projects totaling $370,000 were initiated and completed (Lindstrom, Grannis, and Niebur), resulting in the protection of just 120 acres of the 325 acre projected target for Metro Greenways. The city of Lindstrom acquired a new 64 acre Allemansratt "wilderness" park that will give residents the chance to explore its several clear lakes and deciduous hardwood forest. Two grants to Dakota County added a total of 56 acres under conservation easements to its green infrastructure network being created by the Farmland and Natural Areas Program. Unfortunately, a $200,000 grant to Anoka Conservation District did not materialize and a $10,000 grant awarded to Chanhassen was turned down. These funds were put toward other projects. A Washington County project fell through very late in the biennium, leaving an $80,000 balance for this result category.
- Metro Greenways' Community Conservation Assistance Program awarded 13 grants to cities, counties and special districts that supported a variety of locally-specific conservation needs: a) to obtain land cover and urban tree canopy (UTC) inventories; b) to develop natural resource-based land use decision models; c) to create interjurisdictional partnerships to protect high quality natural areas; and d) to write new or revise existing ordinances to protect natural resources. In addition to these grants, the Program organized and facilitated two annual events (Rendez-Vous) that brought all DNR Community Assistance grantees (2008 and 2009 appropriations) together for full days of information-sharing and peer-to-peer learning. The DNR also convened the three cities undertaking urban tree canopy (UTC) inventories, along with the University of Minnesota forestry and extension service, U.S. Forestry Service, and Minneapolis Park and Recreation Board, to hear about each city's findings and proposed applications of UTC data.

This third result area also funded the development and offering of six new natural resource-based workshops in 2010/2011 for local government staff and appointed officials. These workshops were offered in the metro area and were promoted by Government Training Services to its clientele (local government commissioners). Almost 325 local government staff and officials (62% from cities; 14% counties; 10% townships; and14% special districts and others) attended these workshops on shoreland conservation, stormwater management, and the incorporation of natural resources into land use

planning and engineering design. The workshops all received excellent evaluations from attendees.

***Project Results Use and Dissemination***
Press releases were sent to local newspapers where projects were funded. The DNR convened all of the Community Conservation Assistance (CCA) project managers in November of 2009 and in February 2011 to share the findings of their conservation work. CCA Project Profiles were drafted and posted on the DNR website. Protection and restoration project information is available through the Metro Conservation Corridor partnership map created for public use. The CCA deliverables will be tried and tested as part of the Results Outcomes effort by the State of Minnesota.

**Project completed:** 6/30/2011

**2.7/3.6 FINAL REPORT - MeCC V - Scientific and Natural Area Restoration and Acquisition - MN DNR ($646,955)**

***Project Outcome and Results***
Nearly 150 acres of high quality native habitat threatened by urban development was acquired and added to two metro Scientific and Natural Areas (SNAs). First, 80 acres were acquired (36.7 acres pro-rated to this appropriation) and added to the Hastings Sand Coulee SNA. The addition contains native oak savanna and prairie and increases this SNA to 267 acres. Thus, more than half of this largest remaining prairie complex in Dakota County is protected for its 13 resident rare species (including 3 snake and 2 butterfly species) and for public use, including hiking and nature observation. Second, about 70 acres - including public fishing frontage on the Credit River - was acquired (6.2 acres pro-rated to this appropriation) and added to the Savage Fen SNA in Scott County. These sites offer urban residents close-to-home nature-based recreation, including a new archery hunting opportunity on 300 acres at Savage Fen SNA.

SNA restoration and enhancement activities were completed on 187 acres at 13 SNAs in 7 counties in the greater metropolitan area. For example, a 55-acre prairie was reconstructed (restored) at Lost Valley Prairie SNA with the help of volunteers and a Sentence-to-Serve crew using seed collected on site by hand and mechanically harvested by the SNA crew. Almost 100 acres was prescribed burned at 5 SNAs. About 34 acres received invasive species control actions, including work by Conservation Corps Minnesota. These activities result in better habitat for the SNAs' rare features and improved quality for users of SNAs.

***Project Results Use and Dissemination***
Information about Scientific and Natural Area (SNA) sites, including those SNAs with new acquisition, restoration, enhancement and development activities through this appropriation, is available on the DNR website (www.mndnr.gov/snas). DNR-sponsored volunteer events, such as those involved in the Lost Valley Prairie, are regularly posted at: www.dnr.state.mn.us/volunteering/sna/index. Both of the acquisition projects received publicity in local newspapers and in partner organization newsletters. Specifically, Savage Fen SNA acquisition was publicized in the Shakopee Valley News and in the Trust for Public Land's electronic newsletter and electronic invite. The Hastings Sand Coulee SNA acquisition was referenced in articles in the Hastings Gazette and the Friends of the Mississippi River website.

**Project completed:** 6/30/2011

**2.9/3.5 FINAL REPORT - MeCC V - Fish and Wildlife Habitat Restoration and Acquisition - MN DNR ($500,000)**

***Project Outcome and Results***
This project had a two pronged focus. Result 1 (4f2.9) focused on a trout stream habitat restoration project located within Vermillion River Aquatic Management Areas (AMA), in Dakota County. This stretch of the Vermillion River channel had been altered by ditching. Result 2 (4f3.5) focused on securing fee title parcels on the Vermillion River in Dakota County and Eagle Creek in Scott County. Parcels include habitat linkages that provided environmental protection of the shoreline and riparian zone, exhibit a high risk of development, supply angler access, and afford management access necessary for implementing habitat improvement projects. Project goals were to restore 0.6 miles of stream habitat and acquire 60 acres with 1.0 mile of shoreline. Partner funding includes donations of land value and cash.

Result 1 (4f2.9): Restoration of 0.9 miles of Vermillion River channel. Environmental and Natural Resources Trust Fund (ENRTF) dollars directly restored approximately 0.44 miles of the total restored channel. Other State dollars (TU OHC = $140,000) restored 0.41 miles, and other funding (Vermillion River Watershed = $20,000) restored 0.05 miles of the total.

Result 2 (4f3.5): Acquisition of four parcels with a grand total of approximately 50.5 acres and 1.1 miles of stream shoreline. Because of the extreme variation in shoreline values it is hard to accurately predict a reliable acre benchmark. Most years, including the 2008 ENRTF appropriation, we far exceeded our acres goal. For the 2009 ENRTF appropriation, we fell short of the acres goal, but reached our "miles of shoreline" goal. ENRTF directly acquired approximately 38.8 acres of the total, including 0.7 miles stream shoreline. Donations of land value ("other funds" $106,800) accounted for 11.7 acres and 0.4 shoreline miles. One of the Vermillion River parcels (parcel 7) was acquired jointly using both 2008 and 2009 grants to Metro Corridors Conservation Partnership. Results for Vermillion River, P7 were proportionately distributed for each grant.

Overall, as a result of this project, 0.9 miles of Vermillion River channel was restored to its original course, after being ditched for 50 or more years. Also, as a result of this project, 50.5 acres, including 1.1 miles of critical shoreline fish and wildlife habitat are now permanently protected and open to public angling and/or hunting - as well as other light use recreational activities. Due to failed negotiations, two acquisitions went into abeyance towards the end of the grant, resulting in $57,975 being turned back to the ENRTF. Acquired parcels are now designated and managed as AMAs.

***Project Results Use and Dissemination***
All new AMA lands will be added to DNR's Public Recreational Information Maps (PRIM).

**Project completed:** 6/30/2011

**3.1 FINAL REPORT - MeCC V - TPL's Critical Land Protection Program - Trust for Public Land ($380,000)**
***Project Outcome and Results***
In its Critical Lands Protection Program, The Trust for Public Land (TPL) used $380,000 ENRTF funds to secure fee title on 21.63 ENRTF acres of 402 total acquired acres. TPL conveyed these lands to public agencies for permanent protection. Individual project successes include the following:

- TPL spent $318,000 2009 ENRTF funds to protect 14.43 ENRTF acres of land as part of a larger 64-acre purchase of shoreline designated by the Minnesota Department of Natural Resources as a "regionally significant ecological area." TPL conveyed the land to the City of Lindstrom to create the Allemansratt Wilderness Park.

- TPL spent $62,000 2009 ENRTF to protect 7.2 ENRTF acres of land as part of a 338-acre acquisition of one of the largest undeveloped and contiguous tracts of open space in the Twin Cities Metro Area. TPL then conveyed the land to Anoka County. Located at the confluence of Cedar Creek and the Rum River, this land will be managed by the County as the Cedar Creek Conservation Area.

TPL leveraged $380,000 in TPL Metro Conservation Corridors (MeCC) 2009 funding on these projects with $992,000 in non-state funds to protect 87.79 additional pro-rated acres of land. $652,000 of this was non-state public funds and $339,500 of this was from private land value donations. Additionally, $500,000 in state remediation grant funds were used to protect 22.7 pro-rated acres and $1,900,000 in Outdoor Heritage Funds were used to protect 221.4 pro-rated acres. TPL's 2010 ENRTF funds in the amount of $338,000 and DNR's 2008 ENRTF funds in the amount of $200,000 were used to protect 39.4 pro-rated acres and 9.08 pre-rated acres respectively. All acres acquired total 402.

*Please note, since a portion of TPL's 2010 ENRTF funding was used for the Cedar Creek Conservation Area project, a portion of these results will also be reflected in TPL's 2010 MeCC Work Program update and Final Report.

***Project Results Use and Dissemination***
As conservation transactions were completed, The Trust for Public Land disseminated information on the TPL website www.tpl.org, broadcast emails to Embrace Open Space (EOS) and TPL list serve members, distributed press releases, and included information in TPL's newsletters as appropriate. TPL also worked with the long-term stewards to ensure information was distributed to their listserves and posted on their websites as well.

**Project completed:** 6/30/2011

**3.2 FINAL REPORT - MeCC V - Protecting Significant Habitat by Acquiring Conservation Easements - Minnesota Land Trust ($250,000)**
***Project Outcome and Results***
During the fifth phase of the Metro Corridors project, the Minnesota Land Trust continued to work with landowners throughout the greater metropolitan area to permanently protect lands that are key components of Minnesota's remaining natural areas in the region. Eight perpetual conservation easements were completed that collectively protect 765 acres of land and more than 13,000 feet of shoreline. Three easements were purchased, and the remaining five easements were donated. While two of the purchased easements used both 2009 and 2010 ENRTF funding, we are reporting the accomplishments as part of our 2009 report. We will not report these acres in future 2010 reports to avoid double-counting. All eight projects represent unique opportunities to protect high quality natural habitat, riparian areas, and to build upon prior land protection work by the Land Trust at several priority sites. The specific project sites of the conservation easements include:

- 45 acres, including 1,095 feet of shoreline, along Deer Lake in Anoka County (purchased using both ML 2009 and ML 2010 ENRTF appropriations);
- 148 acres, including 2,527 feet of shoreline, along Elk River in Sherburne County (donated);
- 44 acres, including 3,065 feet of shoreline, on Kingswood Pond in Hennepin County (purchased using both ML 2009 and ML 2010 ENRTF appropriations);
- 157 acres near Hardwood Creek in Washington County (donated);
- 5 acres in Scandia in Washington County (donated);
- 126 acres near the headwaters of Valley Creek in Washington County (donated);

- 39 acres adjacent to Wild River State Park in Chisago County (purchased using ML 2009 ENRTF appropriation only);
- 201 acres near Baypoint Park in Goodhue County (donated).

Additionally, the Land Trust prepared baseline property reports for each easement, detailing the condition of the property for future monitoring and enforcement. To fund this required perpetual obligation, the Land Trust dedicated ENRTF and other funds to its segregated Stewardship and Enforcement Fund for all completed projects. We estimated the anticipated annual expenses of each project and the investment needed to generate annual income sufficient to cover these expenses in perpetuity - all in accordance with our internal policies and procedures as approved by LCCMR. We will report to LCCMR annually on the status of the Stewardship and Enforcement Fund and the easements acquired with funds from this grant.

Values are known for only five of the eight easements acquired, and this value totals $854,500, with a known donated value of $413,500. The cost to the State of Minnesota to complete these projects was just over $326 per acre.

Cumulatively, across phases I-V of the Metro Corridors program, the Land Trust has protected 3,298 acres of critical habitat and more than 75,000 feet of shoreline, at a cost to the State of $520 per acre.

The Minnesota Land Trust's work on this project continues to demonstrate the cost effectiveness of working with conservation easements to protect natural and scenic resources within developed and developing areas, as the cost to the State was well below the cost to purchase land in the Twin Cities region. This grant continued to generate interest among landowners, and therefore, ongoing funding will be important to sustained success. Additionally, our experiences during this phase of the grant continue to indicate that funds to purchase easements, as opposed to obtaining donated easements, will be necessary in the future as work becomes more targeted, selective, and focused on building complexes of protected land.

***Project Results Use and Dissemination***
The Minnesota Land Trust disseminated information about the specific land protection projects completed under this grant though our newsletter, email updates, web site, and press releases. The Land Trust also shared information about conservation easements generally and our experience with our partner organizations, other easement holders, local communities, as well as policy makers including members of the LCCMR and L-SOHC.

**Project completed:** 6/30/2011

**3.3 FINAL REPORT - MeCC V - Expansion of Minnesota Valley National Wildlife Refuge - Minnesota Valley National Wildlife Refuge Trust, Inc. ($225,000)**
***Project Outcome and Results***
The Minnesota Valley National Wildlife Refuge Trust, Inc. acquired 96 acres of priority lands in the Minnesota River Valley floodplain in Sibley County to expand the Jessenland Unit of the Minnesota Valley National Wildlife Refuge. Of the 96 acres acquired, the Environment and Natural Resources Trust Fund paid for 90 acres and the Minnesota Valley Trust paid for 6 acres with nonprofit and other non-state funds.

Using other non-state funds, the Minnesota Valley Trust also acquired 44.67 acres of priority lands in the

Minnesota River Valley in Scott County to expand the Blakely Unit of the Minnesota Valley National Wildlife Refuge. The Blakely and Jessenland Units are on opposite (facing) sides of the Minnesota River and, together, form a large contiguous block of priority wildlife habitat.

Both of these acquisitions expand upon prior acquisitions funded in part by the Environment and Natural Resources Trust Fund, as recommended by the LCCMR. The parcels acquired are adjacent to other lands protected by the Minnesota Valley Trust for the Minnesota Valley National Wildlife Refuge.

The Blakely and Jessenland Units of the Refuge were identified through a planning process by the US Fish and Wildlife Service as priority expansion units of the Minnesota Valley National Wildlife Refuge. The parcels acquired are within the expansion boundaries of those Refuge units.

After any needed restoration, the lands will be donated to the USFWS for perpetual management as part of the Minnesota Valley National Wildlife Refuge. They will be managed for wildlife and wildlife-dependent recreation, including hunting, fishing, wildlife observation, photography, wildlife interpretation and environmental education.

***Project Results Use and Dissemination***
The Minnesota Valley Trust will publicize the completion of this project through its website and news releases. All funding partners will be acknowledged on Refuge kiosks, including the Environment and Natural Resources Trust Fund, as recommended by the Legislative Citizen Commission on Minnesota Resources.

**Project completed:** 6/30/2011

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**Statewide Ecological Ranking of Conservation Reserve Program (CRP) and Other Critical Lands**
Subd. 04g $107,000

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**Appropriation Language**
$107,000 is from the trust fund to the Board of Water and Soil Resources to continue the efforts funded by the emerging issues account allocation to identify and rank the ecological value of conservation reserve program (CRP) and other critical lands throughout Minnesota using a multiple parameter approach including soil productivity, landscape, water, and wildlife factors.

**Overall Project Outcomes and Results**
To allocate scarce fiscal resources to natural resource programs, identifying the location and ranking the ecological value of critical lands is important. Using parameters of soil productivity, soil erosion risk,

water quality risk, and habitat quality, an ecological ranking tool was developed. An economic model was also incorporated to analyze CRP (Conservation Reserve Program) parcels and determine the likelihood of contract renewal given anticipated crop prices and land quality. A parameter for soil erosion risk was developed using several factors from the Universal Soil Loss Equation. To identify lands posing a risk to water quality, or lands that are most likely to contribute overland runoff to surface waters, terrain analysis was used. Runoff rankings from terrain analysis were then integrated with a proximity analysis of surface water features based on DNR 24k surface water data. A parameter for habitat quality was derived from an update to the work done as part of the Minnesota Conservation and Preservation Plan (LCCMR, 2008). Combining the data sets therein, and assessing them with a "weight of evidence" approach, produced a ranking of wildlife quality. These several parameters were combined into an environmental benefits index (EBI). High EBI translates into high risk. Therefore, a high EBI score implies a site has a high value for conservation. CRP or other parcels deemed critical for conservation can be assessed simultaneously on the basis of multiple ecological benefits. The EBI tool has demonstrated utility as users can establish thresholds for EBI values based on program goals and amount of funding available.

**Project Results Use and Dissemination**
The EBI was first presented to a general audience through a WEBINAR. A follow-up technical training session, geared to GIS professionals, was developed. The technical sessions were attended by 42 conservation professionals representing local units of government, state and federal agencies, non-governmental organizations, and private companies.

A majority (70%) of participants at the three technical training sessions said they planned to use the ecological ranking tool in their professional work. Given the diverse professional affiliations of the participants, their active involvement in conservation planning and delivery, and their connection to the network of natural resource professionals, it is likely that the Ecological Ranking Tool will be integrated into many conservation activities throughout Minnesota.

Presentations of the project and project results were provided to the LCCMR, Lessard-Sams Outdoor Heritage Council and the Board of Water and Soil Resources.

A final report was prepared. The report describes all results in more detail and includes maps and graphics and suggestions for use. A website was established by the Board of Water and Soil Resources that provides an overview of the ranking methodology. The BWSR website also includes links to an interactive ranking tool (located at the University of Minnesota, Natural Resources Research Institute (NRRI) and the final report, which is available in downloadable format.

**Project Publication:**
Statewide Ranking of Ecological Value of CRP and other Critical Lands

**Project completed:** 06/30/2011

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**Protection of Granite Rock Outcrop Ecosystem**
Subd. 04h $1,500,000

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**Appropriation Language**
$1,500,000 is from the trust fund to the Board of Water and Soil Resources, in cooperation with the Renville Soil and Water Conservation District, to acquire perpetual easements of unique granite rock outcrops located in the Upper Minnesota River Valley and to restore their ecological integrity.

**Overall Project Outcome and Results**
A total of 560.4 acres of rare and unique Minnesota River Valley landscape were permanently protected and sixteen landowners were paid $1,379,814 for voluntarily placing perpetual conservation easements on those acres. Five counties participated in the project including Lac qui Parle, Chippewa, Yellow Medicine, Redwood and Renville. Easement applications were scored by resource professional teams and funding was based on those scores.

Soil & Water Conservation District (SWCD) employees saw a need to protect the natural environment and to provide economically viable choices for the landowners. The Minnesota River Valley contains exposed ancient granite rock outcrops that provide unique landscape features and habitat for specialized plant and animal communities rarely found elsewhere in Minnesota. No programs existed that would give landowners a payment if they chose to protect the area from development by mining, overgrazing and other development interests. Rock outcrops are a component of the Minnesota River's riparian zone, and destruction of this unique habitat degrades water quality and wildlife habitat in the Minnesota River and its tributaries. Removal of the rock results in severe degradation and permanent loss of these unique landscape features. The Minnesota River Corridor is easily susceptible to fragmentation because it comprises such a small percentage of the Minnesota River Watershed. Past development activities and mining operations have already fragmented large areas of the fragile Minnesota River Corridor.

Demand for aggregate is growing as our population and infrastructure grow. Interest in mining exposed granite rock outcrops in the Minnesota River Valley is high because the rock is readily available and there is no overburden to remove. This encourages the practice of horizontal mining, removing the easiest and most profitable rock, and moving on. Unlike gravel mining operations, there is no reclamation plan possible for replacing this unique landscape feature once it is removed.

**Project completed:** 06/30/2012

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**MN Farm Bill Assistance Project**
Subd. 04i $1,000,000

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**Appropriation Language**
$1,000,000 is from the trust fund to the Board of Water and Soil Resources to provide funding for technical staff to assist in the implementation provisions of conservation programs including the federal farm bill conservation programs. Documentation must be provided on the number of landowner contacts, program participation, federal dollars leveraged, quantifiable criteria, and measurement of the improvements to water quality and habitat.

**Overall Project Outcome and Results**
A joint effort of MN Board of Water and Soil Resources, MN Dept. of Natural Resources, MN Pheasants Forever, and local Soil and Water Conservation Districts, the focus was acceleration of technical assistance to private landowners for enrollment in federal USDA conservation programs as they relate to grassland and wetland resources. This effort provided 16 full time equivalents at the field level with a goal to establish or restore 50,000 ac. of grassland and wetlands during the 2 year period ending June 1, 2011. This goal was exceeded with a total enrollment of 69,081 acres resulting in $79,000,000 of USDA program payments coming to MN landowners for implementing conservation practices on their land. Efforts of this project will continue for at least another 2 years under new funding from the Environment and Natural Resources Trust Fund and partner agency contributions.

**Project Results Use and Dissemination**
Overall project results and its impact can be found in the Minnesota Conservation Lands Summary table found at http://www.bwsr.state.mn.us/easements/COENROL_083111.pdf.

**Project completed:** 06/30/2011

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**SUBD. 05 WATER RESOURCES**

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**Intensified Tile Drainage Evaluation**
Subd. 05d $300,000

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**RESEARCH**

**Appropriation Language**
$300,000 is from the trust fund to the Science Museum of Minnesota for the St. Croix watershed research station to conduct a comparative assessment of hydrologic changes in watersheds with and without intensive tile drainage to determine the effects of climate and tile drainage on river erosion. This appropriation is available until June 30, 2012, at which time the project must be completed and final products delivered, unless an earlier date is specified in the work program.

**Overall Project Outcome and Results**
Agricultural rivers throughout Minnesota are impaired by excess sediment, a significant portion of which comes from non-field, near-channel sources, suggesting that rivers have become more erosive over time. In the upper Mississippi basin, crop conversions have lead to an intensification of artificial drainage, which is now a critical component of modern agriculture. Coincident with the expansion of drainage networks were increases in annual rainfall. To disentangle the effects of climate and land-use we compared changes in flow, runoff ratio, precipitation, crop conversions, and extent of drained depressional areas in 21 watersheds over the past 70 years. Major finding from this study are:

- Flow and runoff ratio have increased by than more 50% in about half of the watersheds.
- Increases in rainfall generally account for less than half of the increases in flow.
- The largest increases in flow are correlated to the largest conversions to soybeans and extent of artificial drainage.
- Using a water budget, calibrated to the first 35 years of record, we calculate that artificial drainage accounts for the majority of the statistically significant increases in flow.
- Artificial drainage of depressional areas reduces water residence time on the landscape, consequently; a significant portion of annual rainfall that was once returned to the atmosphere via evapo-transpiration, is now routed to the rivers.
- Loss of depressional areas and wetlands are strongly correlated to increases in excess flow in the 21 watersheds, thus supporting the proposed linkage between facilitated drainage of depressional areas and increases in river flow.
- Rivers with increased river flow have experienced channel widening of 10-40%.
- Climate, crop conversion and artificial drainage have combined to create more erosive rivers, with drainage as the largest driver of this change.

**Project Results Use and Dissemination**
Results of this study have been submitted for publication to the journal Hydrological Processes and have been accepted pending final review. Summaries and findings and implications of this study have been presented at more than 30 technical meetings in Minnesota and nationally. Many of these presentations have been in conjunction with local watershed groups, and have an audience of County Commissioners, farmers, SWCD staff, and agricultural consultants. These meetings have been highly successful at delivering the findings of this study to people who are directly involved in watershed management but are less likely to attend scientific meetings or read scientific journals.

**Project completed:** 06/30/2012

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**Citizen-Based Stormwater Management**
Subd. 05e $279,000

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**Appropriation Language**
$279,000 is from the trust fund to the commissioner of natural resources for an agreement with Metro Blooms, in cooperation with Minnehaha Creek Watershed District and the city of Minneapolis, to install and evaluate the effectiveness of rain gardens on improving the impaired water of Powderhorn Lake in Minneapolis. This appropriation is available until June 30, 2012, at which time the project must be completed and final products delivered, unless an earlier date is specified in the work program.

**Overall Project Outcome and Results**
The long term success in reducing impairments to local water bodies will require better citizen-based approaches to increase public awareness and affect behavior change. This project demonstrates a fast-paced approach to citizen engagement for the installation of raingardens within a 28-acre area that drains to Powderhorn Lake (Minneapolis). A paired watershed study was undertaken to evaluate the effectiveness of raingardens in reducing runoff and pollutant loads generated solely on private property.

230 community members participated in project installation events and activities demonstrating the connection between runoff and water quality of Powderhorn Lake. Approximately 50% of homeowners in the test neighborhood received a free raingarden for a total of 125 project-installed raingardens. Two congregations also installed raingardens and permeable pavement strips in their parking lots. Youth and young adult job programs excavated and planted the majority of gardens. More than 70,000 sq. ft. of impervious area was redirected to a stormwater best management practice (BMP). Additionally, 50% of participants also exhibited behavior change by taking voluntary steps to reduce run off from their property (redirecting downspouts, installing rainbarrels, or additional raingardens).

Performance was measured by monitoring the quality and quantity of stormwater discharged to Powderhorn Lake from the test and control sites and comparing results. Minneapolis Park and Recreation Board installed and maintained equipment for three years, providing stormwater runoff characteristics before and after raingarden installation.

Fewer water quality samples were collected than planned due to challenges posed by the urban storm sewer system and climatic conditions. While the paired watershed analysis results do not show a statistically significant outcome, the few water quality samples collected in 2011 provide promise that the test neighborhood efforts could have reduced pollutant loads when compared with the control area. Continued stormwater monitoring is planned in both areas (funded by the City of Minneapolis).

**Project Results Use and Dissemination**
The project has continued to engage others in similar efforts across the Twin Cities metropolitan area, including 14 additional Neighborhood-of-Raingardens style projects led by Metro Blooms and another 170+ raingardens installed.

Neighborhood of Raingardens is also a film produced by University of Minnesota's Mark Pedelty, and funded by the Institute on the Environment. The film gives an introduction to raingardens and

stormwater runoff and highlights the Powderhorn Park project. It aired on the MN Channel (TPT MN) on April 22, 2011 at 7:30pm, with repeats on April 23, 2011 at 1:30am and 7:30am, and during the month of June. The film has been shown at neighborhood events and co-ops and is available to be viewed online or for download at http://www.raingardenmovie.org.

Metro Blooms has a created a Powerpoint presentation on the project, which has been presented to the Watershed Partners and Blue Thumb partners, as well as staff of the Ramsey Washington Metro Watershed District. We will be presenting our project at the2012 Water Resources Conference, a state-wide event that showcases innovative, practical, and applied water resource engineering solutions, management techniques, and current research about Minnesota's water resources.

All project partners received a copy of the final report and executive summary. All project participants received a copy of the executive summary with accompanied raingarden maintenance brochure. The full report and executive summary are available on our website at http://www.metroblooms.org/neighborhood-of-raingardens.org. Additional copies of the executive summary will be made available at outreach events and upon request, while supplies last.

**Project Publication:**
A Citizen-Based Approach to Stormwater Management: Raingardens to Improve Impaired Waters (PDF - 12.6 MB)

**Project completed:** 06/30/2012

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**Minnesota Drainage Law Analysis and Evaluation**
Subd. 05f $87,000

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**Appropriation Language**
$87,000 is from the trust fund to the commissioner of natural resources for an agreement with Smith Partners PLLP to identify and analyze legal and policy issues where the drainage code conflicts with other laws impacting protection of public waters and wetlands.

**Overall Project Outcome and Results**
The Environment and Natural Resources Trust Fund enabled this study to analyze Minnesota drainage laws and related economic and environmental considerations, and to explore alternative strategies that would best protect both the state's surface waters and the rights of property owners to make beneficial use of their land through drainage. This study presents an overview of the drainage code and related water resource laws; identifies critical issues where potential conflicts between the drainage code and

other laws create barriers to successful resource protection; and identifies three prototypical demonstration scenarios (Red River Valley, Minnesota River Valley, and Developing Watershed) to inform the study's analysis of these critical issues.

A study advisory committee composed of individuals from diverse backgrounds and expertise met nine times, from December 2009 through May 2011. We also presented this study to the Minnesota Association of Watershed Districts annual meeting in 2009 and 2010; three times to the Board of Soil and Water Resources Drainage Work Group; and to the Red River Watershed Management Board in June 2011.

Key recommendations include:

- Give drainage authorities more tools and resources for watershed-based planning.
- Give drainage authorities more tools and resources to implement projects with integrated drainage, flood control, conservation and water quality benefits.
- Better integrate effects on wetlands and water quality into drainage authority decisions about drainage system work.
- Provide drainage authorities with more clarity in legal authority to address drainage system alignment, grade, cross section, and hydraulic capacity of bridges and culverts for multipurpose design of drainage system establishment, improvement, or repair.
- Extend the authority to establish a locally based wetland regulatory framework under a comprehensive wetland protection and management plan (CWPMP) to public water wetlands.
- Foster reliability of CWPMP outcomes through coordination of local land use authority and wetland regulatory authority.

The policy recommendations include both pertinent findings, specific recommended actions, and draft legislation.

**Project Results Use and Dissemination**
This project will be presented at the University of Minnesota Water Resources Conference on October 18-19, 2011, the Annual conference of the Minnesota Association of Watershed Districts on December 2, 2011, and at the Annual Convention for the Minnesota Association of Soil and Water Conservation Districts on December 6, 2011.

**Project Publication:**
MN Drainage Law Analysis and Evaluation (PDF - 3.3 MB)

**Project completed:** 06/30/2011

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**SUBD. 06 AQUATIC AND TERRESTRIAL INVASIVE SPECIES**

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**Ballast Water Sampling Method Development and Treatment Technology**
Subd. 06a $366,000 ($300,000 TF / $66,000 GLPA)

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**RESEARCH**

**Appropriation Language**
$300,000 is from the trust fund and $66,000 is from the Great Lakes protection account to the commissioner of the Pollution Control Agency in cooperation with the Department of Natural Resources to conduct monitoring for aquatic invasive species in ballast water discharges to Minnesota waters of Lake Superior and to test the effectiveness of ballast water treatment systems.

**Overall Project Outcome and Results**
Safe and effective ballast water treatment (BWT) is the best way to prevent ship-mediated introductions of invasive species in the Great Lakes. However, knowing whether a proposed BWT works in freshwater, and whether it is used properly by a ship is a difficult challenge for the Minnesota Pollution Control Agency (MPCA) and other regulators. BWTs with International Maritime Organization (IMO) approval have never been tested in natural fresh water, and there are no agreed methods for monitoring ballast discharge from ships. This project assisted the MPCA through accomplishing a) IMO-consistent freshwater validations of two promising BWTs at the Great Ships Initiative (GSI) freshwater testing facility, and 2) design, installation and demonstration of a credible and feasible ballast discharge sampling method for Great Lakes ships. The IMO-approved PureBallast system (AlfaLaval), performed well in tests overseas, but did not function effectively in the GSI test, likely due to clogging by freshwater filamentous algae (see http://www.nemw.org/GSI/GSI-LB-F-A-2.pdf). This outcome informs MPCA that IMO-approval does not by itself assure freshwater effectiveness. The other BWT tested, a lye-based system aimed at US lakers, performed better (see http://www.nemw.org/GSI/GSI-LB-F-A-3.pdf), warranting refinement and shipboard testing. The project's ship sampling system proved a) applicable to the Great Lakes fleet, as demonstrated by project installation plans for 10 ships; b) cost-effective, as demonstrated by installations on 5 ships; and c) feasible, as demonstrated by sampling exercises on 2 ships. A detailed guidebook (see http://www.nemw.org/GSI/ballastDischargeMonitoringGuidebook.pdf) equips MPCA with the project method. All sample ports are permanent installations. The remaining four installations and seven tests will take place in 2012 using Department of Transportation, Maritime Administration funds. GSI will collect and analyze data on live organisms in ballast water discharge sampled in 2011 and 2012, and will post outcomes on the GSI website (http://www.greatshipsinitiative.org) and forward them to the MPCA.

**Project Results Use and Dissemination**
Final reports on ballast treatment tests performed pursuant to this grant, and the guidebook developed for ship discharge sampling, have been posted on the GSI public website (www.greatshipsinitiative.org). The project forwarded final reports on ballast treatment performance tests to the United States Environmental Protection Agency (USEPA) Science Advisory Board which reported to the USEPA and the USCG on availability of ballast treatment technology in 2011. NEMWI presented the sampling method developed through this project to an international gathering of ballast discharge researchers and regulators (Global R&D Forum and Exhibition on Ballast Water Management in a session on ballast treatment testing and compliance monitoring in Istanbul Turkey in the fall of 2011), and will submit the guidebook as a manuscript for the conference proceedings.

**Project Publications:**
Final Report of the Land-Based, Freshwater Testing of the AlfaWall AB PureBallast Ballast Water

Treatment System (PDF - 1.8 MB)
Final Report of the Land-Based, Freshwater Testing of the Lye (NaOH) Ballast Water Treatment System (PDF - 2 MB)
A Ballast Discharge Monitoring System for Great Lakes Relevant Ships: A Guidebook for Researchers, Ship Owners, and Agency Officials (PDF - 1.5 MB)

**Project completed:** 06/30/2011

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**Emergency Delivery System Development for Disinfecting Ballast Water**
Subd. 06b $125,000

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**RESEARCH**

**Appropriation Language**
$125,000 is from the trust fund to the commissioner of the Pollution Control Agency for an agreement with the United States Geologic Survey to test the viability of treating ballast water through tank access ports or air vents as a means to prevent the spread of invasive species.

**Overall Project Outcome and Results**
This project was part of Phase III of an overall effort to produce an Emergency Response Guide to Handling Ballast Water to Control Non-Indigenous Species. Phase I ($25,000) was funded by National Oceanic and Atmospheric Administration and resulted in a study plan entitled "Mixing Biocides into Ships' Ballast Water: Efficiency of Novel Methods." Phase II ($185,000) was funded by the Great Lakes Fisheries Trust and studied in-line injection, bulk dye dosing, perforated hose dosing, and passive mixing methods, such as ship's motion.

Similar to Phase II, this effort (Phase III) prepared ballast tank mixing and sampling equipment, field work on a working ship to trial promising ballast mixing methods, and analysis/report. The active methods being studied in Phase III are venturi eductors and air lifts. The outcome will be the incorporation of these methods (if determined to be effective and practical) into a best practices guide for treating the ballast water of ships either:

- Arriving in port with high risk ballast water,
- Leaving a port that contains ballast known to be high risk for the destination port, or
- Grounded and laden with high risk, untreated ballast water.

**Project Results Use and Dissemination**
Preliminary information from Result 1 and Result 2 activities were shared at the May 18, 2010 Great Lakes Ballast Water Collaborative meeting in Montreal, QC and at the June 1, 2010 Lake Superior

Binational Program - Invasive Species Workshop in Duluth, MN.

The final project results consisting of two reports entitled "Emergency Response Guidance for Handling Ballast Water to Control Aquatic Invasive Species" and "Mixing Biocides into Ship's Ballast Water-Great Lakes Bulk Carrier Field Trials" are posted on the National Park Service web site at http://www.nps.gov/isro/naturescience/handling-ballast-water-to-control-non-indigenous-species.htm.

**Project Publication:**
Emergency Response Guidance for Handling Ballast Water to Control Aquatic Invasive Species (PDF - 2.2 MB)
Mixing Biocides into Ship's Ballast Water: Great Lakes Bulk Carrier Field Trials (PDF - 3.5 MB)

**Project completed:** 06/30/2012

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**Improving Emerging Fish Disease Surveillance in Minnesota**
Subd. 06c $80,000

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**RESEARCH**

**Appropriation Language**
$80,000 is from the trust fund to the Board of Regents of the University of Minnesota to assess mechanisms and control of the transmission of Heterosporosis, an emerging fish disease in Minnesota, to assist in future management decisions and research.

**Overall Project Outcome and Results**
Heterosporosis is an emerging disease of importance to Minnesota fish populations. The disease is caused by the previously undescribed microsporidian parasite, Heterosporis sp., which effectively destroys the skeletal muscle of susceptible fish hosts. The resulting damage from advanced infection renders the fillet unfit for human consumption and likely results in indirect mortality due to increased predation and reduced fitness. With no treatment of the disease in wild fish populations, management is limited to preventing the spread to naive fish populations. The goal of this study was to improve diagnostic testing capabilities and perform a survey to prevent the further spread of this important fish disease. To that end, a highly sensitive and specific quantitative PCR (qPCR) assay was developed to detect sub-clinical Heterosporosis disease in fish. This assay vastly improved our capacity to detect the pathogen and was used to survey 50 waterbodies in Minnesota. From this survey and three additional MDNR submitted samples, six new waterbodies were identified as Heterosporis-positive, including: North Long Lake, (Crow Wing County), Mary Lake (Douglas County), a private pond in both Douglas and

Pope Counties, Wabana Lake (Itasca County), and Black Hoof Lake (Crow Wing County). Positive fish species from this study included: walleye, yellow perch, cisco, northern pike, and for the first time spottail shiners. Further evaluation to characterize the parasite identified very low genetic variability in the species H. sutherlandae, collected from inland waters of Minnesota. However, there was a unique Heterosporis species (H. superiorae) in Lake Superior. This suggests a distant evolutionary divergence between the parasite species, but a rapid distribution once introduced into inland waters. These findings highlight the importance of continued surveillance and research to improve our understanding and control this important pathogen in Minnesota.

**Project Results Use and Dissemination**
The results from this project have been important for the management of the emerging fish disease, Heterosporosis, in Minnesota. This was achieved, in part, by increasing laboratory capacity and diagnostic confidence. The Minnesota Veterinary Diagnostic Laboratory now offers this highly sensitive and specific qPCR assay for surveillance testing and research. In addition, the ability to make science based management decisions at the MDNR has been greatly improved following the survey performed in this study. Understanding the distribution of Heterosporis is essential to controlling the spread.

The results from this project will be widely disseminated online, in press, and presented to a variety of stakeholders. A summary report will be made available on the University of Minnesota Extension's aquaculture website for review by aquaculture producers, veterinarians, MDNR, LCCMR, and other groups. A more detailed published paper will be prepared for submission to the Journal of Parasitology and presented at the American Fisheries Society - Fish Health Section Annual Meeting to update the scientific community on these important findings.

**Project completed:** 06/30/2012

## SUBD. 7 ENERGY

**Projecting Environmental Trajectories for Energy-Water-Habitat Planning**
Subd. 07b $180,000

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**Appropriation Language**
$180,000 is from the trust fund to the Board of Regents of the University of Minnesota to combine detailed climatic records of Minnesota with present and past ecosystem boundaries to forecast future fine-scale flow of climate across the state impacting human activities and natural resources.

**Overall Project Outcome and Results**

Just as weather flows across the surface of the earth, so does climate-only much more slowly. Understanding the flow of climate is of particular importance in Minnesota because Minnesota encloses the junction of the three great ecosystems of North America western prairie, northern needle-leaf forests, and eastern broad-leaf forests. Conditions here are particularly sensitive to local changes, and therefore can also be indicators for the nation as a whole.

We applied new methods for understanding this flow of climate, in terms of direction and speed, to actual historical Minnesota weather data. Utilizing established data on both average temperature and total precipitation, we found the lines along which precipitation and temperature do not change and where those lines intersect across Minnesota's landscape. Tracking the advancement of an intersection over time, artifacts of historic importance on climate are identifiable, such as the beginning and end of the dust bowl era. For the present and future, the data show climate in recent years moving northward at a few miles per year.

Results have two major implications, first, as a new confirmation of rate of climate shifts from projections based on global circulation models, and second, as a fine-scale mapping of climate migration in Minnesota. In addition to the average migration, we found differences between longitudinal and lateral migration and differences within Minnesota's ecoregions.

This report outlines the significance of climate migration on habitat for trees, tree pests and diseases, and insects in Minnesota. The project has spawned future research to apply the implications of climate flow, such as how it relates to degree days and other agricultural parameters for the bioenergy industry.

A public product of this project is the Climate Tracker, found on the project website: http://www.cbs.umn.edu/climatetracker. Climate Tracker allows citizens to follow the flow of climate at any point in Minnesota over the past century, including where it has been and where it is going.

**Project Results Use and Dissemination**

This was a two-year project. Its first year involved data assembly, algorithm validation, analysis, and preparation of preliminary maps and tables. In its second year, results were correlated with ecological, hydrological, physical, and social aspects. Included in the second year are a final report, public presentations, and web dissemination, which can be found at http://www.cbs.umn.edu/climatetracker. This website is designed to be user-friendly, useful, and interesting to both scientists and the general public. The interactive Climate Tracker application was developed as a novel way to dynamically view a century of data at a glance, while the brief video introduction presents information in a broader context and allows visitors to the website to meet some of the project researchers.

Future publications in scientific journals are expected to result from this project. Impacts of shifting climate on crops important to Minnesota's economy are being explored through collaborations with the Department of Agronomy and Plant Genetics at the University of Minnesota. A collaboration with the University of Minnesota's Department of Forest Resources is considering the interaction of climate and tree growth, tree ranges, and tree pests. A methods paper is underway documenting the methodology used in this project and comparing the resulting climate velocities with those found using Global Circulation Models.

**Project completed:** 06/30/2011

**Energy Efficient Cities**
Subd. 07c $2,000,000

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**Appropriation Language**
$2,000,000 is from the trust fund to the commissioner of commerce for an agreement with the Center for Energy and Environment for demonstration of innovative residential energy efficiency delivery and financing strategies, training, installation, evaluation, and recommendations for a utility residential energy conservation program.

**Overall Project Outcome and Results**
The Energy Efficient Cities project was developed to demonstrate innovative residential energy efficiency program delivery to reduce energy use and environmental impact in at least 6,000 homes through a community-wide partnership approach. With strong and crucial support from local gas and electric utilities, city-specific programs were developed in a total of 8 cities: Apple Valley, Austin, Duluth, Minneapolis, Owatonna, Park Rapids, Rochester, and St. Paul. While each city developed a customized approach, each program was designed to provide a "one-stop shop" comprehensive whole-house approach that makes taking energy efficiency actions as easy as possible for the homeowner, while maximizing participation and energy savings opportunities. This comprehensive approach involved the following components shared by each program:

- Community-based marketing strategies to recruit participants to workshops and for training participants to take low-cost energy actions;
- Home energy visits that include installation of low-cost materials and identify other energy-saving opportunities;
- Energy usage feedback reports to encourage individual energy-saving actions;
- Follow-up assistance, including providing cost-share, for completion of major efficiency upgrades including insulation, air sealing and major mechanicals replacement; and
- Training and quality control for insulation and air sealing contractors.

The project exceeded its original goals for participation, with 8,243 people attending workshops, 6,922 of those households completing a home energy visit, and 1,474 homes completing major energy efficiency upgrades. Over 36 contractors were trained in high performance installation techniques for insulation and air sealing jobs. The upgrades completed under this program generated $4.8 million in work for Minnesota's insulation and heating contractors. The total energy savings from measures installed in these homes will result in an estimated $13.8 million dollars in energy savings for the homeowners over the life of the measures. The programs will be continued in at least 5 of the participating cities.

**Project Results Use and Dissemination**
Dissemination of information to homeowners was an integral part of the program. Our outreach activities for the program reached tens of thousands of Minnesotans, resulting in over 7,500 households attending a workshop that was produced by the project. The workshops educated people on basic energy conservation concepts and strategies, such as how a home loses energy, low-cost or no-cost methods for reducing energy, and what the process is for doing major energy efficiency upgrades in your home. The "Home Energy Resource Minnesota" website was also designed for education and outreach on energy efficiency issues. In addition, each city program had an on-line presence for dissemination of information about the program.

In addition to outreach targeted to homeowners as part of program activities, efforts were made to communicate to utilities, cities and other potential program sponsors of energy efficiency programs the Energy Efficient Cities program results, and increase uptake of similar residential programs. A presentation was given in August 2010 at the American Council for an Energy-Efficient Economy's (ACEEE) Summer Study on Buildings in Pacific Grove, California. Based on interest at that conference, another webinar presentation on the program was given as part of a series sponsored by the U.S. Department of Energy and attended by over 500 participants. A second webinar presentation was conducted for a national network of local government officials organized by the Institute for Sustainable Communities. A presentation was also conducted for the Clean Energy Teams (CERTs) conference in February 2011. Both Minneapolis's and St. Paul's programs were featured in a national study of retrofit programs by Lawrence Berkeley National Lab entitled "Driving Demand for Home Energy Improvements." As a result of the initial program success, programs in Minneapolis, Duluth, Owatonna, Rochester and Austin will continue beyond the grant period, funded by utilities and other sources.

Finally, a report was completed to document the project and communicate lessons learned to utilities and other potential program sponsors. The report will be disseminated to Minnesota utilities, and presentations will be scheduled with interested parties. A presentation has been scheduled for October in Owatonna for the Midwest chapter of the Association of Energy Service Professionals.

**Project Publication:**
Energy Efficient Cities: Using a Community-Based Approach to Achieve Greater Results in Comprehensive, Whole-House Energy-Efficiency Programs

**Project completed:** 06/30/2011

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**SUBD. 08 ADMINISTRATION AND OTHER**

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**Contract Management**
Subd. 08a $158,000

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**Appropriation Language**
$158,000 is from the trust fund to the commissioner of natural resources for contract management for duties assigned in Laws 2007, chapter 30, section 2, and Laws 2008, chapter 367, section 2, and for additional duties as assigned in this section.

**Overall Project Outcome and Results**
This appropriation was used to provide continued contract management services to pass-through recipients of Environment and Natural Resources Trust Fund dollars. The DNR provided this fiduciary service to ensure funds were expended in compliance with session law, state statute, grants policies, and approved work plans. Contract management ensured oversight of reimbursement for project deliverables and met the requirements of the Department of Administration's Grants Management procedures.

Ensuring timely access to the funds through streamlined grant agreements and prompt processing of reimbursement requests was an overarching goal of DNR's contract management. Services provided under this appropriation included the following:

- Contract Management Services
  - Prepare grant agreements and amendments.
  - Encumber/unencumber funds.
  - Execute Use of Funds agreements.
  - Communicate with LCCMR staff and pass-through grant recipients, informally and formally.
  - Continue to work on process improvements that improve efficiency and ease for grantee while ensuring fiscal integrity.
  - Contract management documentation, including file management.
- Training and Communications
  - Train recipients on state grant requirements, including reporting procedures, proper documentation of expenses, and the Department of Administration's grants management policies, to ensure grantees follow state law and grants management policies set forth by the state's grant agreement.
  - Work with recipients to ensure grantees understand the state's reimbursement procedures and requirements.
  - Provide ongoing technical assistance/guidance to recipients.
- Reimbursement Services
  - Review reimbursement requests to ensure claimed reimbursements include sufficient documentation and comply with state and session laws, LCCMR approved Work Plan and grants policies.
  - Arrange for prompt payment once grantee has submitted a completed reimbursement request and expenses have been deemed eligible for reimbursement.
  - Detailed accounting by pass-through appropriation for each recipient.
- Fiscal and Close-out Services
  - Financial reconciliation/reporting.
  - Contract management reporting (fund balance/expenditures).

- Examine records of recipients.
- Work with recipients to successfully close-out grants.

**Project Results Use and Dissemination**
This project's grants specialists are in frequent contact with pass-through grant recipients. The grants manager and DNR's liaison communicate with LCCMR staff. In addition, grant agreement requirements are communicated through manuals, emails, and letters.

**Project completed:** 06/30/2012

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**Legislative-Citizen Commission on Minnesota Resources (LCCMR)**
Subd. 08b $1,254,000

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**Appropriation Language**
$1,254,000 is from the trust fund for fiscal years 2010 and 2011 and is for administration as provided in Minnesota Statutes, section 116P.09, subdivision 5.

**Overview**
Per M.S. 116P.09, up to 4% of the amount available for appropriation from the Environment and Natural Resources Trust Fund (ENRTF) for a biennium is available for expenses related to LCCMR administration - this includes expenses pertaining to project selection, approval, and ongoing oversight of projects funded by the ENRTF, including new projects funded during the biennium and existing projects funded in previous bienniums. Historically, LCCMR has always used less than 3% of available funds for administration. This appropriation, which represents 2.33% of the amount available for the biennium, funds LCCMR administration expenses for FY 2010-11.

**Project completed:** 6/30/2012

# M.L. 2008 Projects Completed 2011-2012

# MN Laws 2008, Chapter 367, Section 2

**M.L. 2008 Projects Completed 2011-2012**

**M.L. 2008 Projects**
**MN Laws 2008, Chapter 367, Section 2 (beginning July 1, 2008)**

NOTE: Below are short abstracts for projects funded during the 2008 Legislative Session and ending during 2011-2012. The final date of completion for these projects is listed at the end of the abstract. Final Reports for all completed projects are available at http://www.lccmr.leg.mn/projects/2008-index.html or by contacting the LCCMR office.

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**Subd. 03 Land and Habitat**

03b Vermillion River Corridor Acquisition and Restoration in Dakota County
03d Preserving the Avon Hills Landscape
03g State Land Acquisition Consolidation
03i Metropolitan Regional Park System Land Acquisition
03p Impacts of Climate Change and CO2 on Prairie and Forest Production - RESEARCH
03q Biofuel Production and Wildlife Conservation in Working Prairies - RESEARCH

**Subd. 04 Water Resources**

04b Accelerating Plans for Integrated Control of the Common Carp - RESEARCH
04e Intra-Lake Zoning to Protect Sensitive Lakeshore Areas
04f Native Shoreland Buffer Incentives Program
04h South-Central MN Groundwater Monitoring and County Geologic Atlases

**Subd. 05 Natural Resource Information**

05a Updating the National Wetlands Inventory for Minnesota
05c Updating Precipitation Intensities for Runoff Estimation and Infrastructure Designs
05g Conservation Easement Stewardship, Oversight and Maintenance
05h Conservation Easement Stewardship and Enforcement Program Plan

**Subd. 06 Environmental Education**

06b Global Warming - Reducing Carbon Footprint of Minnesota Schools

**Subd. 7 Establishment of an Emerging Issues Account**

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## SUBD. 03 LAND AND HABITAT

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**Vermillion River Corridor Acquisition and Restoration in Dakota County**
Subd. 03b $400,000

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**Overall Project Outcome and Results**
The Vermillion River, a designated trout stream, flows through four cities and five rural townships starting in Scott County and running through Dakota County. The existing watershed plan, like most other comparable plans, identified and addressed water quality issues, but recommended and required that management efforts do not include corridor-related wildlife habitat protection and restoration, or recreational use and conflicts.

The new Vermillion River Corridor Plan developed with these funds establishes a vision and philosophy for the corridor along the main stem and primary tributaries of the Vermillion River from New Market Township in Scott County to Vermillion Falls in Hastings. It is based on integrating multiple benefits: environmental (water quality and upland habitat), social (recreation), and economic (sustainable high-quality places to live and work). The plan creates a foundation for coordinating and prioritizing funding, implementation and management. The plan also includes the "Vermillion River Corridor Handbook", a searchable, online Best Management Practices tool intended for use by a broad audience. The tool includes practices indexed by primary benefits (water quality, habitat, and recreation) and by the predominant landscape type of interest to the user (urban, rural, and developing). Information on and links to potential funding sources and technical information is included. The plan, process, and products were designed to be replicable.

The corridor plan also creates the framework for initiating a comprehensive riparian buffers initiative throughout Dakota County. An 800-point criteria system that includes water quality, wildlife habitat, recreation, financial, and other considerations was developed to evaluate and select future land protection projects. An innovative system for determining financial value for corridor buffer easements based on land cover/use types was developed.

The plan and resulting selection system resulted in the acquisition of a 193-acre permanent conservation easement that protects the headwaters of South Branch of the Vermillion River, a very high quality restored prairie, and a network of trails open to the public.

**Project Results Use and Dissemination** As the project transitioned from planning to implementation, information has been shared with the general public through various venues and media forms. See the Final Report, Section VII "Dissemination" for more information.

**Project Publications:**
Vermillion River Corridor Plan: Improving Water Quality, Habitat, and Recreation (PDF - 13.2 MB)
Vermillion River Corridor Handbook (Web-based)

**Project completed:** 6/30/2011

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**Preserving the Avon Hills Landscape**
Subd. 03d $337,000

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**Overall Project Outcome and Results**
The Avon Hills Initiative is a group of local citizens interested in preserving the rural nature of the 50,000 acre Avon Hills 15 miles west of St. Cloud. The group helped steer this project made possible with Environment and Natural Resources Trust Fund support. Saint John's provided the staff and fiscal support. This project had three goals:

1. Increase the level of interest and understanding of all citizens and landowners interested in the Avon Hills, mostly through conferences. Outcome: Three day-long conferences were held with nearly 900 total attendees indicating very strong local support.

2. Negotiate and complete acquisition of permanent conservation easements. Outcome: Six conservation easements totaling 400 high quality forest, wetland, and grassland acres in Stearns County were successfully enacted. Two of the easements, totaling 99 acres, were purchased, and four of the easements, totaling 301 acres, were donated by the landowners. These acres contain a total of more than two miles of shoreline on streams, ponds, and lakes, and provide habitat to a variety of species, including several of greatest conservation need. Additionally, through this process we tested a new method for prioritizing and acquiring easements for the best value. Called MMAPLE, the Minnesota Multi-faceted Approach for Prioritizing Land Easements, the system weighs the measurable environmental benefits against the cost that the current landowner wants to provide a permanent easement on that land. Using sealed bids, each landowner chooses their own price which results in lower costs and fewer complaints from landowners and taxpayers about the "fairness" or "price" of the easement process.

3. Provide support for township and county officials to review and change zoning and ordinances that impeded protection of the open space. Outcome: Two "conservation design" conferences for officials and the public as well as reviews of the existing ordinances by professionals resulted in positive feedback from the participants. This gradual education helped create sufficient support for Stearns County to pass a land-use ordinance that requires new housing developments in the Avon Hills to permanently preserve at least 80% of the land. This is believed to be the highest standard in the United States.

**Project Results Use and Dissemination**
The success of the land use concepts used in the Avon Hills of Stearns County to preserve open space and working forests and farms has been disseminated in a variety of ways. Staff, officials, and citizens have been asked to discuss the concepts with neighboring county officials and at professional meetings.

Todd County, a neighboring county, sent several officials to the land use conferences and has gradually begun to implement similar practices in their county.

The MMAPLE method developed under this grant is being used to apply for a Outdoor Heritage Fund

grant for more easements.

**Project completed:** 6/30/2011

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**State Land Acquisition Consolidation**
Subd. 03g $500,000

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**Overall Project Outcome and Results**
The goal of a land consolidation revolving fund was, and is, to enable Department of Natural Resources (DNR) to purchase lands of significant natural resource value adjacent to, or imbedded within, lands that are already managed by public agencies. Many of these purchases are likely to be private, industrial forest lands that would otherwise be subdivided and sold for development. At the same time, the DNR would sell parcels of state-owned land that are isolated and difficult to manage from a resource or public benefit standpoint. The proceeds from the sale of these parcels would go back into the land consolidation revolving fund. By strategically purchasing and selling parcels through this fund, the state could achieve a net gain from both a natural resource and economic perspective.

The appropriation for this project enabled DNR to purchase five parcels in Koochiching County and two parcels in Itasca County, totaling 800 acres. These were key acquisitions as each one was selected because it either was a sole private parcel imbedded in tens of thousands of acres of public ownership, or it was adjacent to DNR managed lands and would enhance that management and provide natural resource benefits. Development or subdivision of these parcels would create fragmentation and potentially hinder forest management activities on adjacent lands.

On the sale side, results were not as successful. DNR identified six parcels in the project area for potential sale, but did not succeed in selling any of them. We learned from this project that the geographic scope of this project was too small. The vast majority of the land in the project area (well over 90%) is state trust fund land and the proceeds of sales from these lands must go to the corpus of the school trust fund and not the revolving account. Had the project been broadened to include some northwestern Minnesota counties, where there are significantly more acquired lands, the project would have had more success. On a positive note, DNR has statutory authority to continue the purpose of this project statewide and will do so. We will continue to provide LCCMR updates on our work in this area.

**Project Results Use and Dissemination**
The State Land Acquisition Consolidation project information has been disseminated to DNR staff who manage lands in the project area, as well as county land departments and county commissioners in Koochiching and Itasca counties.

As stated above, we were in regular contact with the counties. We also have communicated with third party non-profits such as The Nature Conservancy, The Trust for Public Lands, and The Conservation Fund.

**Project completed:** 6/30/2012

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**Metropolitan Regional Park System Land Acquisition**
Subd. 03i $1,500,000

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**Overall Project Outcome and Results**
This $1.5 million appropriation leveraged a total of $1,833,241 of other funds to acquire 66.7 acres for the Metropolitan Regional Park System as follows:

- 0.5 acres including shoreline of the Mississippi River for Above the Falls Regional Park in Minneapolis (Grant SG-2008-143: $81,392 Environment Trust Funds and $54,261 Metro Council bonds, and matched with $45,216 of Minneapolis Park & Rec. Board funds for a total of $180,870).
- 9.42 acres along Rush Creek for Rush Creek Regional Trail managed by Three Rivers Park District in suburban Hennepin County (Grant SG-2009-021: $244,440 Environment Trust Funds and $152,528 Metro Council bonds, and matched with $132,233 of Three Rivers Park District funds for a total of $529,200).
- 8.89 acres including shoreline of Schulz Lake for Carver Park Reserve, managed by Three Rivers Park District in Carver County (Grant SG-2009-059: $431,640 Environment Trust Funds and $287,760 Metro Council bonds, and matched with $239,800 Three Rivers Park District funds for a total of $959,200).
- 8.12 acres including shoreline of Cedar Lake for Cedar Lake Farm in Scott County (Grant SG-2009-062: $221,810 Environment Trust Funds and $147,873 Metro Council bonds, and matched with $123,228 of Scott County funds for a total of $492,911).
- 38 acres including shoreline of the Mississippi River for Grey Cloud Island Regional Park in Washington County (Grant SG-2010-045: $445,455 Environment Trust Funds, and $296,970 Metro Council bonds, and matched with $247,475 of Washington County funds for a total of $989,900).
- 1.8 acres including shoreline of the St. Croix River for the St. Croix Valley Regional Trail in Washington County (Grant SG-2010-052: $75,263 Environment Trust Funds and $60,608 Metro Council bonds, and matched with $45,290 of Washington County funds for a total of $181,161).

**Project Results Use and Dissemination**
Each regional park agency that received a grant or grants from this appropriation informs the public about the land acquisition with its own website and news releases. The Metropolitan Council also publishes a "Regional Parks Directory and Map" that informs the public about the recreation activities available at each regional park and trail and includes website addresses and phone numbers for each park agency for more information. Finally, the Metropolitan Council's website includes an interactive parks map that contains the same information as the paper version of the "Regional Parks Directory and Map" at http://www.metrocouncil.org/parks/r-pk-map.htm.

**Project completed:** 6/30/2011

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**Impacts of Climate Change and CO2 on Prairie and Forest Production**
Subd. 03p $330,000

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**RESEARCH**

**Overall Project Outcome and Results**
Funds from the Environment and Natural Resources Trust Fund (ENRTF) were used to help establish, maintain, and expand studies regarding impacts of elevated carbon dioxide and changing climate on productivity (i.e. carbon acquisition) and carbon sequestration of woody and herbaceous vegetation. Two new state-of-the-art open air experiments were begun. A new biofuel-oriented experiment was installed in 72 elevated CO2 plots within the ongoing BioCON (Biodiversity, CO2, and Nitrogen) experiment - an effort started in 1997 that is examining how plant communities respond to environmental changes in biodiversity, CO2, and Nitrogen; these plots were planted with potentially "high-yielding" woody and herbaceous perennials. A Boreal Forest Warming experiment in Cloquet and Ely was installed, planted and warming treatments implemented in 2009 and 2010. ENTRF funds were also used to support specific carbon cycling measures in the original, ongoing BioCON experiment. The following findings were documented:

1. In all studies, results showed that acquisition of new carbon is likely in a world with higher CO2 levels and/or with modest warming, but is significantly dampened during periods of low water availability or when soil nutrients are limiting.
2. Long-term sequestration in soil of acquired carbon is likely modest due to the rapid return (through respiration of roots and decomposers) of new carbon to the atmosphere.
3. Soil carbon storage is likely dependent upon soil characteristics however, with sandy soils in our experiments less able to build up carbon stores than finer-textured soils might be.

4. Results suggest considerable potential to grow biomass carbon that could potentially contribute to biofuel offsetting of fossil fuel use and to carbon sequestration in live biomass, dead biomass, and potentially in soils.

**Project Results Use and Dissemination** Several publications are in preparation. These include experiment-specific papers (about individual experiments), cross-experiment papers for several related experiments at the Cedar Creek station, and meta-analyses and synthesis papers for which data from this ENRTF project have been combined with similar data from other experiments in North America, Europe, and Asia.

**Project completed:** 6/30/2011

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**Biofuel Production and Wildlife Conservation in Working Prairies**
Subd. 03q $750,000

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**RESEARCH**

**Overall Project Outcome and Results**
Minnesota prairies reliably produce bioenergy resources which largely go untapped. This project sought management practices to promote wildlife and habitat diversity on future working prairies used for bioenergy in Minnesota. It combined harvested areas with refuges and monitored wildlife populations and bioenergy potential in Minnesota grasslands, while developing protocols for future long-term work.

We collaborated with land managers of established prairies to survey birds, insects, small mammals, reptiles, amphibians, plants and soils in regions across western Minnesota. Statistical trends show that harvesting grasslands with refuge remaining does not reduce wildlife abundance. In fact, harvested areas supported greater biomass of insects for bird food. Harvesting can also increase overall small mammal abundance when equal area is left as refuge. These results are being clarified in the ongoing second phase of this project.

We measured bioenergy potential measured by harvesting prairies with production-scale equipment. We tested various harvesting machinery, techniques, and bale types, and found current round baling technology more amenable to these plots, a discbine cutter mounted on a four-wheel drive tractor as the most effective cutting equipment, and tractors with custom-made front and rear mounted bale spikes worked best for transport. We obtained noticeably higher quantities of biomass per acre in the south, but biomass quality was approximately the same. Harvesting three years in a row did not reduce yield, and we found mixed-species biomass can produce at least as much liquid fuel per unit mass as

switchgrass. Our bioenergy partners reported that bales of prairie grass have better storage life than other renewable feedstocks they used.

The large amount of data produced is being made available on the project website for general use. Results from this first phase of the project will inform future land management by analyzing the intersection of renewable energy and wildlife conservation.

**Project Results Use and Dissemination**
We have a project website available (www.cbs.umn.edu/wildlife) to make the ideas and results available world-wide. This website will continue to develop as the protocols for this project are refined and as data become available. The project will also be featured in Cedar Creek educational programs for school-age and other groups. Presentations (oral and poster) to special interest groups, research groups, and other interested parties continued by project collaborators throughout the project. The first publication from this project in a peer-reviewed scientific outlet is now available. (Jungers et al., Characterizing Grassland Biomass for Energy Production and Habitat in Minnesota, Proceedings of the 22nd North American Prairie Conference, 2010). Further publications will be submitted as the project moves into its second phase.

**Project completed:** 6/30/2011

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**SUBD. 04 WATER RESOURCES**

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**Accelerating Plans for Integrated Control of the Common Carp**
Subd. 04b $550,000

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**RESEARCH**

**Overall Project Outcome and Results**
The common carp (Cyprinus carpio) was introduced to Minnesota in the late 1800s and quickly came to dominate the fish communities in the south-central portion of the state where it is now responsible for poor water quality and greatly reduced duck habitat. Our previous Environment and Natural Resources Trust Fund (ENRTF) funded projects from appropriations in 2003 and 2005 had suggested that recruitment (survival of fertilized eggs to adulthood) might be a key weakness in the life history of the carp and that predatory fish, odors, or sounds might be used to control recruitment. This project investigated these possibilities in six studies ('results'):

1. For the first, we monitored the fate of carp eggs and larvae in both the field and lab to determine if predators might be eating them. We discovered that bluegill sunfish, a native game-fish, consume large numbers of carp eggs and larvae.
2. For result 2 we examined correlations between the abundance of young-of-the-year (YOY) carp and predatory game-fish across two dozen lakes using trap-net surveys. We discovered the YOY carp are rarely found in lakes that have bluegills, suggesting that bluegills control carp in lakes.
3. A third study examined the age structure of several populations of adult carp. It found that YOY carp only recruit in years and places where winter oxygen levels are low enough to kill bluegills.
4. A fourth study examined whether food odors might be used to enhance capture rates of YOY carp. While, we found evidence that certain baits are attractive in the lab, field results were variable and application appeared impractical.
5. A fifth study examined pheromones for use in YOY removal and came to a similar conclusion.
6. Lastly, we examined whether air-bubble curtains have potential to reduce the movement of YOY carps from nursery areas by producing sound. These results were promising.

In summary, this project provided compelling evidence that populations of invasive carp can be controlled by promoting the abundance of native predators and controlling movement using bubble barriers.

**Project Results and Dissemination** The results of this project are presently being implemented by the Riley Purgatory Bluff Creek Watershed District and the Ramsey Washington Metro Watershed District. Both watersheds report that carp densities are reduced and under control while water quality has improved. The barrier bubble developed here is now being developed further by another ENRTF project. This work has been described in 6 peer-reviewed publications (with more in review), over a dozen scientific meetings, a dozen agency meetings and in at least 6 press and TV reports.

**Project completed:** 6/30/2011

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**Intra-Lake Zoning To Protect Sensitive Lakeshore Areas**
Subd. 04e $125,000

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**Overall Project Outcome and Results**
Protection of critical fish and wildlife habitat, particularly for "species in greatest conservation need", is necessary given the substantial near-shore habitat losses estimated to date and the losses projected with future shoreland development. This cooperative Cass County/State project identified sensitive shoreland for the county's largest and most valuable waters. The project used objective, science-based criteria to identify sensitive shoreland parcels. Cass County selected seventeen lakes that were the highest priority for assessment (e.g., Ten Mile, Woman, and Leech). The objectives of this project were

to: (1) identify and map sensitive shorelands, (2) develop and adopt shoreland ordinances to provide greater protection to sensitive areas, and (3) propose and implement zoning districts for identified sensitive shorelands.

Biological surveys were completed on the 17 priority lakes, as well as three connecting waterbodies. Species presence was recorded in extensive spatial detail. Botanists documented a total of 69 native aquatic plant taxa, including 42 submerged and free-floating, 7 floating-leaf, and 20 emergent taxa. Surveyors mapped over 2,000 acres of bulrush, and over 6,000 acres of other emergent and floating-leaf plant stands. Seventeen unique or rare plant species were documented. Biologists recorded four fish species in greatest conservation need. Pugnose shiners were the most widespread of these species, and were recorded on 10 study lakes. Longear sunfish, least darters, and greater redhorse were collected on four lakes each. Biologists documented 161 bird species, including 45 species in greatest conservation need. Four of these species are listed as Threatened in Minnesota and seven species are of Special Concern status. Mink and green frog breeding locations were identified on all surveyed lakes.

A total of 190.2 miles of shoreline, representing 40% of the total shoreline miles, were identified as sensitive. Nearly 28,000 acres of shoreland were identified as sensitive. Cass County proposed and adopted innovative zoning provisions within their shoreland ordinance to protect water quality and near-shore habitat.

**Project Results Use and Dissemination**

We completed sensitive lakeshore assessments on the 17 priority lakes, as well as three connecting waterbodies. Lake reports summarizing sensitive lakeshore assessments were completed for the 20 lakes. These reports describe the results of the biological surveys and provide maps of identified sensitive lakeshore. Reports were distributed to Cass County as well as to interested lake associations, organizations, and individuals. They are also available online at: http://www.dnr.state.mn.us/eco/sli.

Public presentations explaining the sensitive area identification process and results were given to the Cass County Board of Commissioners, Cass County Planning Commission, Association of Cass County Lake Associations, U.S. Forest Service, multiple lake associations, and many other groups.

Several organizations have used the sensitive lakeshore identification information to help protect critical and vulnerable lakeshore areas. In 2010, Cass County received Environment & Natural Resource Trust Fund monies to provide assistance for donation of conservation easements to protect sensitive shoreland parcels in Cass County. The Leech Lake Area Watershed Foundation has identified large, undeveloped parcels that when overlaid with areas of sensitive shoreland have become priorities for conservation easements and acquisition. Recently implemented conservation easements on Wabedo Lake properties protect from development over 3500 feet of shoreline and nearly 70 acres of shoreland. Additional conservation easements that will protect another three to five miles of shoreline are currently in process. In addition, the information has been utilized within the DNR to help identify priority conservation areas (e.g., aquatic management areas). Finally, a project funded by an Outdoor Heritage Fund appropriation to the Leech Lake Area Watershed Foundation, Minnesota Land Trust, and DNR will pay for acquisition-related expenses and monitoring costs of donated permanent conservation easements on sensitive shorelands in north central Minnesota.

Cass County developed and adopted sensitive lakeshore and conservation subdivision ordinances. Other local governments are considering these ordinances for their own use. Crow Wing County modified Cass County's ordinance provisions for sensitive lakeshore protection, as the county is pursuing sensitive

lakeshore zoning districts to better protect areas in their jurisdiction. In addition, the DNR used Cass County's conservation subdivision ordinance within its draft state shoreland standards.

**Project completed:** 6/30/2011

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**Native Shoreland Buffer Incentives Program**
Subd. 04f $225,000

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**Overall Project Outcome and Results**
Through a competitive grant process, the MN DNR offered two $75,000 grants. East Ottertail SWCD and the Itasca Water Legacy Partnership (Itasca SWCD) collaborated with DNR and the Water Resources Center (WRC) at the U of M to craft shoreland restoration incentive programs for lakeshore residential properties. Unique to this project was the focus on assessing the effectiveness of applying social science methods (KAP Studies) in promoting the planting of native shoreland buffers. Using a process that is well known but rarely used in natural resources, Dr. Karlyn Eckman (WRC) used KAP Studies to determine Knowledge, Attitudes and Practices of target audiences. The process has three steps:

1. Survey landowners
2. Design & implement incentives
3. Survey again

The second survey determines the effectiveness of project activities in changing the knowledge, attitudes and practices of the target audience. Target audiences for East Ottertail County were lakeshore owners 50 to 70 years old owning 120 feet or more of shoreline and for Itasca County, all landowners on 5 selected lakes. Funds were utilized for designing incentives and analyzing results.

*Project conclusions:*

- Using a "KAP Study" contributed to more successful outcomes (more shoreland restored) by predicting better incentives and better communication methods.
- People were more knowledgeable than expected about water quality.
- People in these particular studies were not motivated to action by a financial incentive - they took it because it was offered. Therefore, funds intended for financial incentives may have greater impact if they are re-allocated to hire high-quality, knowledgeable professionals.
- Social networks were more important than previously realized. Groups like lake associations, churches, garden clubs, informal groups of neighbors helped spur interest and motivation.
- More projects should incorporate KAP methods so they are "evaluation-ready" before implementation to better utilize the use of conservation funding and document project success to funders.

- Social science practices could be used in areas such as invasive species, habitat restoration, and recreation. Practices include KAP studies, message re-framing and utilizing existing social networks in the community.

**Project Results Use and Dissemination**

The DNR project manager and partners have shared the results of the project and project components on several different occasions at conferences to a total of approximately 365 attendees.

This project was submitted for consideration for the 2011 Environmental Initiative Awards. Now that the project is complete consideration is now being given for submission again in the spring of 2013.

In order to widen the influence of the results of the demonstrations, several actions are being considered at the present time. They include:

1. This final LCCMR report and the individual detailed survey evaluations will be entered into the DNR Documents Library for reference to others.
2. Development of a Native Shoreland Buffer Initiative web page hosted by the DNR that will provide a gateway to information on the buffer projects including survey examples, final reports from the University of Minnesota, resource products developed by the project partners.
3. Communication back to the original 'class' of buffer proposers participating in the initial workshop.
4. The DNR's Division of Ecological and Water Resources widely distributes results in order to adopt social science principles into natural resources work.

Discussions are ongoing as to the applicability of the project results to other programs within the Department of Natural Resources and elsewhere.

**Project completed:** 6/30/2012

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**South-Central MN Groundwater Monitoring and County Geologic Atlases**
Subd. 04h $1,600,000

**Part 1 ($894,000)**
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**Part 2 ($706,000)**
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**PART 1: MN Department of Natural Resources**

**Overall Project Outcome and Results**
To better understand the recharge dynamics of the Mt. Simon aquifer the western edge of this aquifer was investigated through observation well installations, water level monitoring, groundwater chemical analysis, and aquifer capacity testing. Most data collected for this study are derived from the 27 observation wells, drilled to depths of 70 to 718 feet, that were installed at 14 locations by contracted drilling companies.

The combination of chemical residence time indictors, continuous water level data from nested well locations, and a general knowledge of the regional hydrostratigraphy, shows the Mt. Simon aquifer in this region has a very slow recharge rate from a large source area located south of the Minnesota River, and a smaller source area located in the northern portion of the study area. The younger Carbon-14 residence time values of Mt. Simon groundwater (7,000-8,000 years) from this project roughly correspond to a time after the last ice sheet had receded from southern Minnesota suggesting groundwater in the Mt. Simon aquifer in this region began as precipitation that infiltrated during the post-glacial period. The stable isotope data of oxygen and hydrogen support this conclusion. A recharge estimate of the Mt. Simon aquifer south of the Minnesota River based on these minimum residence time data suggest an infiltration rate of approximately 2 cm/year. The resulting 5 billion gallons/year of recharge from the southern source area is approximately equal to permitted volumes (volume of water that the users are allowed to pump) for appropriators in this area. At current groundwater extraction rates the region appears to be in a steady state. A major accomplishment of this project was the creation of a network of observation well nests, base line water level data, and geochemical data in this region that will enable future hydrologists to evaluate the local and regional affects of any future expansion of Mt. Simon groundwater pumping beyond current volumes. This effort is documented in a report "South-Central Minnesota Groundwater Monitoring of the Mt. Simon Aquifer". A document titled "Minnesota Groundwater Level Monitoring Network-Guidance Document for Network Development" was also completed as part of this project. The Guidance Document outlines how Minnesota's current groundwater level monitoring network of approximately 750 wells should be expanded to meet monitoring needs. This expansion is necessary because large areas in Minnesota are not adequately monitored. Many areas of Minnesota are underlain by multiple aquifers, all of which must be considered in developing the long-term network that will provide adequate resource data.

**Project Results Use and Dissemination**
The reports from this project will be available on the DNR website during the summer of 2011. An abstract of the project results will be submitted to the Geological Society of America for the national conference in Minneapolis during October 2011. In addition, a summary of the project will be submitted to the Minnesota Groundwater Association for inclusion in the quarterly newsletter. The well log and well construction information is currently available in the project report and the Minnesota Department of Health County Well Index. The wells have become part of the DNR observation well network. Water level data is currently available at: http://climate.umn.edu/ground_water_level/.

**Project Publication:**

South-Central Minnesota Groundwater Monitoring of the Mt. Simon Aquifer (PDF - 3.0 MB)
Minnesota Groundwater Level Monitoring Network-Guidance Document for Network Development (PDF - 3.3 MB)

**Project completed:** 06/30/2011

**PART 2: Minnesota Geological Survey**

**Overall Project Outcome and Results**
County geologic atlases are created to support water and mineral resource management. An atlas provides maps and associated databases at scales appropriate for land use planning and water management decisions. An atlas greatly improves our ability to monitor the resource, to predict the effects of pumping, and to respond effectively to contamination. This project created atlases for Blue Earth, Nicollet, and Sibley counties in paper, digital, and web-accessible formats. They will be published as MGS C-24, C-25, and C-26, and workshops will be held to train users.

Geologic maps describe the distribution of earth materials. The materials determine where water can enter the ground (become ground water), where it can be taken from the ground (aquifers), and how aquifers connect to rivers, lakes, and wetlands. Each geologic atlas contains the below parts.

Database map: shows the location of all well records, borings, scientific drilling, natural exposures, and geophysical measurements used to support all the maps in the atlas. The data itself is also provided.

Surficial Geology map: this map shows the earth materials immediately beneath the soil zone, and describes their composition and ability to convey water. The surface described by this map is the interface between human activities and ground water. Its character determines to a great degree the sensitivity of ground water to contamination.

Glacial Stratigraphy and Sand Distribution Model: A series of maps show the location, depth, and thickness of sand or gravel bodies (aquifers) in glacial materials. This map is useful in finding a water source, determining pumping effects, and in understanding the results of water monitoring.

Bedrock Geology map, bedrock topography map: These maps describe the location and type of bedrock present, and its ability to host and transmit groundwater. Where a sequence of sedimentary rocks are present the contacts between layers are mapped as digital surfaces and this enables numerical simulations of the ground water system that can predict the effects of pumping before wells are drilled.

Through this project, MGS also provided support to the DNR Mt. Simon monitoring well project by examining and describing samples, conducting downhole geophysical surveys, and providing interpretations of the geologic units penetrated by these wells.

**Project Results Use and Dissemination**
Geologic atlases are created to support informed decision-making. They are applied to wellhead protection, water appropriation decisions, well field design, onsite water treatment designs, facility siting, monitoring, and remediation of contamination. The atlases are printed for those who don't use computers and for use in the field. They are also provided in several digital formats for electronic use including geographic information systems. When the atlases are complete we hold workshops in the county to explain the products and their uses.

**Project completed:** 06/30/2011

## SUBD. 05 NATURAL RESOURCE INFORMATION

### Updating the National Wetlands Inventory for Minnesota

Subd. 05a $550,000

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**Overall Project Outcome and Results**

Over the past 100 years, about half of Minnesota's original 22 million acres of wetlands have been drained or filled. Some regions of the State have lost more than 90 percent of their original wetlands. Urban development, agricultural drainage, mining, road construction, and utility projects result in additional losses each year. The National Wetland Inventory (NWI) is the only comprehensive inventory of wetlands for Minnesota, but it is inaccurate in many places because it is 25-30 years out-of-date. Updating the NWI is a key component of the State's strategy to monitor and assess wetlands in support of efforts to assure healthy wetlands and clean water for Minnesota.

This project is the first phase of a multi-phase effort to update the NWI for all of Minnesota. Under this project, the project team:

1. developed wetland mapping standards and quality control objectives to assure that the final product can meet the broad array of data needs for various stakeholders,
2. developed a request for proposal that incorporates these standards and objectives,
3. acquired high-resolution, spring, leaf-off, digital aerial photography for northeastern and east-central Minnesota (22,500 square miles),
4. developed updated wetland mapping procedures for northeastern and east-central Minnesota that incorporate modern high-resolution digital imagery, radar imagery, and LiDAR elevation data,
5. provided training to DNR and Ducks Unlimited staff (total of six people) on the application of the updated wetland mapping procedures, and
6. performed initial data processing for updating NWI maps for east-central Minnesota and northern Koochiching County.

Subsequent phases of this project are focused on producing updated NWI maps for five different regions of Minnesota; east-central, southern, northeastern, central-lakes, and northwestern. These subsequent phases will also include the continuation of the imagery acquisition for the southern, northeastern, and central-lakes regions.

**Project Results Use and Dissemination**
The wetland mapping standards and quality assurance objectives developed through this project are presented in reports found on the project website. Imagery acquired as part of this project are freely available to the public through the Minnesota Geospatial Information Office website. The imagery for northeastern Minnesota receives an average of about 62,000 requests per month and the imagery for east-central Minnesota receives an average of more than 300,000 requests per month. Wetland mapping procedures based on pilot studies in northeast and east-central Minnesota are contained in two separate reports. Three hard copies and one electronic copy on CD have been submitted with the final project report to LCCMR. Presentations and workshops have been provided by the University of Minnesota regarding the updated wetland mapping methods as described above.

**Project Publications:**
Comprehensive Project Plan for the National Wetland Inventory Update of Minnesota
Requirements for the National Wetland Inventory of Minnesota
Quality Assurance Project Plan for the National Wetland Inventory of Minnesota
Wetland Mapping Methods for the Twin Cities Metropolitan Area
Wetland Mapping Methods for the Arrowhead Region of Minnesota

**Project completed:** 06/30/2011

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**Updating Precipitation Intensities for Runoff Estimation and Infrastructure Designs**
Subd. 05c $100,000

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**Overall Project Outcome and Results**
Checking the daily weather forecast for where and how bad the next storms will be has become a more important part of our daily routines. Recent variable climate (dry periods, intense storms and floods) have brought heightened awareness by farmers, engineers, cities, and water managers of rainfall intensity (how fast) and duration (how long). Up to now, available summaries (done in the early 1960's) were based on relatively crude analyses of rainfall data collected through the 1950's. This project has updated precipitation intensities based on the compilation of hundreds of rainfall monitoring locations in and around Minnesota (including our neighboring Canadian and adjacent state partners) with continuous data collected through 2009 via a partnership with the National Oceanic and Atmospheric Administration, National Weather Service (NOAA/NWS). State-of-the-art computer-based statistical procedures have generated summary information and maps with a resolution of 4 km by 4 km (or about 2.5 miles by 2.5 miles). NOAA required one contract with all 11 Midwest states (Minnesota, North Dakota, South Dakota, Wisconsin, Michigan, Iowa, Missouri, Colorado, Nebraska, and Kansas) with pass-

through funding via the Pooled Highway Fund. All Environment and Natural Resources Trust Fund dollars were expended by June 30, 2011 with additional funding provided by the Minnesota DOT being used to complete the final work components. This study has generated rainfall frequency estimates for durations from 15 minutes to 60 days and for average recurrence intervals from 1 to 1,000 years along with trend analyses. Final web-based products will be available in early 2012 due to delays associated with reducing huge amounts of data from about 1/2 of the contiguous United States. The results of this work are required for standard engineering practices associated with runoff routing, flood prevention and safe road & culvert designs - and will become part of our daily forecasts ("today's storm is called a hundred year event").

**Project Results Use and Dissemination**
Precipitation frequency information is required for standard engineering practices for building new roads, highways, bridges, and developments so as to minimize flooding and for water quality treatment, agricultural and other watershed management purposes.

This study has resulted in rainfall frequency estimates from 15 minutes to 60 day durations and for average recurrence intervals from 1 to 1,000 years. Data has been summarized in NOAA's nationally recognized standard engineering tables. New products have been developed for inclusion in GIS formats for a wide variety of computer-based applications and website distribution for watershed management purposes. Regional patterns and comparisons to old TP-40 rainfall frequency data will also be available.

Project products will be freely available from the NOAA website www.nws.noaa.gov/ohd/hdsc, including reports, maps and spatial data with precipitation frequency estimates and downloads of digital files.

**Project completed:** 6/30/2011

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**Conservation Easement Stewardship, Oversight and Maintenance**
Subd. 05g $180,000

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**Overall Project Outcome and Results**
Since collection of digital easement data within the Minnesota Board of Water & Soil Resources (BWSR) first began in the late 1990's, every effort had been made to keep the database accurate and complete. However, over a decade later, and with over 5,000 easements and growing, it became prudent (particularly with the advent of more advanced technology) to reexamine, update, and enhance that database.

Attributes and boundaries for easements and conservation practices (planned land cover types based on

the NRCS Field Office Technical Guide) that previously only existed in paper format were scanned and digitized, then added to a Geographic Information Systems (GIS) database for the RIM Reserve easement program. The GIS database is flexible enough to implement future easement monitoring technology that can capture stewardship data such as easement condition and compliance, habitat quality, easement maintenance, and enhancement.

Prior to this undertaking, it would have been impossible to implement a modern long-term conservation easement stewardship plan. Easement boundaries only existed on paper and an outdated database placed limitation on reporting and analysis. As a result of this project, the framework is in place for implementing such a plan. A modern database is being implemented. 220,329 acres of conservation practices within 5,882 easements have been digitized into a GIS database, and a GIS-based monitoring field application has gone through pilot testing.

BWSR now has increased capabilities to target new easement projects using GIS reporting and analysis, as well as ensure the quality of past projects through easement stewardship and monitoring. This maximizes the return of each dollar spent, benefitting Minnesotans through better water quality, reduced soil erosion, and enhanced wildlife habitat.

**Project Results Use and Dissemination**
As a result of this project, a conservation easement database that is more streamlined has been implemented, giving BWSR staff the ability to edit and update easement boundaries and attributes, conduct geospatial reporting and analysis using GIS technology, create online delivery applications available via BWSR's website, and develop and test future easement stewardship and monitoring applications.

Conservation easement data has been made publically available as both an interactive online web map and a GIS shapefile download, both available at BWSR's web site:
http://www.bwsr.state.mn.us/easements

**Project completed:** 6/30/2011

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**Conservation Easement Stewardship and Enforcement Program Plan**
Subd. 05h $520,000

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**Overall Project Outcome and Results**
The DNR needed comprehensive information about its conservation easements in a centralized database and an agency-wide plan to monitor and enforce the easements.

Project objectives were to:

1. Conduct a comprehensive inventory of DNR's easements, classify conservation easements by type, and capture relevant data about each easement in DNR's land records system;
2. Develop a conservation easement stewardship plan that integrates an easement monitoring computer application developed through DNR's Land Records Management Project;
3. Recommend solutions to long-term conservation easement stewardship funding.

The inventory consisted of a review of all deed and easement records maintained by DNR's Lands and Minerals Division, capture of relevant easement data, and reconciliation of the data with records maintained by DNR's conservation easement administrators. The stewardship plan was developed after test monitoring a sample of existing conservation easements and obtaining extensive input from a working group comprised of representatives of DNR divisions that administer conservation easements.

The inventory identified 13 DNR conservation easement types and a total of 974 conservation easements covering 355,623 acres. The stewardship plan outlines monitoring methods and monitoring frequency for each conservation easement type, estimates stewardship costs and identifies options for funding. Project results are detailed in the "Conservation Easement Stewardship and Enforcement Program Plan" dated Feb. 28, 2011.

Under a work program amendment, project staff converted scans of 600 conservation easements into a format for use in the new conservation easement monitoring application, developed GIS tools that identified subdivisions and ownership of 557 trout stream easements and created shapefiles for 170 conservation easements from legal descriptions. The Aug. 15, 2011 Final Report Supplement contains examples of these work products.

The database, forms, tools, and plans developed in this project provide the foundation for the DNR to implement an agency-wide conservation easement stewardship program.

**Project Results Use and Dissemination**
Project results are currently being used by the DNR in several ways:

- Conservation easement data entered into the DNR's existing land records system in the project are being used to respond to inquiries from DNR staff and the public about DNR's conservation easements.
- A conservation easement Geographic Information Systems (GIS) layer developed by project staff and Division of Lands and Minerals GIS staff is available to all DNR ArcGIS users.
- The DNR is beginning the process of implementing the conservation easement stewardship plan developed in the project.

- Staff in divisions that administer conservation easements are currently using the baseline property report and monitoring forms developed in the project.
- The DNR's land records system contractor, International Land Systems, Inc. (ILS), is using the baseline property report and monitoring forms developed in the project and input about application design provided through the project to build the conservation easement administration application in the DNR's new land records system.
- Staff in divisions that administer conservation easements and project staff for the Conservation Easement Stewardship and Enforcement Program, Phase II will use shapefiles prepared under the Jan. 31, 2011 Work Program Amendment to create maps for baseline property reports and conservation easement monitoring.
- The Division of Fish and Wildlife is in the process of merging its existing GIS layer, which contains trout stream easement shapefiles, with the geoprocessing tools developed in the project to identify subdivisions and current landowners. This will enable Fisheries staff statewide to access the subdivision and landowner data using ArcGIS.
- All data entered into DNR's existing land records system in the project, as well as trout stream subdivision and landowner data and the Access database of easement terms created under the Work Program Amendment, will be migrated to and used in the new land records system currently being built by ILS.

Project results have been disseminated both within the DNR and to members of the public.

**Project Publication:**
Conservation Easement Stewardship and Enforcement Program Plan (PDF - 10.6 MB)

**Project completed:** 6/30/2011

## SUBD. 06 ENVIRONMENTAL EDUCATION

**Global Warming - Reducing Carbon Footprint of Minnesota Schools**
Subd. 06b $750,000

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**Project Outcome and Results**
Minnesota Schools Cutting Carbon (MnSCC) is a three-year project that engaged over 7,000 students in 100 public high schools, colleges and universities across Minnesota to save energy, and reduce

greenhouse gas emissions at their schools.

Results: The 100 MnSCC schools collectively saved their schools about 5 million kWh of electricity (totaling 18 billion BTUs) and $325,000 in energy costs annually, which means the three-year program paid for itself in two and a half years. The project also avoided 9.5 million pounds of carbon dioxide emissions (CO2 is a greenhouse gas).

In addition, 23 of the MnSCC schools received a total of $202,828 in competitive grants for renewable energy, energy efficiency, recycling, and transportation reduction projects. Fourteen schools were able to measure and report savings of over 3 million kWh of electricity; 10,500 therms of natural gas; and 26,000 gallons of gasoline - totaling 14.4 billion BTUs. These projects saved approximately $300,000 in annual energy costs and avoided 6.2 million pounds of CO2 emissions.

The cumulative impact of all 100 MnSCC school projects saved schools 32.4 billion BTUs of energy, $625,000 in energy costs, and reduced carbon dioxide emissions by 15.7 million pounds, the equivalent of taking 1,700 cars off of Minnesota roads.

Our project team helped schools create clean energy teams, personally visited every school, provided individual school reports with recommendations on saving energy and resources, and gave students the opportunity to develop and lead energy-saving projects, network with other schools, and share success stories.

Student leadership was a key focus of our project, and there are many great examples of students having a direct impact on their schools and communities:

- Students presented at the biennial Clean Energy Resource Teams (CERTs) conference in St. Cloud in February 2011 to over 100 conference attendees over two days.
- Students rallied in the State Capitol Rotunda on Earth Day 2010, meeting fellow students and several legislators.
- Students presented before the LCCMR and the House Environment Policy and Oversight Committee to talk about how their work has impacted their school.

Overall, MnSCC demonstrated that our students are highly motivated and very effective. They achieved significant energy savings, and they directly influenced their schools and communities through their leadership and interactions with school officials, teachers, fellow students, and community representatives.

**Project Results Use and Dissemination**

One of the primary objectives of this project was to raise awareness of energy issues and to implement low cost and no cost energy-saving actions in schools through the leadership of students. We also were focused throughout the project on creating opportunities for students to talk about their projects, share results, and for MnSCC to recognize their successes. A variety of resources, detailed in the final report, were created and made available to enable schools to take clean energy actions and make presentations to their communities and local officials. These resources were made available on a robust MnSCC website. Many schools also used the website to share their project success stories and post rleated text, pictures, and videos. Additionally, ongoing communication, outreach, and interaction with Minnesota's schools, colleges, and universities through a variety of means was at the heart of this project from beginning to end.

**Project completed:** 6/30/2011

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**Subd. 07 Establishment of an Emerging Issues Account**

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**Emerging Issues Account**
Subd. 07 $155,000

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Funds will be used by the LCCMR to provide assistance for an unexpected, urgent, or emergency need where time is of the essence, as authorized in Minnesota Statutes, section 116P.08, subdivision 4, paragraph (d).

WENT TO:

Statewide Ecological Ranking Conservation Reserve Program (CRP) and Other Critical Lands - $155,000 (completion date for this portion is 6/30/2010)

Other funds include:
M.L. 2007, Chp. 30, Sec. 2, Subd. 7 "Emerging Issues Account" - $13,000 (completion date for this portion is 6/30/2009)

M.L. 2009, Chp. 143, Sec. 2, Subd. 4g "Statewide Ecological Ranking of Conservation Reserve Program (CRP) and Other Critical Lands" - $107,000 (Project due to be completed: 6/30/2011)

**Project completed:** 6/30/2011

# M.L. 2006 Projects Completed 2011-2012

# MN Laws 2006, Chapter 243, Section 20

**M.L. 2006 Projects Completed 2011-2012**

**M.L. 2006 Projects**
**MN Laws 2006, Chapter 243, Section 19 & Section 20 (beginning July 1, 2006)**

NOTE: Below is a short abstract for a project funded during the 2006 Legislative Session ending during 2011-2012. The final date of completion for these projects is listed at the end of the abstract. Final Reports for all completed projects are available at http://www.lccmr.leg.mn/projects/2006-index.html or by contacting the LCCMR office.

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**Subd. 08 Land Exchange Revolving Fund for Aitkin, Cass, and Crow Wing Counties**

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**FISH AND WILDLIFE HABITAT**

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**Land Exchange Revolving Fund for Aitkin, Cass, and Crow Wing Counties**
Section 20, Subd. 08 $290,000

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**Overall Project Outcome and Results:**
In 2006, an inter-county revolving loan fund was established for the benefit of Aitkin, Cass and Crow Wing Counties. The objective of this fund was to improve public and private land-ownership patterns, which will increase public management efficiency, protect critical habitat, and reduce public service expenditures to isolated parcels; without reducing the local tax base.

Under this program, the Counties purchased privately owned parcels that met certain project criteria. Tax forfeited land, of substantially equal value and better suited to private ownership, was sold to replenish the fund; resulting in the public/private land ownership base remaining stable.

A total of 174.6 acres of land plus a lot were purchased solving many easement issues and consolidating public ownership so that public service expenditures to these parcels would not exist.

During this process, land values dropped because of the recession which made it harder to recoup the funds from land sales. Parcels were put up for sale, but did not sell because of the economy. Purchases of recreational property was no longer a priority, when homes were being lost and people weren't sure about the future of their jobs.

Another item that caused some problems, was that as funds from the account were used, sometimes larger parcels were unable to be purchased as there was not enough in the account for purchase. Exchanges were not as favorably looked at as when a county parcel was exchanged, people thought that

everyone should have the opportunity to purchase the parcel, not just the person doing the exchange.

Overall, the process was a good process. It gave counties the opportunity to cure problem parcels with a ready cash fund. No access properties, wetland properties that should not be developed, and recreational opportunities were all developed with a 'no cash out of the general fund' opportunity.

**Project completed:** 6/30/2011

# M.L. 2005 Projects Completed 2011-2012

# MN Laws 2005, First Special Session, Chapter 1, Article 2, Section 11

**M.L. 2005 Projects**
**MN Laws 2005, First Special Session, Chapter 1, Article 2, Section 11 (beginning July 1, 2005)**

NOTE: Below is a short abstract for a project funded during the 2005 Legislative Session ending during 2011-2012. The final date of completion for these projects is listed at the end of the abstract. Final Reports for all completed projects are available at http://www.lccmr.leg.mn/projects/2005-index.html or by contacting the LCCMR office.

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**Subd. 06 Recreation**
06l Local and Regional Trail Grant Initiative Program

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**Subd. 06 Recreation**

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**Local and Regional Trail Grant Initiative Program**
Subd. 06l $700,000 Funding available through duration of matching Federal funding.

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**Overall Project Outcomes and Results:**
Every year the department solicits grant proposals from local governments for local trail connections, and regional trails outside the metro area. Project applications are usually due in the spring, with project selection completed by the end of May.

Two distinct grant programs provide matching grants to local governments for acquisition and development of trails:

- Local Trail Connections Grant Program - helps link communities to trails and parks through development of connecting trail segments. The maximum grant amount of $100,000 has been established administratively and is not defined in statute. Historically, the maximum grant amount for this program was $50,000. In October 2001, the amount was changed to reflect increased construction costs realized by prospective grantees.
- Regional Trail Grant Program - provides grants of up to $250,000 to cities, counties, and townships for development of regionally significant trails funded with local or federal funding. Primary determinants of significance include length, expected use and resource quality and/or attractiveness. The 1999 LCMR appropriation language specifies that the funds be used for project outside the seven-county metropolitan area.

Project proposals for all of these programs are evaluated and ranked on a competitive basis, with grants being awarded to the highest-ranking projects.

The Local Trail Connections Program was able to provide 23.45 miles of new trail, 6 new bridges/culverts, 1 easement, 1.62 miles of bituminous surfacing of a gravel trail and provided

rehabilitation on 1.65 miles of trail. The regional Trail Grant Program was able to provide 25.50 of new trail, 1 bridge, 2.70 miles of railroad bed acquisition, and 19.85 miles of bituminous surfacing of a gravel trail. Together, both programs provided 48.95 miles of new trail, 7 bridges/culverts, 1 easement, 2.70 miles of railroad bed acquisition, 21.47 miles of bituminous surfacing of a gravel trail, and 1.65 miles of trail rehabilitation. There were a total 29 projects to 25 different communities supported with this LCCMR funding.

**Project completed:** 06/30/2011

# IV. Agency Implementation

*"recommendations to implement successful projects and programs into a state agency's standard operations;"*

No recommendations at this time.

# V. Recommendations

*"to the extent known by the commission, descriptions of the projects anticipated to be supported by the trust fund during the next biennium;"*

There is $33,810,552 available for expenditure in each year of the FY14-15 biennium from the Environment and Natural Resources Trust Fund (ENRTF) –biennial total available $67,621,104. The amount available for expenditure is determined by the MN Constitution which states: "The amount appropriated each year of a biennium….may be up to 5.5% of the market value of the fund on June 30 one year before the start of the biennium". The value of the ENRTF on June 30, 2012 was $614,737,321.58.

The LCCMR is making a funding recommendation to the 2013 Legislature from the ENRTF totaling $38,160,000 ($33,810,000 is for FY14 and $4,350,000 is for FY15). The LCCMR will be making a future additional funding recommendation for FY15 totaling $29,460,000 to the 2014 Legislature. As stated in M.S. 116P, the LCCMR may make an annual or a biennial funding recommendation.

The list of recommended appropriations totaling $38,160,000 from the Environment and Natural Resources Trust Fund is provided in "Section V. Recommendations." The funding levels and the proposed legislative bill were adopted by the LCCMR on November 28, 2012. Both actions were through affirmative votes of at least 12 of the 17 members as required by M.S. 116P.05, Subd. 2.

# LCCMR M.L. 2013 ENVIRONMENT AND NATURAL RESOURCES TRUST FUND RECOMMENDATIONS BY SUBDIVISION - HF xxx & SF xxx

**LCCMR Process for M.L. 2013 Recommendations**

*For the next biennium (July 1, 2013 - June 30, 2014), approximately $33.8 million is available each fiscal year (Total = $67,620,000) for funding from the Environment and Natural Resources Trust Fund. In response to the 2012-2013 Request for Proposal, 169 proposals requesting a total of approximately $155 million were received. Through a competitive, multi-step process, 66 of these proposals, requesting a total of $73 million, were chosen to present to the LCCMR and 46 of those proposals were chosen to receive a recommendation for funding. These recommendations are for the FY 2014 funds and part of the FY 2015 funds. Recommendations for the remainder of the FY 2015 funds will be presented to the 2014 Legislature as part of the 2013-2014 RFP process.*

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| December 7, 2011 | 2012-2013 Funding Priorities Determined and RFP Adopted |
| December 12, 2011 | 2012-2013 RFP Issued |
| April 6, 2012 | 2012-2013 RFP Proposal Deadline (Received 169 Proposals totaling $154,628,351) |
| June 5, 2012 | Discussion of 2012-2013 Proposals Received and Selection of Proposals for Presentations |
| June 19, 20, 27, 28, 2012 | 2012-2013 Proposal Presentations (4 days) (66 proposals totaling $73,610,973 selected to present) |
| July 11, 2012 | 2013 Allocations Recommendations |
| August-November 2012 | Research Projects Recommended Undergo Peer Review |
| November 28, 2012 | M.L. 2013 Appropriation Language Review & Adoption |

**Summary of Recommendations by Subdivision***

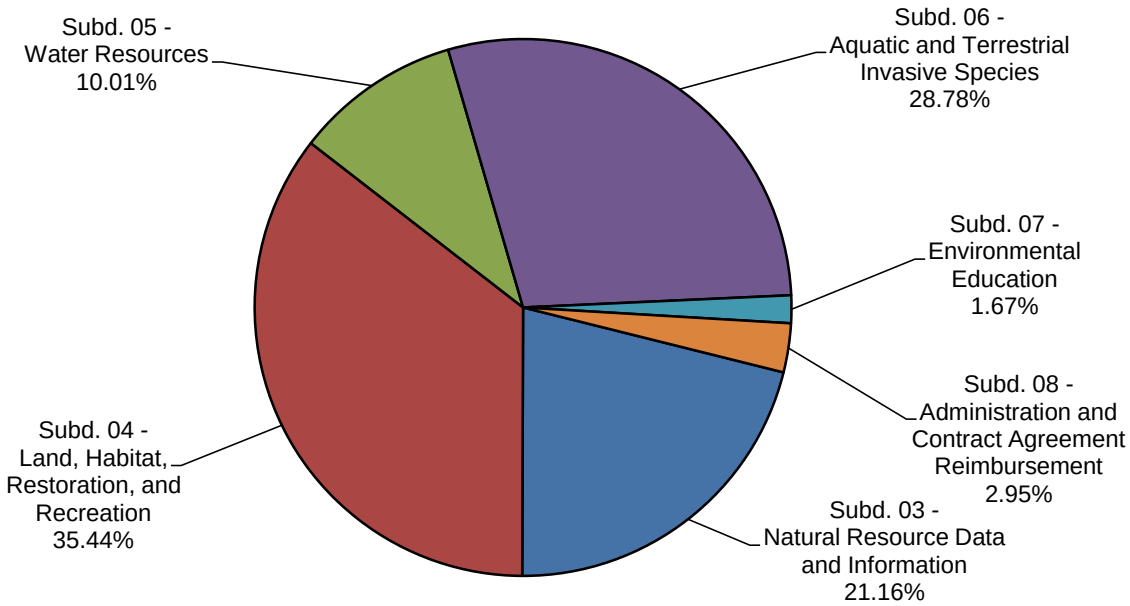
| Subdivision | $ Recommended | # Appropriations** |
|---|---|---|
| Subd. 03 - Natural Resource Data and Information | $8,076,000 | 10 |
| Subd. 04 - Land, Habitat, Restoration, and Recreation | $13,522,000 | 11 |
| Subd. 05 - Water Resources | $3,819,000 | 8 |
| Subd. 06 - Aquatic and Terrestrial Invasive Species | $10,982,000 | 7 |
| Subd. 07 - Environmental Education | $636,000 | 2 |
| Subd. 08 - Administration and Contract Agreement Reimbursement | $1,125,000 | 2 |
| **TOTAL** | **$38,160,000** | **40** |

**Notes:**

***The distribution of dollars is based on the subdivisions in the appropriation language.

****One appropriation includes multiple projects with multiple partners of different affiliations receiving funds. The total number of individual projects within the 40 appropriations is 46.

## % of Total $ Recommended

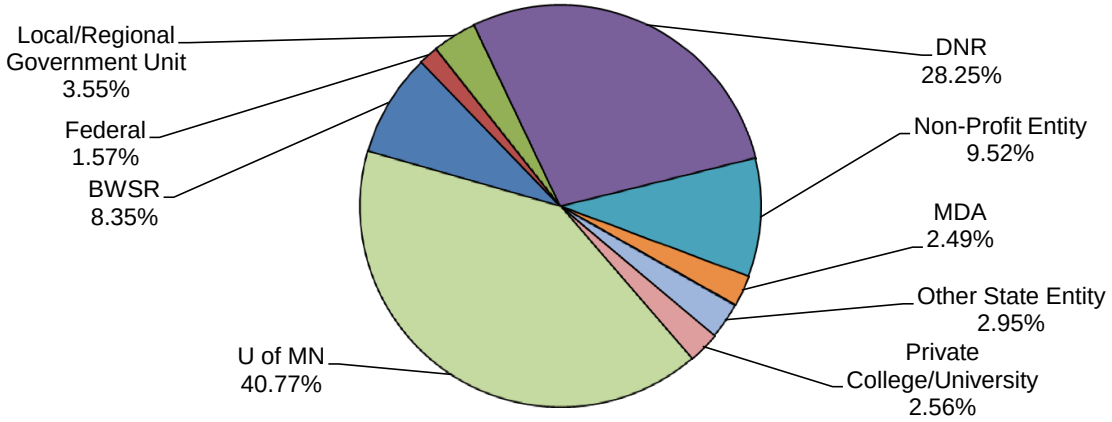


# LCCMR M.L. 2013 ENVIRONMENT AND NATURAL RESOURCES TRUST FUND RECOMMENDATIONS BY SUBDIVISION - HF xxx & SF xxx

| Summary of Project Recommendations by Proposer Affiliation* | | |
|---|---|---|
| **Affiliation Type** | **$ Recommended** | **# Projects** |
| MN Board of Water and Soil Resoures (BWSR) | $3,186,000 | 2 |
| Federal | $600,000 | 1 |
| Local/Regional Government Unit | $1,353,000 | 4 |
| MN Department of Natural Resources (DNR) | $10,780,000 | 11 |
| Non-Profit Entity | $3,634,000 | 9 |
| MN Department of Agriculture (MDA) | $950,000 | 2 |
| Other State Entity | $1,125,000 | 2 |
| Private College/University | $975,000 | 2 |
| U of MN | $15,557,000 | 13 |
| **TOTAL** | **$38,160,000** | **46** |

*Some projects have multiple partners with different affiliations receiving funds. The distribution of funds between affiliation types above is based on the best information available at this time.

**% of Total $ Requests Selected to Present by Proposer Affiliation**

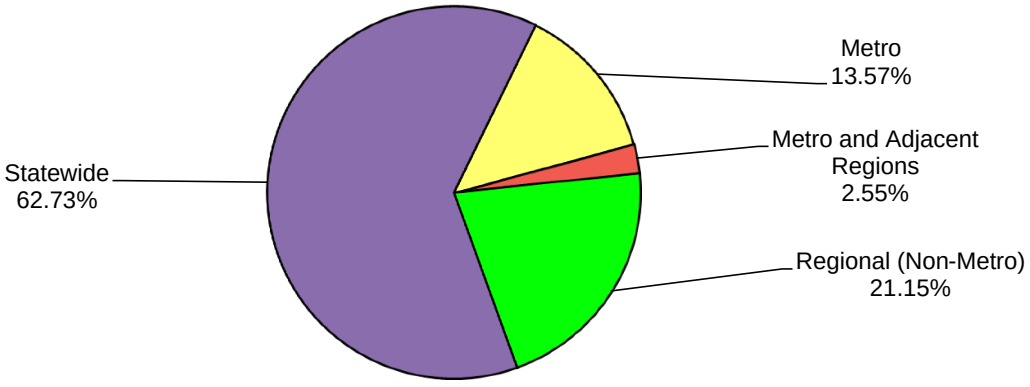



| Summary of Proposals Selected to Present by Area of Impact | | |
|---|---|---|
| **Area of Impact** | **$ Recommended** | **# Projects** |
| Metro* | $5,180,000 | 7 |
| Metro and Adjacent Regions | $973,000 | 4 |
| Regional (Non-Metro)** | $8,070,000 | 13 |
| Statewide | $23,937,000 | 22 |
| **TOTAL** | **$38,160,000** | **46** |

* "Metro" region includes the 11 counties of Anoka, Carver, Chisago, Dakota, Hennepin, Isanti, Ramsey, Scott, Sherburne, Washington, and Wright.

**** "Regional" means area of impact is less than "Statewide" but includes one or more regions of the state ("Northwest", Northeast", "Central", "Southwest", or "Southeast") other than the 11-county "Metro" region.

**% of Total $ Requests Selected to Present by Area of Impact**



# ENVIRONMENT AND NATURAL RESOURCES TRUST FUND
# M.L. 2013 LCCMR Recommendations – H.F. XXX & S.F. XXX

## SUMMARY OF ML 2013 APPROPRIATIONS BY SUBDIVISION ($38,160,000)

**SUBD. 3. Natural Resource Data and Information: $8,076,000 – 10 Appropriations**

- Collection, interpretation, mapping, and dissemination of foundational data and information pertaining to groundwater, wetlands, and distributions of plant and animal species and ecological systems.
- Planning, inventory, monitoring, and data management pertaining to existing state-held conservation easements.
- Research and analysis pertaining to Dutch elm disease resistance and to the application of unique microorganisms for bioremediation, bioenergy, and biocontrol uses.
- Evaluation of alternative methods for improved and expedited forest inventory, more sustainable timber payment methods, and management of woodland grazing.

**SUBD. 4. Land, Habitat, Restoration, and Recreation: $13,522,000 – 11 Appropriations [17 projects]**

- Protection, restoration, and enhancement of priority, high quality, and unique lands and habitat through fee title acquisition, conservation easements, restoration/enhancement, and related efforts.
- Expansion of outdoor recreational opportunities through expanded state parks and state trails, an expanded metropolitan landscape arboretum, and the addition of a new city park in Saint Paul.
- Planning and monitoring to conserve rare and unique habitats with high biodiversity significance.
- Development and assessment of best practices for restoring moose habitat, enhancing bee pollinator habitat, and utilizing conservation grazing to improve wildlife habitat.
- Technical assistance and training for landowners on conservation program opportunities, habitat restoration, and land stewardship.
- Outreach to engage and educate citizens about ecology, outdoor recreation, and land use and protection.

**SUBD. 5. Water Resources: $3,819,000 – 8 Appropriations**

- Development and implementation of modeling, monitoring, and reporting protocols to track and understand changes in Minnesota lakes and improve water and fisheries management.
- Assessment of copper-nickel bedrock in northeastern Minnesota and its related impacts to water quality as a result of both natural processes and potential future mining operations.
- Research and analysis pertaining to understanding significant thermal and biological changes occurring in Lake Superior and related implications; evaluating the impacts of habitat restoration on flood-reduction and water quality to inform future restoration practices; and assessing the presence, sources, and threats posed by antibiotics in the Mississippi River.
- Develop, test, and optimize a technology designed to utilize wastewater to generate clean water and energy.
- Installation and monitoring of shoreland and agricultural best management practices to improve water quality of lakes in two regions of southern Minnesota.

**SUBD. 6. Aquatic and Terrestrial Invasive Species: $10,982,000 – 8 Appropriations**

- Establish, develop, and support a new, first-of-its-kind research center at the University of Minnesota specifically dedicated to developing and implementing new techniques for controlling aquatic invasive species.
- Development, testing, monitoring, and implementation pertaining to control methods for a variety of established invasive species including garlic mustard, emerald ash borer, and zebra mussels and several emerging invasive species including oriental bittersweet and Grecian foxglove.
- Establishment of a detection and monitoring program targeting Asian carp species.

**SUBD. 7. Environmental Education: $636,000 – 2 Appropriations**

- Training of future conservation professionals through mentoring opportunities.
- Delivery of environmental education and training to youth through focused outdoors experiences along the Mississippi River from Grand Rapids to the Twin Cities and down to Red Wing and through internships in environmental fields.

**SUBD. 8. Administration and Contract Agreement Reimbursement: $1,125,000 – 2 Appropriations**

- LCCMR administration and project contract agreement reimbursement.

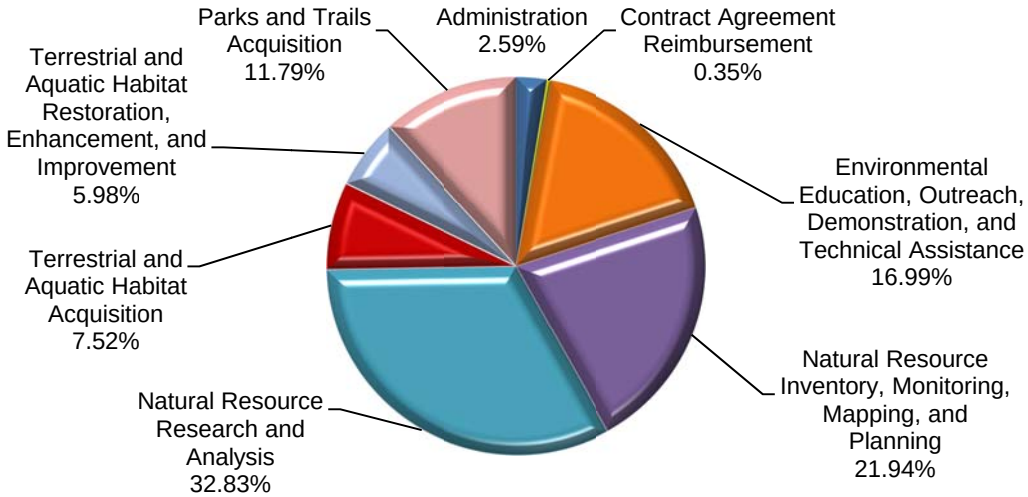
*Includes approximately $33.8 million for FY 2014 and $4.4 million for FY 2015.

# ENVIRONMENT AND NATURAL RESOURCES TRUST FUND
# M.L. 2013 LCCMR Recommendations – H.F. XXX & S.F. XXX

## SUMMARY OF EXPECTED OUTCOMES ACROSS SUBDIVISIONS FOR ~$38.2 MILLION*

- **Natural Resource Inventory, Monitoring, Mapping, and Planning: ~$8.4 million**
  *Inventory, monitoring, mapping, and planning* efforts to obtain critical information and guide relevant decisions and efforts over time, including acceleration of the MN Biological Survey; MN County Geologic Atlas program; MN Wetlands Inventory; mapping and measurement of springsheds; expanded monitoring and management of state-owned lands; surveying, monitoring, and modeling of Minnesota lakes, including Lake Superior; detection and monitoring of invasive species including Asian carp, emerald ash borer, and others.
- **Terrestrial and Aquatic Habitat Acquisition: ~$2.9 million**
  *Acquisition* of an estimated 912 acres in a combination of fee title (130 acres and .2 miles of shoreline) and conservation easements (782 acres and .7 miles of shoreline), including donated easements. Permanently protected areas will include forests, prairie, blufflands, wetlands, shorelands, grasslands, and other habitat.
- **Terrestrial and Aquatic Habitat Restoration, Enhancement, and Improvement ~$2.3 million**
  *Restoration, enhancement, and improvement* activities on an estimated 9,289 acres and 6 miles of shoreline. Activities performed will include seed collection, prescribed burns, soil preparation, native vegetation installation, structural improvements, woody encroachment removal, and invasive species control.
- **Parks and Trails Acquisition: ~$4.5 million**
  *Acquisition* of an estimated 287 acres, including 1.35 miles of shoreline, in state parks, state trails, a metropolitan park, and the University of Minnesota Landscape Arboretum.
- **Natural Resource Research and Analysis: ~$12.5 million**
  *Research and analysis* projects that will advance our knowledge about and provide strategies and recommendations for addressing issues relating to invasive species control; water quality and conservation; bioremediation and wastewater treatment; renewable energy options; forestry and forest inventory practices; species protection, decline, and recovery; and conservation grazing practices.
- **Environmental Education, Outreach, Demonstration, and Technical Assistance: ~$6.5 million**
  *Environmental education, outreach, demonstration, and technical assistance* efforts that will engage and educate Minnesotans on topics including ecology, plants and wildlife, land protection, alternative landscape practices, and outdoor recreation; demonstrate options for alternative landscape practices; and provide training and technical assistance on invasive species prevention, detection, and control and natural resource conservation and management tools, practices, and options.
- **Contract Agreement Reimbursement: ~$0.1 million**
  Administering of contract agreement reimbursement for projects of non-state entities.
- **Administration: ~$1 million**
  FY 2014-2015 LCCMR administration

## % OF EXPECTED OUTCOMES ACROSS SUBDIVISIONS




*Includes approximately $33.8 million for FY 2014 and $4.4 million for FY 2015.

# ML 2013 Environment and Natural Resources Trust Fund Recommendations

*In Minnesota's next biennium (July 1, 2013 - June 30, 2014), approximately $33.8 million is available each fiscal year (Total = $67,600,000) for funding from the Environment and Natural Resources Trust Fund. In response to the LCCMR's 2012-13 Request for Proposal, 169 proposals requesting a total of approximately $155 were received. After full consideration of all proposals received through a competitive, multi-step process, on July 11 and November 28, 2012, the LCCMR selected 46 projects to be included in its appropriation recommendations to the 2013 Minnesota Legislature. These recommendations ranged from full funding for the full proposal and dollar amount requested to partial funding for specific proposal elements and partial dollar amounts requested.*

| Topic Area | $ Recommending ($38,160,000) | Percentage of Total Recommendation |
|---|---|---|
| **Subd. 03 Natural Resource Data and Information**<br>10 Appropriations | $8,076,000 | 21.16% |
| **Subd. 04 Land, Habitat, Restoration, and Recreation**<br>11 Appropriations [17 Projects] | $13,522,000 | 35.44% |
| **Subd. 05 Water Resources**<br>8 Appropriations | $3,819,000 | 10.01% |
| **Subd. 06 Aquatic and Terrestrial Invasive Species**<br>7 Appropriations | $10,982,000 | 28.78% |
| **Subd. 07 Environmental Education**<br>2 Appropriations | $636,000 | 1.67% |
| **Subd. 08 Administration and Contract Management**<br>2 Appropriations | $1,125,000 | 2.95% |
| **TOTAL $ RECOMMENDATION** | **$38,160,000** | **100.00%** |

**Fund Source**

| | |
|---|---|
| **FY 2014 - Environment and Natural Resources Trust Fund Recommended** | **$33,810,000** |
| **FY 2015 - Environment and Natural Resources Trust Fund Recommended** | **$4,350,000** |
| **TOTAL $ RECOMMENDATION** | **$38,160,000** |

| Subd. | Title | Summary | Affiliation | Program Manager | Total $ Recommended | FY2014 Trust Fund $ ($33,810,000) | FY2015 Trust Fund $ ($4,350,000) | Region of Impact |
|---|---|---|---|---|---|---|---|---|
| **Subd. 03 Natural Resource Data and Information (10 Appropriations - Subtotal = $8,076,000)** | | | | | | | | |
| 03a | Minnesota Biological Survey | To provide a foundation for conserving biological diversity by systematically collecting, interpreting, monitoring, and delivering data on plant and animal distribution and ecology, native plant communities, and functional landscapes. | MN DNR | Carmen Converse | $2,650,000 | $2,650,000 | $0 | Statewide |
| 03b | County Geologic Atlases - Part A | Continuing statewide effort to provide comprehensive geologic mapping essential to effective and efficient management of surface and ground water resources. Users include local, state, and federal agencies and private businesses. | U of MN - MN Geological Survey | Dale Setterholm | $1,200,000 | $1,200,000 | $0 | Statewide |
| 03c | County Geologic Atlas - Part B | To continue the analysis and compilation of groundwater data for the production of county geologic atlases, publication of geospatial groundwater data, and continued mapping of springsheds and karst features for Winona and Houston Counties. | MN DNR | Jan Falteisek | $1,200,000 | $1,200,000 | $0 | Central, Metro, NE, SE |
| 03d | Updating the National Wetland Inventory for Minnesota - Phase IV | This is the fourth phase of a multi-phase project to update and enhance the National Wetland Inventory for Minnesota. This phase will update wetland maps for northeastern Minnesota. | MN DNR | Steve Kloiber | $1,000,000 | $1,000,000 | $0 | NE, NW |
| 03e | Conservation Easement Stewardship Program - Phase III | Acceleration of DNR ongoing work to bring existing conservation easements up to minimum standards through monitoring, baseline data collection and baseline report preparation; development of technology to enhance monitoring efficiency. | MN DNR | Susan Damon | $200,000 | $200,000 | $0 | Statewide |
| 03f | Harnessing Soudan Mine Microbes: Bioremediation, Bioenergy and Biocontrol | To continue the characterization of unique microbes discovered in the Soudan Underground Mine State Park that have potential applications for metal remediation in water resources, microbial electrofuels, and inhibition of White-Nose Bat Syndrome. | U of MN | Christine Salomon | $838,000 | $838,000 | $0 | Statewide |
| 03g | Improved Rapid Forest Ecosystem and Habitat Inventory | Evaluate a new approach to forest inventory, based on imputation of statewide Forest Inventory and Analysis (FIA) data, to speed updates, improve usability, and reduce costs. | U of MN | Alan Ek | $262,000 | $262,000 | $0 | Central, NE, NW |
| 03h | Finding Disease Resistant Elm Trees in Minnesota | To evaluate and identify native Minnesota elms resistant to Dutch elm disease to assist with limiting the susceptibility of the state's elms to Dutch elm disease. | U of MN | Robert Blanchette | $200,000 | $200,000 | $0 | Statewide |
| 03i | Enhancing Timber Sale Program Environmental and Economic Sustainability | Evaluate how timber payment methods impact post-harvest forest ecological conditions, net revenue generated from public timber sale programs, and barriers perceived by forest managers and loggers. | U of MN | Charles Blinn | $336,000 | $336,000 | $0 | Central, NE, NW |
| 03j | Enhancing Environmental and Economic Benefits of Woodland Grazing | To evaluate management options of woodlands used for grazing to improve ecological and economic benefits. | U of MN | Diomy Zamora | $190,000 | $190,000 | $0 | Central, NW |
| | | | | **Subd. 03 Natural Resource Data and Information Subtotal =** | **$8,076,000** | **$8,076,000** | **$0** | |
| **Subd. 04 Land, Habitat, Restoration, and Recreation (12 Appropriations/19 Projects- Subtotal = $13,522,000)** | | | | | | | | |
| 04a | State Parks and State Trails Land Acquisition | Acquire approximately 275 acres from willing sellers within the statutory boundaries of State Parks, State Recreation Areas and authorized State Trails. State land acquisitions provide ecological and recreational benefits to the public. | MN DNR | Jennifer Christie | $1,000,000 | $1,000,000 | $0 | Statewide |

| Subd. | Title | Summary | Affiliation | Program Manager | Total $ Recommended | FY2014 Trust Fund $ ($33,810,000) | FY2015 Trust Fund $ ($4,350,000) | Region of Impact |
|---|---|---|---|---|---|---|---|---|
| 04b | Scientific and Natural Areas Restoration, Enhancement and Citizen Engagement | To conserve sites of biodiversity significance by restoring and enhancing lands established as scientific and natural areas as provided in Minnesota Statutes, section 86A.05, subdivision 5, and providing volunteer engagement and outreach. | MN DNR | Peggy Booth | $1,500,000 | $1,500,000 | $0 | Statewide |
| 04c | Native Prairie Stewardship and Prairie Bank Easement Acquisition | To acquire approximately 195 acres of native prairie bank easements, prepare baseline property assessments, restore and enhance native prairie sites, and provide technical assistance to landowners. | MN DNR | Jason Garms | $750,000 | $750,000 | $0 | Central, Metro, NW, SE, SW |
| 04d | Metropolitan Conservation Corridors (MeCC) - Phase VII | Protect and restore a connected network of critical habitat in the 16 county greater metropolitan area by acquiring fee title and conservation easements on 526 acres and restoring and enhancing 264 acres. | 7 partners (8 individual projects) | Kris Larson | $2,000,000 | $2,000,000 | $0 | Metro |
| *04d-1.1/1.2* | *MeCC VII - 1.1/1.2: Coordination and Mapping* | *Coordination of Partnership, accomplishment mapping and outreach.* | *Minnesota Land Trust* | *Kris Larson* | *$20,000* | *$20,000* | *$0* | *Metro* |
| *04d-2.1/3.4* | *MeCC VII - 2.1 & 3.4: Protect, Restore and Enhance Significant Watershed Habitat* | *Restore 10 acres of prairie and enhance 120 acres of prairie/savanna and 108 acres of forest. Six acres within the Fish Creek Natural Area will be acquired in the City of Maplewood.* | *Friends of the Mississippi River* | *Tom Lewanski* | *$304,000* | *$304,000* | *$0* | *Metro* |
| *04d-2.3* | *MeCC VII - 2.3: Restoring Our Lands and Waters* | *Restore and enhance 90 acres of shoreline, engaging volunteer community members.* | *Great River Greening* | *Wiley Buck* | *$208,000* | *$208,000* | *$0* | *Metro, SE* |
| *04d--2.6/3.7* | *MeCC VII - 2.6 & 3.7: Dakota County Lakeshore and Riparian Protection* | *Acquire 32 acres of conservation easements along rivers, streams and undeveloped lakeshore; and restore and enhance 40 acres.* | *Dakota County* | *Al Singer* | *$368,000* | *$368,000* | *$0* | *Metro* |
| *04d-3.1* | *MeCC VII - 3.1: 2013 TPLs Critical Land Protection Program* | *Acquisition of 24 acres of high quality habitat and .2miles of shoreline in scientifically evaluated wildlife corridors within the greater Twin Cities Metro Area.* | *The Trust for Public Land* | *Becca Nash* | *$400,000* | *$400,000* | *$0* | *Metro* |
| *04d-3.2* | *MeCC VII - 3.2: Protect Signifcant Habitat by Acquiring Conservation Easements* | *Protect 100 acres of critical habitat in the greater metropolitan area by securing permanent conservation easements and dedicating funds for the perpetual monitoring and enforcement of those easements.* | *Minnesota Land Trust* | *Kris Larson* | *$300,000* | *$300,000* | *$0* | *Metro* |
| *04d-3.3* | *MeCC VII - 3.3: Priority Expansion of Minnesota Valley National Wildlife Refuge* | *Acquire in fee 100 acres to expand the Minnesota Valley National Wildlife Refuge, improving wildlife habitat and water quality and increasing public access to wildlife-dependent recreation.* | *Minnesota Valley National Wildlife Refuge Trust Inc* | *Deborah Loon* | *$400,000* | *$400,000* | *$0* | *Central, Metro, SE* |
| 04e | Landscape Arboretum Acquisition Lake Tamarack | To acquire land surrounding Lake Tamarack in Hennepin County as part of the acquisition of approximately 80 acres for the MN Landscape Arboretum. | U of MN - MN Landscape Arboretum | Peter Moe | $2,000,000 | $2,000,000 | $0 | Metro |
| 04f | Conservation Program Technical Assistance | To continue providing grants to soil and water conservation districts and other units of local and state government for the employment of staff to re-enroll expiring lands into new programs for conservation purposes. | Board of Water and Soil Resources | Tabor Hoek | $3,000,000 | $3,000,000 | $0 | Statewide |
| 04g | Moose Habitat Restoration in Northeastern Minnesota | To develop best practices guidelines for creating moose foraging habitat efficiently and cost-effectively. | U of MN - NRRI | Ron Moen | $200,000 | $200,000 | $0 | NE |
| 04h | Bee Pollinator Habitat Enhancement | To assess the potential to supplement traditional turf grass by providing critical floral plant resources to enhance bee pollinator habitat. | U of MN | Marla Spivak | $200,000 | $200,000 | $0 | Statewide |
| 04i | Conservation Grazing to Improve Wildlife Habitat on Wildlife Management Areas | To develop grazing plans and provide infrastructure to support conservation grazing on 5,000 acres of targeted Wildlife Management Areas in partnership with local livestock producers. | MN DNR | Bill Penning | $600,000 | $600,000 | $0 | Central, NW, SE, SW |

| Subd. | Title | Summary | Affiliation | Program Manager | Total $ Recommended | FY2014 Trust Fund $ ($33,810,000) | FY2015 Trust Fund $ ($4,350,000) | Region of Impact |
|---|---|---|---|---|---|---|---|---|
| 04j | Preserving the Avon Hills Landscape - Phase II | To secure permanent conservation easements on high quality habitat in Stearns County, prepare conservation management plans, and provide public outreach. | Saint Johns Arboretum and University | Thomas Kroll | $772,000 | $772,000 | $0 | Central |
| 04k | Frogtown Farm and Park Acquisition | To acquire a portion of twelve acres for Frogtown Farm and Park to be established as a St. Paul city park. | The Trust for Public Land | Robert McGillivray | $1,500,000 | $1,500,000 | $0 | Metro |
| | | | | **Subd. 04 Land, Habitat, Restoration, and Recreation Subtotal =** | **$13,522,000** | **$13,522,000** | **$0** | |
| **Subd. 05 Water Resources (8 Appropriations - Subtotal = $3,819,000)** | | | | | | | | |
| 05a | Sustaining Lakes in a Changing Environment - Phase II | To continue development and implementation of monitoring, modeling, and reporting protocols for Minnesota lakes to be used in water quality and fisheries management. | MN DNR | Donald Pereira | $1,200,000 | $1,200,000 | $0 | Statewide |
| 05b | Assessment of Natural Copper-Nickel Bedrocks on Water Quality? | To assess impacts of existing mineralization and potential mining on northeastern Minnesota regional water quality from copper, nickel, and other metal concentrations in rocks, streambed sediments, and soils in areas of potential base-metal mining. | U of MN - NRRI | Steve Hauck | $585,000 | $585,000 | $0 | NE |
| 05c | Heron Lake Sediment and Phosphorus Reduction Implementation Projects | For public outreach and installation and monitoring of water quality improvement projects. | Heron Lake Watershed District | Jan Voit | $122,000 | $122,000 | $0 | SW |
| 05d | Southern Minnesota Lakes Restoration | To install shoreland and agricultural best management practices to improve water quality for fourteen lakes in a tri-county area in Southern Minnesota. | Le Sueur County | Lauren Klement | $463,000 | $463,000 | $0 | SE |
| 05e | Measuring Hydrologic Benefits from Glacial Ridge Habitat Restoration | To compare the hydrology of habitats before and after restorations to evaluate and quantify the impacts on flood-reduction and water-quality in order to inform improvements to restoration techniques. | Red Lake Watershed District | Tim Cowdery | $400,000 | $400,000 | $0 | Statewide |
| 05f | Evaluation of Lake Superior Water Quality Health | To evaluate impacts to Lake Superior from a changing thermal structure and invasive species in order to implement lake water quality management strategies. | U of MN - Duluth | Erik Brown | $600,000 | $600,000 | $0 | NE |
| 05g | Membranes for Wastewater-Generated Hydrogen and Clean Water | To develop, optimize, and test membranes made of thin film polymers embedded with selected bacteria to generate clean water and energy in the form of hydrogen from wastewater. | U of MN | Paige Novak | $246,000 | $246,000 | $0 | Statewide |
| 05h | Antibiotics in Minnesota Waters - Phase II - Mississippi River | To measure antibiotic concentrations and antibiotic resistance levels and assess the contributions of farm runoff and wastewater treatment in a portion of the Mississippi River. | University of St Thomas | Kristine Wammer | $203,000 | $203,000 | $0 | Central, Metro, SE |
| | | | | **Subd. 05 Water Resources Subtotal =** | **$3,819,000** | **$3,819,000** | **$0** | |
| **Subd. 06 Aquatic and Terrestrial Invasive Species (7 Appropriations - Subtotal = $10,982,000)** | | | | | | | | |
| 06a | An Aquatic Invasive Species Research Center | To develop and support an Aquatic Invasive Species (AIS) research center at the University of Minnesota that will develop new techniques to control aquatic invasive species including Asian carps, zebra mussels, and plant species. | U of MN | Peter Sorensen | $8,700,000 | $4,350,000 | $4,350,000 | Statewide |
| 06b | Detection and Monitoring of Asian Carp Populations | To establish a search and monitoring program directly targeting Asian carp to be used in the development of potential control strategies. | MN DNR | Bradford Parsons | $540,000 | $540,000 | $0 | Statewide |

| Subd. | Title | Summary | Affiliation | Program Manager | Total $ Recommended | FY2014 Trust Fund $ ($33,810,000) | FY2015 Trust Fund $ ($4,350,000) | Region of Impact |
|---|---|---|---|---|---|---|---|---|
| 06c | Improving Emerald Ash Borer Detection Efficacy for Control | To evaluate and implement options for effective detection of the presence of emerald ash borer. | Minnesota Department of Agriculture | Mark Abrahamson | $600,000 | $600,000 | $0 | Metro, SE, Statewide |
| 06d | Elimination of Target Invasive Plant Species | To train volunteers and professionals to find, control, and monitor targeted newly emergent invasive species. | Minnesota Department of Agriculture | Monika Chandler | $350,000 | $350,000 | $0 | Statewide |
| 06e | Biological Control of Garlic Mustard | To continue the implementation of biological control for invasive garlic mustard plants. | MN DNR | Laura Van Riper | $140,000 | $140,000 | $0 | Statewide |
| 06f | Zebra Mussel Control Research and Evaluation in Minnesota Waters | To assess the ecological impacts of a commercially available molluscicide formulation on the reproduction and development of native fish as well as impacts on larval aquatic insect survival and evaluate the effectiveness of these treatment options for detection and control of zebra mussels. | US Geological Survey, Upper Midwest Environmental Sciences Center | Mark Gaikowski | $600,000 | $600,000 | $0 | Statewide |
| 06g | Controlling Terrestrial Invasive Plants with Grazing Animals | To develop cost effective best management practices to control invasive terrestrial species through planned grazing. | Hiawatha Valley Resource Conservation & Development, Inc. | John Beckwith | $52,000 | $52,000 | $0 | SE |
| | | | | **Subd. 06 Aquatic and Terrestrial Invasive Species Subtotal =** | **$10,982,000** | **$6,632,000** | **$4,350,000** | |
| **Subd. 07 Environmental Education (2 Appropriations - Subtotal = $636,000)** | | | | | | | | |
| 07a | Minnesota Conservation Apprentice Academy | To continue a program to train and mentor future conservation professionals by providing apprenticeship service opportunities with soil and water conservation districts. | Board of Water and Soil Resources | Steve Woods | $186,000 | $186,000 | $0 | Statewide |
| 07b | Youth Outdoors: Mississippi River Education and Employment Opportunities | To provide outdoor education, recreation, and youth employment on the Mississippi River from Grand Rapids to St. Cloud, the Twin Cities, Hastings, and Red Wing. | Wilderness Inquiry | Sarah Milligan-Toffler | $450,000 | $450,000 | $0 | Statewide |
| | | | | **Subd. 07 Environmental Education Subtotal =** | **$636,000** | **$636,000** | **$0** | |
| **Subd. 08 Administration and Contract Management (2 Appropriations - Subtotal = $1,125,000)** | | | | | | | | |
| 08a | Legislative-Citizen Commission on Minnesota Resources Administration | For administration in fiscal years 2014 and 2015 as provided in Minnesota Statutes, section 116P.09, subdivision 5. | Legislative-Citizen Commission on Minnesota Resources | Susan Thornton | $990,000 | $990,000 | $0 | Statewide |
| 08b | Contract Management | For expenses incurred for contract agreement reimbursement for the agreements specified in this section. | | N/A | $135,000 | $135,000 | $0 | Statewide |
| | | | | **Subd. 08 Administration and Contract Management Subtotal =** | **$1,125,000** | **$1,125,000** | **$0** | |
| | | | | **Grand Total =** | **$38,160,000** | **$33,810,000** | **$4,350,000** | |

# VI. Revenues and Distributions

*"the source and amount of all revenues collected and distributed by the commission, including all administrative and other expenses;"*

# Dollars Available from the Environment and Natural Resources Trust Fund

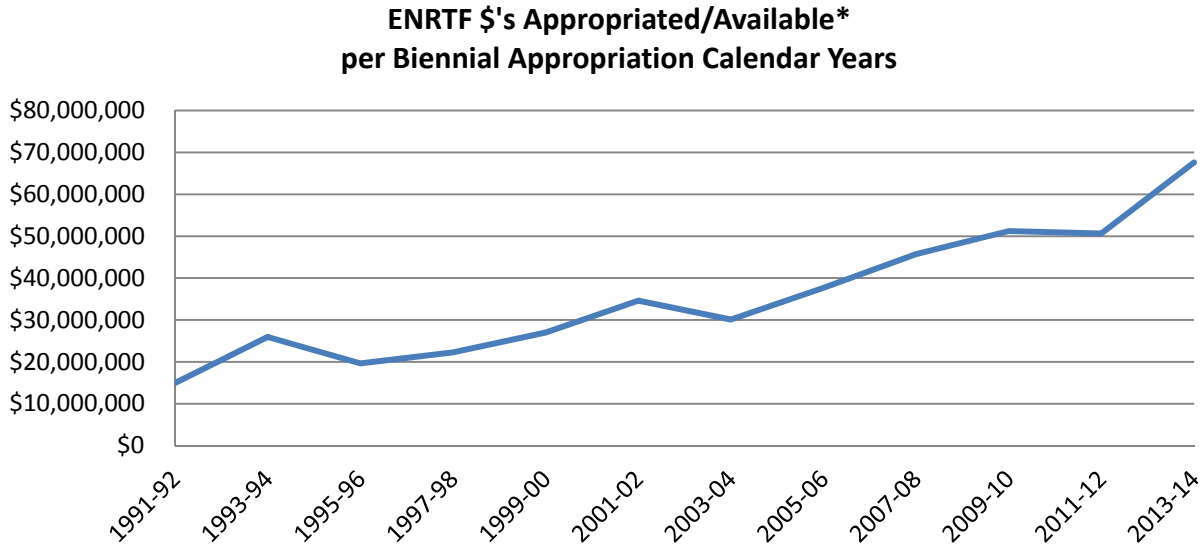
## Total $'s Available for FY 14-15 Recommendations: up to $67,620,000

### Basis

The Minnesota Constitution provides that up to 5.5% of the market value of the Environment and Natural Resources Trust Fund can be utilized for projects each year. This 5.5% value is determined for both years of each fiscal biennium based on the market value of the Trust Fund on June 30 one year prior to the start of the next fiscal biennium. Thus the dollars available for appropriation during fiscal years 2014 (beginning July 1, 2013) and 2015 (beginning July 1, 2014) was determined on June 30, 2012.

| | |
|---|---|
| Value of the Environment and Natural Resources Trust Fund on June 30, 2012 = | $614,736,994.96 |
| 5.5% of value on June 30, 2012 = | $33,810,534.72 |
| **$ Amount to be used for FY 2014-2015 LCCMR recommendations (rounded down to nearest thousandth) =** | **$33,810,000/year** |
| **Total $'s available for recommendation during fiscal 2014-2015 biennium =** | **$67,620,000** |

### History




| Biennial Appropriation Calendar Years | $'s Appropriated/Available* |
|---|---|
| 1991-92 | $ 14,960,000 |
| 1993-94 | $ 25,946,000 |
| 1995-96 | $ 19,649,000 |
| 1997-98 | $ 22,270,000 |
| 1999-00 | $ 27,001,000 |
| 2001-02 | $ 34,620,000 |
| 2003-04 | $ 30,100,000 |
| 2005-06 | $ 37,657,000 |
| 2007-08 | $ 45,732,000 |
| 2009-10 | $ 51,244,000 |
| 2011-12 | $ 50,656,000 |
| 2013-14 | $ 67,620,000 |
| **TOTAL** | **$ 426,847,000** |

*$ amount for all bienniums except 2013-14 reflects the actual dollar amounts appropriated. $ amount for 2013-14 reflects that dollars available to be appropriated.

1. 1991-2006 Biennial appropriations
2. 2007, 2008, 2009, and 2010 Appropriated on an annual basis
3. 2011-2012 Biennial appropriation
4. 2013-2014 Annual appropriations proposed

**Appropriations from Revenue Sources**

| Appropriation Year | | Environment and Natural Resources Trust Fund | Future Resources Fund | Oil Overcharge Money | Land & Water Conservation (LAWCON) | Great Lakes Protection Account | Totals |
|---|---|---|---|---|---|---|---|
| ***LEGISLATIVE COMMISSION ON MINNESOTA RESOURCES (LCMR) - Biennial funding cycle*** | | | | | | | |
| **1991** | | | | | | | |
| *Ch 254 Art. 1 Sec.14* | | 14,960,000 | 16,534,000 | 3,500,000 | | 0 | **34,994,000** |
| **1993** | | | | | | | |
| *Ch 174 Sec. 14* | | 24,600,000 | 14,662,000 | 2,012,000 | | 0 | **41,274,000** |
| **1994** | | | | | | | |
| *Ch 632 Art. 2 Sec. 6* | | 1,346,000 | 1,404,000 | 0 | | 0 | **2,750,000** |
| **1995** | | | | | | | |
| *Ch 229 Sec. 19, 20, 21* | | 17,844,000 | 15,083,000 | 2,055,000 | | 130,000 | **35,112,000** |
| *1st. Sp.Ses., Ch. 2, Sec. 5* | | 175,000 | | | | | **175,000** |
| **1996** | | | | | | | |
| *Ch 407 Sec. 8* | | 1,630,000 | 3,258,000 | 0 | | 0 | **4,888,000** |
| **1997** | | | | | | | |
| *Ch 216 Sec. 15* | | 22,270,000 | 14,668,000 | 150,000 | | 120,000 | **37,208,000** |
| *Ch 246, Sec. 32* | | | 150,000 | | | | **150,000** |
| **1999 *** | (1) | | | | | | |
| *Ch 231, Sec. 16* | | 26,010,000 | 16,040,000 | 0 | | 200,000 | **42,250,000** |
| *Ch 231, Sec. 17* | | 991,000 | | | | | **991,000** |
| **2001** | (2) | | | | | | |
| *1st. Sp.Ses.,Ch. 2, Sec. 14* | | 34,620,000 | 15,385,000 | 180,000 | | 87,000 | **50,272,000** |
| **2002** | | | | | | | |
| *Ch. 220, Art. 8, Sec. 1 & 8* | | 316,000 | 0 | 0 | | 0 | **316,000** |
| **2003** | (3) | 30,100,000 | ~~17,870,000~~ (3) | 519,000 | 2,000,000 (4) | 56,000 | **~~50,545,000~~** |
| *Ch. 128, Art. 1, Sec. 9* | | | 0 | | | | **32,675,000** |
| **2005** | (5) | | | | | | |
| *1st. Sp.Ses.,Ch. 1, Art. 2, Sec. 11* | | 33,560,000 | 0 | 0 | 1,600,000 (4) | 0 | **35,160,000** |
| **2006** | | | | | | | |
| *Ch. 243, Sec. 19 & 20* | | 4,097,000 | 0 | 0 | 0 | 28,000 | **4,125,000** |
| ***LEGISLATIVE-CITIZEN COMMISSION ON MINNESOTA RESOURCES (LCCMR) - Annual funding cycle*** | | | | | | | |
| **2007** | | | | | | | |
| *Ch. 30, Sec. 2* | | 22,866,000 | 0 | 0 | 500,000 (4) | 0 | **23,366,000** |
| **2008** | | | | | | | |
| *Ch.367, Sec. 2* | | 22,866,000 | 0 | 0 | 0 | 86,000 | **22,952,000** |
| **2009** | | | | | | | |
| *Ch.143, Sec. 2* | (6) | 25,622,000 | 0 | 0 | 400,000 | 66,000 | **26,088,000** |
| **2010** | | | | | | | |
| *Ch.362, Sec. 2* | (7) | 25,622,000 | 0 | 0 | 0 | 0 | **25,622,000** |
| **2011 (Biennial)** | | | | | | | |
| *1st. Sp.Ses.,Ch. 2, Art. 3, Sec. 2* | | 50,656,000 | 0 | 0 | 750,000 | 0 | **51,406,000** |
| **2013** | | 33,810,000 | | | | | |
| **2014** | | 33,810,000 | | | | | |
| | | **427,771,000** | **97,184,000** | **8,416,000** | **5,250,000** | **773,000** | **471,774,000** |

NOTES: Does not reflect vetoes below.

(1) 1999 Veto

| | |
|---|---|
| 350,000 | TF |
| 200,000 | TF |
| 1,200,000 | FRF |
| 1,750,000 | |

(2) 2001 Veto

| | |
|---|---|
| 275,000 | FRF |
| 455,000 | TF |
| 730,000 | |

(3) 2003 Future Resource Fund was redirected to the General Fund, not to be recommended by the LCMR per ML 2003, Ch. 128, Art. 1, Sec. 146 & Sec. 155.

(4) Previous to 2003, the LAWCON money was included in the Future Resource Fund appropriation for purposes of this chart.

(5) Note: Does reflect the vetoes
2005 Veto

| | |
|---|---|
| 4,098,000 | TF |
| 28,000 | GLPA |
| 4,126,000 | |

(6) 2009 Veto

| | |
|---|---|
| 275,000 | TF |
| 143,000 | TF |
| 418,000 | |

(7) 2010 Veto

| | |
|---|---|
| 143,000 | TF |

## Appropriations for LCMR and LCCMR Administrative Expenses

Statutory reference MS 116P

The amounts shown here are part of the total appropriation

| | Appropriation Year | Environment & Natural Resources Trust Fund | % of Total Appropriations | Carryforward | Future Resources Fund | Biennium Total |
|---|---|---|---|---|---|---|
| LCMR | 1991 | 0 | 0.00% | | 850,000 | 850,000 |
| LCMR | 1993 | 270,000 | 1.04% | | 425,000 | 695,000 |
| LCMR | 1995 | 394,000 | 2.01% | | 308,000 | 702,000 |
| LCMR | 1997 | 472,000 | 2.12% | | 304,000 | 776,000 |
| LCMR | 1999 | 567,000 | 2.10% | | 333,000 | 900,000 |
| LCMR | 2001 | 738,000 | 2.13% | | 389,000 | 1,127,000 |
| LCMR | 2003 | 672,000 | 2.23% | 172,000 * | 0 ** | 672,000 |
| LCMR | 2005 (annual) | 449,000 | 2.38% | | 0 | 449,000 *** |
| LCCMR | 2006 (annual) | 550,000 | 2.92% | 63,000 **** | 0 | 550,000 |
| LCCMR | 2007 (biennial) | 1,278,000 | 2.79% | | 0 | 1,278,000 |
| LCCMR | 2009 (biennial) | 1,254,000 | 2.48% | | 0 | 1,254,000 |
| LCCMR | 2011 (biennial) | 946,000 | 1.87% | | 0 | 946,000 |
| LCCMR | 2013 Proposed (biennial) | 990,000 | 1.46% | | 0 | 990,000 |
| | **Total** | **8,580,000** | **2.01%** | **235,000** | **2,609,000** | **11,189,000** |

**NOTES:**

- 1991-2003 reflects a biennial appropriation
- 2005 and 2006 are annual appropriations
- The administrative budget from the Trust Fund is capped at 4% of the Trust Fund available each year, M.S. 116P, Subd. 5

* Carryforward from administrative budget appropriation 02-03 (Trust Fund)

** Future Resources Fund was redirected to the General Budget, not to be recommended by the LCMR per ML 2003, Ch. 128, Art. 1, Sec. 146 & Sec. 155.

*** This amount reflects only first year funding. The governor vetoed the second half of the biennium funding of the administrative budget ($450,000).

**** Carryforward from 2005 administrative appropriation for LCMR and the "Citizen Advisory Committee for the Trust Fund"

# VII. Assets & Liabilities

*"a description of the assets and liabilities of the trust fund;"*

The documents include the State Board of Investment
2011 and 2012 Annual Reports.

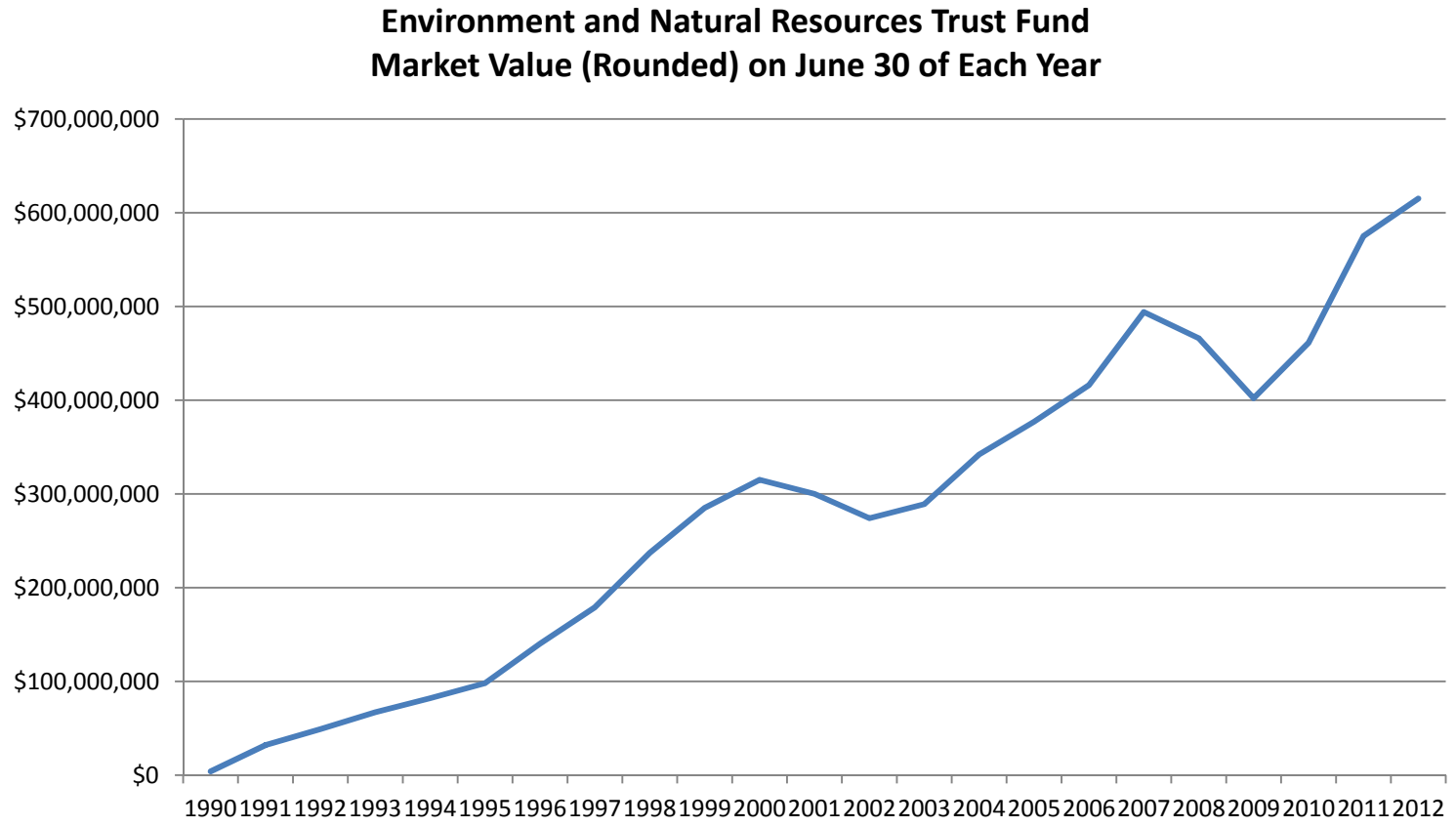
# Historical Market Value of the Environment and Natural Resources Trust Fund

## Background

The assets in the Environment and Natural Resources Trust Fund (ENRTF) originate from a combination of contributions and investment income. Forty percent of the net proceeds from the Minnesota State Lottery, or more than six cents of every dollar spent on playing the lottery, are contributed to the ENTRTF each year; this source of contribution is guaranteed by the Minnesota Constitution through December 31, 2024. The ENRTF may also receive contributions from other sources, such as private donations. Once deposited into the ENRTF, contributions become part of the principal balance and are invested in a combination of stocks and bonds by the State Board of Investment. The income generated from those investments is reinvested back into the Trust Fund.

For FY 1992-1999, investment earnings of the ENRTF and up to 25% of the Minnesota Lottery's annual contributions to the ENRTF were available for appropriation each year. A constitutional amendment in 1998 altered this rule so that beginning in FY 2000, through the present, up to 5.5% of the ENRTF's market value (determined by the market value of the ENRTF on June 30 one year before the start of a biennium) is available for appropriation each year.

## History




| ENRTF Market Value (Rounded) on June 30 of each year | |
|---|---|
| 1990 | $4,000,000 |
| 1991 | $32,000,000 |
| 1992 | $49,000,000 |
| 1993 | $67,000,000 |
| 1994 | $82,000,000 |
| 1995 | $98,000,000 |
| 1996 | $140,000,000 |
| 1997 | $179,000,000 |
| 1998 | $237,000,000 |
| 1999 | $285,000,000 |
| 2000 | $315,000,000 |
| 2001 | $300,000,000 |
| 2002 | $274,000,000 |
| 2003 | $289,000,000 |
| 2004 | $342,000,000 |
| 2005 | $377,000,000 |
| 2006 | $416,000,000 |
| 2007 | $494,000,000 |
| 2008 | $466,000,000 |
| 2009 | $402,000,000 |
| 2010 | $461,000,000 |
| 2011 | $575,000,000 |
| 2012 | $615,000,000 |

# Minnesota State Board of Investment

## 2011 Annual Report

**Minnesota**
**State Board**
**of Investment**
60 Empire Drive
Suite 355
St. Paul, MN 55103

Phone: 651-296-3328
Fax: 651-296-9572
E-mail: minn.sbi@state.mn.us
Website: www.sbi.state.mn.us

# Environmental Trust Fund

*The Environmental Trust Fund was established in 1988 by the Minnesota Legislature to provide a long-term, consistent and stable source of funding for activities that protect and enhance the environment. On June 30, 2011, the market value of the Fund was $575 million.*

By statute, the State Board of Investment invests the assets of the Environmental Trust Fund. The Legislature funds environmental projects from a portion of the market value of the Fund.

## Investment Objective

The Environmental Trust Fund's investment objective is long-term growth in order to produce a growing level of spending within the constraints of maintaining adequate portfolio quality and liquidity.

A constitutional amendment passed in November 1998 continues the mandate that 40 percent of the net proceeds from the state lottery be credited to the Fund through 2025.

The amendment provides for spending 5.5 percent of the Fund's market value annually. The amendment eliminated accounting restrictions on capital gains and losses and the provision that the principal must remain inviolate.

## Asset Allocation

After the constitutional amendment was adopted in November 1998, SBI staff worked with the Legislative Citizen Commission on Minnesota Resources to establish an asset allocation policy that is consistent with the Commission's goals for spending and growth of the Fund. The allocation positions the Fund for the best long-term growth potential while meeting the objective of the Fund to produce a growing level of spending.

The current long term asset allocation targets for the Fund are:

| | |
|---|---|
| Domestic Stocks | 70% |
| Domestic Bonds | 28 |
| Cash | 2 |

Figure 35 presents the actual asset mix of the Fund at the end of fiscal year 2011.

## Investment Management

SBI staff internally manages all assets of the Environmental Trust Fund. The SBI staff is considered to be the most cost effective at this time.

*Stock Segment*
The stock segment of the Fund is passively managed to track the performance of the S&P 500.

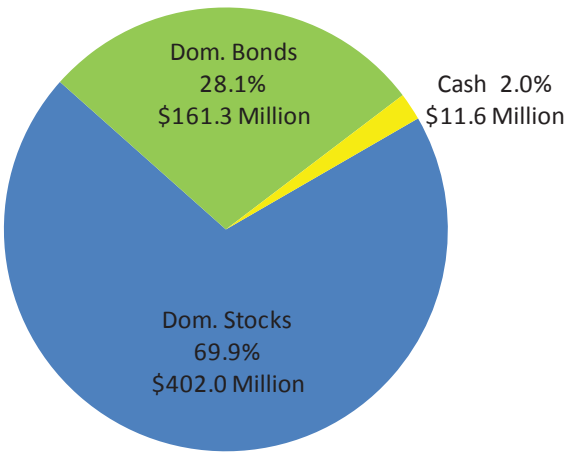
*Bond Segment*
The bond segment is actively managed to add incremental value through sector, security and yield curve decisions, and its performance is measured against the Barclays Capital Aggregate Bond Index.

## Investment Performance

During the fiscal year, the ***stock*** segment had a positive tracking error of 0.1 percentage point when compared to the benchmark, the S&P 500.

The ***bond*** segment outperformed its benchmark by 0.4 percentage points during the fiscal year;

Figure 35. Environmental Trust Fund Asset Mix as of June 30, 2011



# Environmental Trust Fund

primarily due to an overweight to mortgage backed securities and corporate securities.

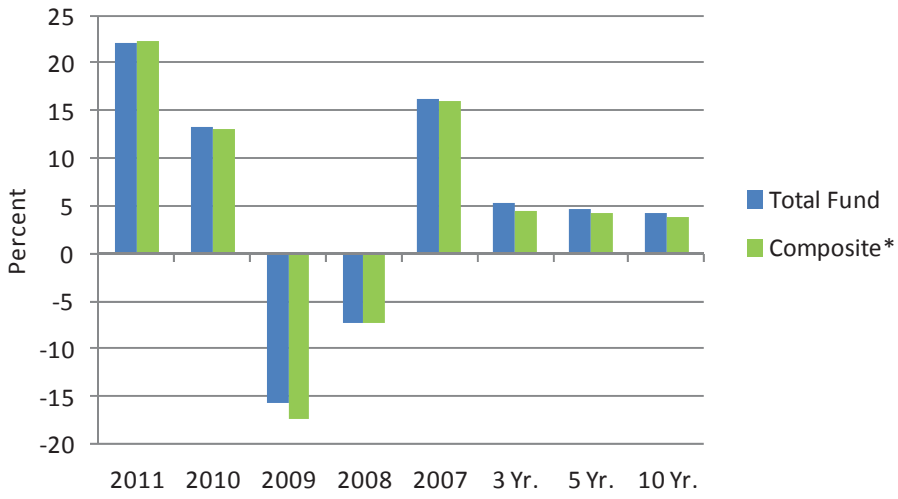
***Overall,*** the Environmental Trust Fund provided a return of 22.1% for fiscal year 2011, but underperformed its composite index by 0.1 percentage point. The Fund outperformed its composite index over the last three, five and ten years due to the incremental value added by both the stock and bond segments.

Performance results are presented in Figure 36.

Spendable income generated by the Fund over the last five fiscal years is shown below:

| Fiscal Year | Millions |
|---|---|
| 2007 | $19 |
| 2008 | $23 |
| 2009 | $23 |
| 2010 | $26 |
| 2011 | $26 |

Figure 36. Environmental Trust Fund Performance For Period Ending June 30, 2011




| | 2011 | 2010 | 2009 | 2008 | 2007 | 3 Yr. | 5 Yr. | 10 Yr. |
|---|---|---|---|---|---|---|---|---|
| S&P 500 | 30.7 | 14.4 | -26.2 | -13.1 | 20.6 | 3.3 | 2.9 | 2.7 |
| **Bond Segment** | **4.3** | **9.7** | **8.3** | **7.0** | **6.2** | **7.4** | **7.1** | **6.3** |
| Barclays Agg. | 3.9 | 9.5 | 6.0 | 7.1 | 6.1 | 6.5 | 6.5 | 5.7 |

* Weighted 70% S&P 500/ 28% Barclays Capital Aggregate/ and 2% 3 month T-Bill.

# Minnesota State Board of Investment

## 2012 Annual Report

**Minnesota**
**State Board**
**of Investment**
60 Empire Drive
Suite 355
St. Paul, MN 55103

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# Environmental Trust Fund

*The Environmental Trust Fund was established in 1988 by the Minnesota Legislature to provide a long-term, consistent and stable source of funding for activities that protect and enhance the environment. On June 30, 2012, the market value of the Fund was $615 million.*

By statute, the State Board of Investment invests the assets of the Environmental Trust Fund. The Legislature funds environmental projects from a portion of the market value of the Fund.

## Investment Objective

The Environmental Trust Fund's investment objective is long-term growth in order to produce a growing level of spending within the constraints of maintaining adequate portfolio quality and liquidity.

A constitutional amendment passed in November 1998 continues the mandate that 40 percent of the net proceeds from the state lottery be credited to the Fund through 2025.

The amendment provides for spending 5.5 percent of the Fund's market value annually. The amendment eliminated accounting restrictions on capital gains and losses and the provision that the principal must remain inviolate.

## Asset Allocation

After the constitutional amendment was adopted in November 1998, SBI staff worked with the Legislative Citizen Commission on Minnesota Resources to establish an asset allocation policy that is consistent with the Commission's goals for spending and growth of the Fund. The allocation positions the Fund for the best long-term growth potential while meeting the objective of the Fund to produce a growing level of spending.

The current long term asset allocation targets for the Fund are:

| | |
|---|---|
| Domestic Stocks | 70% |
| Domestic Bonds | 28 |
| Cash | 2 |

Figure 36 presents the actual asset mix of the Fund at the end of fiscal year 2012.

## Investment Management

SBI staff internally manages all assets of the Environmental Trust Fund. The SBI staff is considered to be the most cost effective at this time.

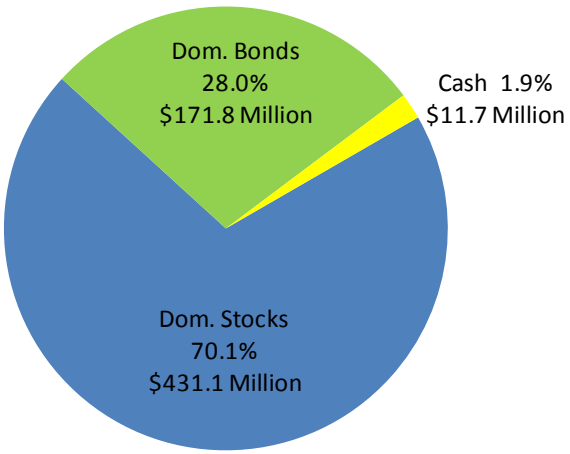
*Stock Segment*
The stock segment of the Fund is passively managed to track the performance of the S&P 500.

*Bond Segment*
The bond segment is actively managed to add incremental value through sector, security and yield curve decisions, and its performance is measured against the Barclays Capital Aggregate Bond Index.

## Investment Performance

During the fiscal year, the ***stock*** segment had a positive tracking error of 0.1 percentage point compared to the benchmark, the S&P 500.

Figure 36. Environmental Trust Fund Asset Mix as of June 30, 2012



# Environmental Trust Fund

The ***bond*** segment underperformed its benchmark by 1.0 percentage point during the fiscal year, primarily due to a short duration position compared to the benchmark.

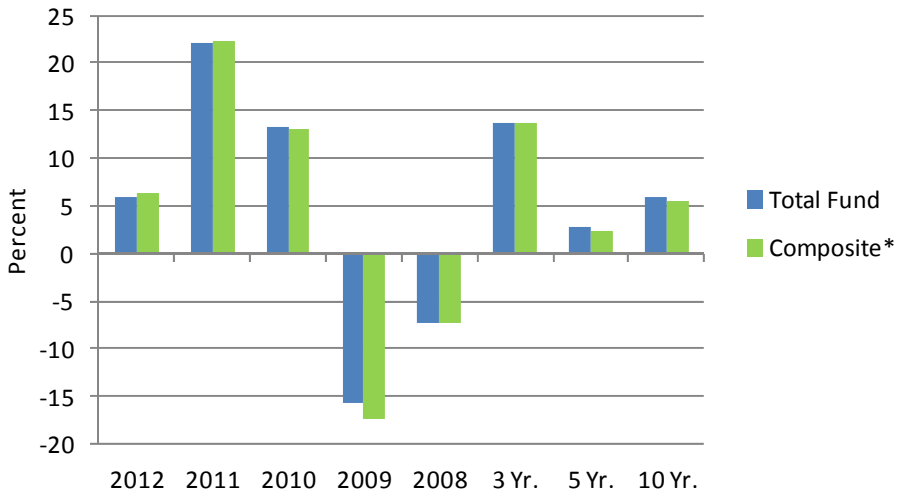
***Overall,*** the Environmental Trust Fund provided a return of 6.0% for fiscal year 2012, but underperformed its composite index by 0.3 percentage point. The Fund outperformed its composite index over the most recent five and ten years due to the incremental value added by both the stock and bond segments.

Performance results are presented in Figure 37.

Spendable income generated by the Fund over the last five fiscal years is shown below:

| Fiscal Year | Millions |
|---|---|
| 2008 | $23 |
| 2009 | $23 |
| 2010 | $26 |
| 2011 | $26 |
| 2012 | $25 |

Figure 37. Environmental Trust Fund Performance For Period Ending June 30, 2012




| | | | | | | Annualized | | |
|---|---|---|---|---|---|---|---|---|
| | **2012** | **2011** | **2010** | **2009** | **2008** | **3 Yr.** | **5 Yr.** | **10 Yr.** |
| **Total Fund** | **6.0%** | **22.1%** | **13.2%** | **-15.6%** | **-7.2%** | **13.6%** | **2.8%** | **6.0%** |
| Composite* | 6.3 | 22.2 | 13.1 | -17.4 | -7.3 | 13.7 | 2.4 | 5.6 |
| **Stock Segment** | **5.5** | **30.8** | **14.2** | **-25.8** | **-13.1** | **16.4** | **0.3** | **5.5** |
| S&P 500 | 5.4 | 30.7 | 14.4 | -26.2 | -13.1 | 16.4 | 0.2 | 5.3 |
| **Bond Segment** | **6.5** | **4.3** | **9.7** | **8.3** | **7.0** | **6.8** | **7.1** | **6.2** |
| Barclays Agg. | 7.5 | 3.9 | 9.5 | 6.0 | 7.1 | 6.9 | 6.8 | 5.6 |

* Weighted 70% S&P 500/ 28% Barclays Capital Aggregate/ and 2% 3 month T-Bill.

# VIII. Findings

*"any findings or recommendations that are deemed proper to assist the legislature in formulating legislation;"*

No findings.

# IX. Gifts and Donations

*"a list of all gifts and donations with a value over $1,000;"*

No gifts or donations were received.

# X. Environmental Spending Comparisons

*"a comparison of the amounts spent by the state for environment and natural resources activities through the most recent fiscal year;"*

The following document is from A Fiscal Review of the 2011 Legislative Session prepared by Minnesota State Senate Office of Senate Counsel, Research, and Fiscal Analysis.

# A Fiscal Review of the

# 2011 Legislative Session

# A

# Fiscal Review

# of the

# 2011 Legislative Session

**Prepared by**
**Minnesota State Senate**
**Office of Senate Counsel, Research, and Fiscal Analysis**
**G-17 State Capitol**
**75 Rev. Dr. Martin Luther King, Jr. Blvd.**
**St. Paul, MN 55155-1606**

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# ENVIRONMENT, ENERGY, AND COMMERCE

Total appropriations for the Environment, Energy, and Natural Resources budget area are $1.945 billion for FY 2012-2013, a 9.1 percent decrease compared to the FY 2010-2011 biennium. The decrease is due mainly to a decrease in General Fund appropriations of $59.3 million, and decrease of funds from the federal economic stimulus package ($113 million less than the previous biennium). As part of the overall budget reductions to help meet the projected General Fund budget shortfall, appropriations were reduced by $40.8 million, or 13.9 percent compared to the base budget. Compared to the prior biennium, General Fund appropriations for the budget area decreased by just over 19 percent.

**Table 1**
**Environment, Energy & Natural Resources**
**All Funds Biennial Spending by Agency & Fund**
*(dollars in thousands)*

| Agency | FY 2010-11 Spending* | FY 2012-13 Forecast Base | FY 2012-13 Enacted Budget | Change: Enacted - FY 2010-11 | Change: Enacted - Fcst. Base |
|---|---|---|---|---|---|
| **Pollution Control Agency** | | | | | |
| General Fund | 18,319 | 17,016 | 10,138 | (8,181) | (6,878) |
| General Fund Transfers Out | (14) | | | 14 | |
| State Govt. Special Revenue Fund | 100 | 100 | 154 | 54 | 54 |
| Special Revenue Fund | 44,636 | 43,513 | 43,513 | (1,123) | |
| Environmental Fund | 125,129 | 124,026 | 127,260 | 2,131 | 3,234 |
| Remediation Fund | 81,409 | 58,188 | 62,346 | (19,063) | 4,158 |
| Gift Fund | 2,780 | | | (2,780) | |
| Federal Funds | 60,223 | 53,335 | 53,335 | (6,888) | |
| Subtotal for PCA: | 332,582 | 296,178 | 296,746 | (35,836) | 568 |
| *Dedicated/Constitutional Funds* | | | | | |
| Environment & Natural Resources Trust Fund | 811 | | | (811) | |
| Clean Water Fund | 47,105 | | 47,770 | 665 | 47,770 |
| *Subtotal Dedicated/Const. Funds:* | *47,916* | | *47,770* | *(146)* | *47,770* |
| **Total Pollution Control Agency** | **380,498** | **296,178** | **344,516** | **(35,982)** | **48,338** |
| **Department of Natural Resources** | | | | | |
| General Fund | 183,377 | 174,443 | 144,434 | (38,943) | (30,009) |
| General Fund Transfers Out | (43) | | | 43 | |
| Natural Resources Fund | 161,635 | 160,977 | 183,110 | 21,475 | 22,133 |
| Game and Fish Fund | 199,588 | 195,057 | 199,270 | (318) | 4,213 |
| Special Revenue Fund | 53,771 | 48,673 | 48,673 | (5,098) | |
| Permanent School Fund | 475 | 408 | 408 | (67) | |

| Agency | FY 2010-11 Spending* | FY 2012-13 Forecast Base | FY 2012-13 Enacted Budget | Change: Enacted - FY 2010-11 | Change: Enacted - Fcst. Base |
|---|---|---|---|---|---|
| Remediation Fund | 1,371 | 962 | 962 | (409) | |
| Gift Fund | 3,255 | 3,196 | 3,196 | (59) | |
| Federal Funds | 52,131 | 57,289 | 60,954 | 8,823 | 3,665 |
| Subtotal for DNR: | 655,560 | 641,005 | 641,007 | (14,553) | 2 |
| *Dedicated/Constitutional Funds* | | | | | |
| Minnesota Resources Fund | 133 | | | (133) | |
| Environment & Natural Resources Trust Fund | 38,664 | | 38,853 | 189 | 38,853 |
| Outdoor Heritage Fund | 126,462 | | 70,576 | (55,886) | 70,576 |
| Clean Water Fund | 18,385 | | 20,720 | 2,335 | 20,720 |
| Parks & Trails Fund | 36,901 | | 46,233 | 9,332 | 46,233 |
| *Subtotal Dedicated/Const. Funds:* | *220,545* | | *176,382* | *(44,163)* | *176,382* |
| **Total Department of Natural Resources** | **876,105** | **641,005** | **817,389** | **(58,716)** | **176,384** |
| **Met Council - Regional Parks** | | | | | |
| General Fund | 7,208 | 7,140 | 5,740 | (1,468) | (1,400) |
| Natural Resources Fund | 10,440 | 10,740 | 11,340 | 900 | 600 |
| Subtotal for Metro Parks: | 17,648 | 17,880 | 17,080 | (568) | (800) |
| *Dedicated/Constitutional Funds* | | | | | |
| Env & Natural Resources Trust Fund | 1,290 | | 2,250 | 960 | 2,250 |
| Clean Water Fund | 800 | | 1,000 | 200 | 1,000 |
| Parks & Trails Fund | 27,781 | | 31,904 | 4,123 | 31,904 |
| *Subtotal Dedicated/Const. Funds:* | *29,871* | | *35,154* | *5,283* | *35,154* |
| **Total Met Council - Regional Parks** | **47,519** | **17,880** | **52,234** | **4,715** | **34,354** |
| **Minnesota Conservation Corps** | | | | | |
| General Fund | 910 | 910 | 612 | (298) | (298) |
| Natural Resources Fund | 980 | 980 | 980 | | |
| **Total MN Conservation Corps** | **1,890** | **1,890** | **1,592** | **(298)** | **(298)** |
| **Board of Water & Soil Resources** | | | | | |
| General Fund | 32,832 | 27,960 | 25,124 | (7,708) | (2,836) |
| Special Revenue Fund | 13,176 | 13,714 | 13,714 | 538 | |
| Federal Funds | 4,946 | 1,168 | 1,168 | (3,778) | |
| Subtotal for BWSR: | 50,954 | 42,842 | 40,006 | (10,948) | (2,836) |
| *Dedicated/Constitutional Funds* | | | | | |

| Agency | FY 2010-11 Spending* | FY 2012-13 Forecast Base | FY 2012-13 Enacted Budget | Change: Enacted - FY 2010-11 | Change: Enacted - Fcst. Base |
|---|---|---|---|---|---|
| Environment & Natural Resources Trust Fund | 6,116 | | 3,857 | (2,259) | 3,857 |
| Outdoor Heritage Fund | 15,953 | | 15,249 | (704) | 15,249 |
| Clean Water Fund | 39,322 | | 55,068 | 15,746 | 55,068 |
| *Subtotal Dedicated/Const. Funds:* | *61,391* | | *74,174* | *12,783* | *74,174* |
| **Total Board of Water & Soil Resources** | **112,345** | **42,842** | **114,180** | **1,835** | **71,338** |
| **Minnesota Zoo** | | | | | |
| General Fund | 12,674 | 12,462 | 10,862 | (1,812) | (1,600) |
| Natural Resources Fund | 320 | 320 | 320 | | |
| Special Revenue Fund | 26,626 | 28,248 | 28,814 | 2,188 | 566 |
| Gift Fund | 4,768 | 4,512 | 4,512 | (256) | |
| Subtotal for MN Zoo: | 44,388 | 45,542 | 44,508 | 120 | (1,034) |
| *Dedicated/Constitutional Funds* | | | | | |
| Arts & Cultural Heritage Fund | 264 | | 3,000 | 2,736 | 3,000 |
| *Subtotal Dedicated/Const. Funds:* | *264* | | *3,000* | *2,736* | *3,000* |
| **Total Minnesota Zoo** | **44,652** | **45,542** | **47,508** | **2,856** | **1,966** |
| Legis.-Citizen Comm. on MN Resources | | | | | |
| Environment & Natural Resources Trust Fund | 1,254 | 1,254 | 949 | (305) | (305) |
| Total LCCMR | 1,254 | 1,254 | 949 | (305) | (305) |
| **Department of Commerce** | | | | | |
| General Fund | 45,832 | 42,668 | 43,430 | (2,402) | 762 |
| General Fund Transfers Out | (71) | | | 71 | |
| State Govt. Special Revenue Fund | 232 | | | | |
| Special Revenue Fund | 62,921 | 62,890 | 62,890 | (31) | |
| Petroleum Tank Release Cleanup Fund | 20,338 | 16,388 | 24,776 | 4,438 | 8,388 |
| Workers' Compensation Special Fund | 1,502 | 1,502 | 1,502 | | |
| Federal Funds | 528,766 | 418,028 | 418,028 | (110,738) | |
| Subtotal for Dept of Commerce: | 659,520 | 541,476 | 550,626 | (108,662) | 9,150 |
| *Dedicated/Constitutional Funds* | | | | | |
| Environment & Natural Resources Trust Fund | 2,270 | | | 2,270) | |
| *Subtotal Dedicated/Const. Funds:* | *2,270* | | | *(2,270)* | |
| **Total Dept. of Commerce** | **661,790** | **541,476** | **550,626** | **(110,932)** | **9,150** |
| **Public Utilities Comm.** | | | | | |

| Agency | FY 2010-11 Spending* | FY 2012-13 Forecast Base | FY 2012-13 Enacted Budget | Change: Enacted - FY 2010-11 | Change: Enacted - Fcst. Base |
|---|---|---|---|---|---|
| General Fund | 10,866 | 10,864 | 12,364 | 1,498 | 1,500 |
| Special Revenue Fund | 3,499 | 3,791 | 3,791 | 292 | |
| Federal Funds | 627 | 256 | 256 | (371) | |
| **Total Public Utilities Commission** | **14,992** | **14,911** | **16,411** | **1,419** | **1,500** |
| **Totals by Fund** | | | | | |
| General Fund | 312,018 | 293,463 | 252,704 | (59,314) | (40,759) |
| General Fund Transfers Out | (128) | | | 128 | |
| State Govt. Special Revenue Fund | 332 | 100 | 154 | (178) | 54 |
| Special Revenue Fund | 204,629 | 200,829 | 201,395 | (3,234) | 566 |
| Environmental Fund | 125,129 | 124,026 | 127,260 | 2,131 | 3,234 |
| Remediation Fund | 82,780 | 59,150 | 63,308 | (19,472) | 4,158 |
| Natural Resources Fund | 173,375 | 173,017 | 195,750 | 22,375 | 22,733 |
| Game and Fish Fund | 199,588 | 195,057 | 199,270 | (318) | 4,213 |
| Gift Fund | 10,803 | 7,708 | 7,708 | (3,095) | |
| Permanent School Fund | 475 | 408 | 408 | (67) | |
| Petroleum Tank Release Cleanup Fund | 20,338 | 16,388 | 24,776 | 4,438 | 8,388 |
| Workers' Compensation Special Fund | 1,502 | 1,502 | 1,502 | | |
| Federal Funds | 646,693 | 530,076 | 533,741 | (112,952) | 3,665 |
| Subtotal for Regular Funds: | 1,777,534 | 1,601,724 | 1,607,976 | (169,558) | 6,252 |
| *Dedicated/Constitutional Funds* | | | | | |
| Minnesota Resources Fund | 133 | | | (133) | |
| Environment & Natural Resources Trust Fund | 50,405 | 1,254 | 45,909 | (4,496) | 44,655 |
| Outdoor Heritage Fund | 142,415 | | 85,825 | (56,590) | 85,825 |
| Clean Water Fund | 105,612 | | 124,558 | 18,946 | 124,558 |
| Parks & Trails Fund | 64,682 | | 78,137 | 13,455 | 78,137 |
| Arts & Cultural Heritage Fund | 264 | | 3,000 | 2,736 | 3,000 |
| *Subtotal Dedicated/Const. Funds:* | *363,511* | *1,254* | *337,429* | *(26,082)* | *336,175* |
| **Total for Budget Area** | **2,141,045** | **1,602,978** | **1,945,405** | **(195,640)** | **342,427** |

* As adjusted by FY 2011 changes made by the 2011 Legislature.

**Table 2**
**Environment, Energy & Natural Resources**
**General Fund Changes Compared to Forecast**
*(dollars in thousands)*

| Change Item | FY 2011 | FY 2012 | FY 2013 | FY 2012-13 | FY 2014 | FY 2015 | FY 2014-15 |
|---|---|---|---|---|---|---|---|
| **Pollution Control Agency** | | | | | | | |
| Clean Water Partnership Grants | | (1,767) | (1,767) | (3,534) | (1,767) | (1,767) | (3,534) |
| Other Water Programs | | (664) | (664) | (1,328) | (664) | (664) | (1,328) |
| Env. Health & Biomonitoring | | (167) | (167) | (334) | (435) | (435) | (870) |
| Administrative Reduction | | (841) | (841) | (1,682) | (841) | (841) | (1,682) |
| **Pollution Control Agency Total** | | **(3,439)** | **(3,439)** | **(6,878)** | **(3,707)** | **(3,707)** | **(7,414)** |
| **Department of Natural Resources** | | | | | | | |
| Lands & Minerals Management | | (271) | (271) | (542) | (271) | (271) | (542) |
| Ecological & Water Management | | (2,425) | (2,425) | (4,850) | (2,425) | (2,425) | (4,850) |
| Forest Management | | (3,257) | (3,257) | (6,514) | (3,257) | (3,257) | (6,514) |
| Parks & Trails | | (3,150) | (3,150) | (6,300) | (3,150) | (3,150) | (6,300) |
| Fish & Wildlife | | (63) | (63) | (126) | (63) | (63) | (126) |
| Operations Support/Admin. | | (641) | (641) | (1,282) | (641) | (641) | (1,282) |
| Subtotal Spending Changes | | (9,807) | (9,807) | (19,614) | (9,807) | (9,807) | (19,614) |
| Transfer Dedicated Fees out of General Fund | | (5,195) | (5,200) | (10,395) | (5,195) | (5,200) | (10,395) |
| **Department of Natural Resources Total** | | **(15,002)** | **(15,007)** | **(30,009)** | **(15,002)** | **(15,007)** | **(30,009)** |
| **Met Council - Regional Parks** | | | | | | | |
| Operations Reduction | | (700) | (700) | (1,400) | (700) | (700) | (1,400) |
| **Minnesota Conservation Corps** | | | | | | | |
| General Fund Phase Out | | (99) | (199) | (298) | (455) | (455) | (910) |
| **Board of Water & Soil Resources** | | | | | | | |
| Grant Programs | | (950) | (950) | (1,900) | (950) | (950) | (1,900) |
| Pass thru/Other Boards | | (226) | (226) | (452) | (226) | (226) | (452) |
| Operations Support/Admin. | | (242) | (242) | (484) | (242) | (242) | (484) |
| **Board of Water & Soil Resources Total** | | **(1,418)** | **(1,418)** | **(2,836)** | **(1,418)** | **(1,418)** | **(2,836)** |
| **Minnesota Zoo** | | | | | | | |
| Operations Reduction | | (800) | (800) | (1,600) | (800) | (800) | (1,600) |
| **Department of Commerce** | | | | | | | |
| Operations Reduction | | (520) | (520) | (1,040) | (520) | (520) | (1,040) |
| Additional Financial Examiners | | 350 | 350 | 700 | 350 | 350 | 700 |
| Unclaimed Property Compliance | | 375 | 375 | 750 | 375 | 375 | 750 |
| Energy Compliance & Regulation | (700) | 176 | 176 | 352 | 176 | 176 | 352 |
| **Department of Commerce Total** | **(700)** | **381** | **381** | **762** | **381** | **381** | **762** |
| **Public Utilities Commission** | | | | | | | |
| Energy Compliance & Regulation | | 750 | 750 | 1,500 | 750 | 750 | 1,500 |

| Change Item | FY 2011 | FY 2012 | FY 2013 | FY 2012-13 | FY 2014 | FY 2015 | FY 2014-15 |
|---|---|---|---|---|---|---|---|
| **Total Spending Changes** | **(700)** | **(20,327)** | **(20,432)** | **(40,759)** | **(20,951)** | **(20,956)** | **(41,907)** |
| **Department of Natural Resources** | | | | | | | |
| Transfer Dedicated Fees out of General Fund | | (5,195) | (5,200) | (10,395) | (5,195) | (5,200) | (10,395) |
| **Department of Commerce** | | | | 18,898 | | | |
| Transfer from Assigned Risk Plan | | 13,742 | | 13,742 | | | |
| Transfer from other Special Funds | | 1,836 | 3,320 | 5,156 | | | |
| Assessments for Additional Staff | | 526 | 526 | 1,052 | 526 | 526 | 1,052 |
| Unclaimed Property Compliance | | 1,125 | 1,875 | 3,000 | 1,219 | 1,219 | 2,438 |
| **Department of Commerce Total** | | **17,229** | **5,721** | **22,950** | **1,745** | **1,745** | **3,490** |
| **Public Utilities Commission** | | | | | | | |
| Assessments for Additional Staff | | 750 | 750 | 1,500 | 750 | 750 | 1,500 |
| **Total Revenue Changes** | | **12,784** | **1,271** | **14,055** | **(2,700)** | **(2,705)** | **(5,405)** |
| **Net Changes (if different from total spending)** | **(700)** | **(33,111)** | **(21,703)** | **(54,814)** | **(18,251)** | **(18,251)** | **(36,502)** |

**Pollution Control Agency**

The total FY 2012-2013 budget for the Pollution Control Agency (PCA) is $344.5 million, which is a $35.8 million (9.5 percent) decrease compared to the previous biennium, but is also $48.3 million higher than the forecast base. The increase compared to the forecast base is due to appropriations from the constitutionally-dedicated Clean Water fund, which were not part of the forecasted base budget.

The 2011 Legislature continued the trend over the past couple of biennia by shifting more of the agency's operating budget from the General Fund to the Environmental Fund. The PCA's regular operating budget in the FY 2004-2005 biennium ($297 million) was similar to the enacted operating budget for FY 2012-13 ($296.7 million). However, the General Fund portion of the agency's budget has shrunk from 18 percent of the agency's budget, down to 3.4 percent. Currently, almost half of the agency's budget comes from the Environmental Fund, which is funded mostly by a portion of the state's solid waste tax, agency fees, and other dedicated revenues.

In 2011 First Special Session Chapter 2, the General Fund reductions compared to the base budget were $6.9 million, resulting in a 40 percent General Fund reduction. The bulk of the General Fund reduction was to clean water-related programs.

The PCA's level of funding from the constitutionally-dedicated (Legacy) funds stayed almost the same from the previous biennium at $47.8 million from the Clean Water Fund.

**Department of Natural Resources**
The total FY 2012-2013 budget for the Department of Natural Resources (DNR) is $817.4 million, which is a 6.7 percent decrease compared to the previous biennium, but $176.4 million over the forecast base. The increase compared to the forecast base is mostly due to appropriations from the constitutionally-dedicated funds (Outdoor Heritage Fund, Clean Water Fund, and Parks and Trails Fund), which were not part of the forecasted base budget. There were also increased appropriations from the Natural Resources Fund and the Game and Fish Fund.

In First Special Session Chapter 2, the Legislature reduced General Fund appropriations to the DNR within all program areas for a total of just over $30 million. However, $10.3 million of this was offset by moving some dedicated water fees and campground fees from the General Fund to the Natural Resources Fund. After adjusting for the shift of fees and expenditures from the General Fund to the Natural Resources Fund, the net reduction in General Fund appropriations was 11.2 percent, or $19.6 million. The major General Fund reductions were to: Ecological and Water Management ($4.9 million, a 15 percent reduction), Forestry Management ($6.5 million, or a 9.2 percent reduction), and Parks and Trails ($6.3 million, a 15.4 percent reduction).

Additional onetime Environment and Natural Resources Trust Fund appropriations of $3.6 million were provided for state parks operations and improvement activities to help offset the General Fund reduction. The Legislature also appropriated $5.6 million from the Trust Fund for efforts to control and prevent the spread of aquatic invasive species.

New spending from the Natural Resources Fund include: $4.3 million increase from various parks and trails-related user accounts; $5.0 million increase from the forestry management account; and $1.3 million increase to enforcement from various dedicated accounts.

Game and Fish Fund changes include: $2.0 million for enforcement efforts to prevent the spread of invasive species; and $2.0 million for the mapping of native plant species in state forests.

**Metropolitan Council – Regional Parks**
The total budget for the Metropolitan Council – Regional Parks is $52.2 million, which is a $4.7 million increase over the previous biennium. The Metropolitan Council – Regional Parks' FY 2012-2013 budget is $34.3 million over the forecast base, which is due mostly to appropriations from the constitutionally-dedicated Parks and Trails Fund, which were not part of the forecasted base budget. The Metropolitan Council – Regional Parks' General Fund reduction of $1.5 million is a 20 percent reduction to its General Fund forecast base budget.

**Minnesota Conservation Corps**
The total FY 2012-2013 budget for the Minnesota Conservation Corps (MCC) is $1.6 million, which is a $298,000, or 15.8 percent, reduction from the forecast base. The MCC's General Fund appropriation is set to be phased out after the FY 2012-2013 biennium.

**Board of Water and Soil Resources**
The total FY 2012-2013 budget for the Board of Water and Soil Resources (BWSR) is $114.1 million, which is $71.3 million higher than forecast (and $1.8 million higher than the FY 2010-11 biennium, 1.6 percent). Despite BWSR's General Fund reduction of $2.8 million, the increase compared to the forecast base is due to appropriations from the constitutionally-dedicated funds (Outdoor Heritage Fund and Clean Water Fund) and from the Environment and Natural Resources Trust Fund, which were not part of the forecast base budget.

In First Special Session Chapter 2, the Legislature reduced total General Fund appropriations by $2.8 million. Of this amount, $1.9 million was reduced from local grant programs. The remaining amount was reduced from operations ($484,000) and local board grants ($452,000).

**Minnesota Zoo**
The total FY 2012-2013 budget for the Minnesota Zoo is $47.5 million, which is $2.0 million higher than forecast, and also a $2.9 million (6.4 percent) increase from the previous biennium. While the Zoo's General Fund budget was reduced by $1.6 million compared to the forecast base, the Zoo's appropriation from the Arts and Cultural Heritage Fund increased from $264,000 in FY 2010-2011 to $3.0 million in FY 2012-2013.

**Public Utilities Commission**
Total FY 2012-2013 appropriations for the Public Utilities Commission (PUC) increased by $1.5 million (10.1 percent) compared to the base, and also $1.4 million (9.5 percent) over the previous biennium. The increase is due to additional full-time employees (costing $750,000 per year) for expediting regulatory decisions. The PUC is authorized to recover their operation costs through assessments on utility companies.

**Department of Commerce**
The total budget for the Department of Commerce for the FY 2012-2013 biennium is $550.6 million, of which $418.0 million is mostly energy-related federal funds. Total funding for Commerce increased by $9.2 million compared to the forecast, but was also $110.9 million lower than the prior biennium. Federal funds decreased from the previous biennium by $110.7 million due to onetime stimulus funds in FY 2010-11. Net General Fund spending increased slightly (1.8 percent) over the base budget. However, there were reductions to agency operations of just over $1 million for the FY 2012-2013 biennium. These were offset by increases for additional bank examiners and additional employees for energy compliance and regulation. The Legislature also appropriated an additional $375,000 per year so that the Department of Commerce could recover an expected additional $3 million to the General Fund for the biennium through unclaimed property compliance.

First Special Session Chapter 2 included $18.9 million of onetime transfers and cancellations from Special Revenue Funds to the General Fund to help offset the overall budget deficit.

| Transfers from Special Revenue Funds to the General Fund | |
|---|---|
| **Fund/Account** | **Amount (in thousands)** |
| Assigned Risk Plan | $13,742 |
| Energy Conservation Improvement Account | 1,300 |
| Telephone Assistance Program | 1,000 |
| Telecommunication Access Minnesota Account | 1,100 |
| Other Special Revenue Accounts | 1,756 |
| **Total Transfers** | **18,898** |

*For questions regarding this Section or for more information on the fiscal aspects of Environment, Energy, and Commerce, please contact daniel.mueller@senate.mn.*

# XI. Compliance Audit

*"a copy of the most recent compliance audit."*

The most recent compliance audit dated October 13, 2000 was included in the January 15, 2001 biennial report. The LCCMR has requested the Office of the Legislative Auditor to schedule a financial audit in the near future.

# Appendix A

Funding Source Reference:

| | |
|---|---|
| Environment and Natural Resources Trust Fund | |
| MN Constitution – Amendment Article 11, Sec. 14 and M.S. 116P | |
| Oil Overcharge Money | M.S. 4.071 |
| Great Lakes Protection Account | M.S. 116Q.02 |

## Minnesota Constitution – Article XI, Section 14

Sec. 14. **ENVIRONMENT AND NATURAL RESOURCES FUND.** A permanent environment and natural resources trust fund is established in the state treasury. Loans may be made of up to five percent of the principal of the fund for water system improvements as provided by law. The assets of the fund shall be appropriated by law for the public purpose of protection, conservation, preservation, and enhancement of the state's air, water, land, fish, wildlife, and other natural resources. The amount appropriated each year of a biennium, commencing on July 1 in each odd-numbered year and ending on and including June 30 in the next odd-numbered year, may be up to 5-1/2 percent of the market value of the fund on June 30 one year before the start of the biennium. Not less than 40 percent of the net proceeds from any state-operated lottery must be credited to the fund until the year 2025. [Adopted, November 8, 1988; Amended, November 6, 1990; November 3, 1998]

# Environmental Protection Funds

# CHAPTER 116P
# ENVIRONMENT AND NATURAL RESOURCES TRUST FUND


116P.01 FINDINGS.
116P.02 DEFINITIONS.
116P.03 TRUST FUND NOT TO SUPPLANT EXISTING FUNDING; APPROPRIATIONS.
116P.04 TRUST FUND ACCOUNT.
116P.05 LEGISLATIVE-CITIZEN COMMISSION ON MINNESOTA RESOURCES.
116P.07 INFORMATION GATHERING.
116P.08 TRUST FUND EXPENDITURES.
116P.09 ADMINISTRATION.
116P.10 ROYALTIES, COPYRIGHTS, PATENTS, AND SALE OF PRODUCTS AND ASSETS.
116P.11 AVAILABILITY OF FUNDS FOR DISBURSEMENT.
116P.12 WATER SYSTEM IMPROVEMENT LOAN PROGRAM.
116P.13 MINNESOTA FUTURE RESOURCES FUND.
116P.15 LAND ACQUISITION RESTRICTIONS.
116P.16 REAL PROPERTY INTEREST REPORT.
116P.17 ACQUISITION OF LANDS TO BE CONVEYED TO THE STATE; COMMISSIONER APPROVAL.


## 116P.01 FINDINGS.

The legislature finds that all Minnesotans share the responsibility to ensure wise stewardship of the state's environment and natural resources for the benefit of current citizens and future generations. Proper management of the state's environment and natural resources includes and requires foresight, planning, and long-term activities that allow the state to preserve its high quality environment and provides for wise use of its natural resources. The legislature also finds that to undertake such activities properly, a long-term, consistent, and stable source of funding must be provided.

**History:** *1988 c 690 art 1 s 5*

## 116P.02 DEFINITIONS.

Subdivision 1. **Applicability.** The definitions in this section apply to this chapter.

Subd. 2. [Repealed, 2006 c 243 s 22]

Subd. 3. **Board.** "Board" means the State Board of Investment.

Subd. 4. **Commission.** "Commission" means the Legislative-Citizen Commission on Minnesota Resources.

Subd. 5. **Natural resources.** "Natural resources" includes the outdoor recreation system under section 86A.04 and regional recreation open space systems as defined under section 473.351, subdivision 1.

Subd. 6. **Trust fund.** "Trust fund" means the Minnesota environment and natural resources trust fund established under Minnesota Constitution, article XI, section 14.

**History:** *1988 c 690 art 1 s 6; 1989 c 335 art 1 s 269; 2003 c 128 art 1 s 146; 2006 c 243 s 2*

## 116P.03 TRUST FUND NOT TO SUPPLANT EXISTING FUNDING; APPROPRIATIONS.

(a) The trust fund may not be used as a substitute for traditional sources of funding environmental and natural resources activities, but the trust fund shall supplement the traditional sources, including those sources used to support the criteria in section 116P.08, subdivision 1. The trust fund must be used primarily to support activities whose benefits become available only over an extended period of time.

(b) The commission must determine the amount of the state budget spent from traditional sources to fund environmental and natural resources activities before and after the trust fund is established and include a comparison of the amount in the report under section 116P.09, subdivision 7.

(c) For the fiscal year beginning July 1, 2007, and each year thereafter, the amount of the environment and natural resources trust fund that is available for appropriation under the terms of the Minnesota Constitution, article XI, section 14, shall be appropriated by law.

(d) The amount appropriated from the environment and natural resources trust fund may be spent only for the public purpose of protection, conservation, preservation, and enhancement of the state's air, water, land, fish, wildlife, and other natural resources. Recommendations made by the commission under this chapter must be consistent with the Minnesota Constitution, article XI, section 14; this chapter; and the strategic plan adopted under section 116P.08, subdivision 3, and must demonstrate a direct benefit to the state's environment and natural resources.

**History:** *1988 c 690 art 1 s 7; 2006 c 243 s 3*

## 116P.04 TRUST FUND ACCOUNT.

Subdivision 1. **Establishment of account and investment.** A Minnesota environment and natural resources trust fund, under article XI, section 14, of the Minnesota Constitution, is established as an account in the state treasury. The commissioner of management and budget shall credit to the trust fund the amounts authorized under this section and section 116P.10. The State Board of Investment shall ensure that trust fund money is invested under section 11A.24. All money earned by the trust fund must be credited to the trust fund. The principal of the trust fund and any unexpended earnings must be invested and reinvested by the State Board of Investment.

Subd. 2. [Repealed, 1990 c 610 art 1 s 59]

Subd. 3. **Revenue.** Nothing in sections 116P.01 to 116P.12 limits the source of contributions to the trust fund.

Subd. 4. **Gifts and donations.** Gifts and donations, including land or interests in land, may be made to the trust fund. Noncash gifts and donations must be disposed of for cash as soon as the board prudently can maximize the value of the gift or donation. Gifts and donations of marketable securities may be held or be disposed of for cash at the option of the board. The cash receipts of gifts and donations of cash or capital assets and marketable securities disposed of for cash must be credited immediately to the principal of the trust fund. The value of marketable securities at the time the gift or donation is made must be credited to the principal of the trust fund and any earnings from the marketable securities are earnings of the trust fund.

Subd. 5. **Audits required.** The legislative auditor shall audit trust fund expenditures to ensure that the money is spent for the purposes for which the money was appropriated.

**History:** *1988 c 690 art 1 s 8; 1990 c 610 art 1 s 44; 1991 c 343 s 1; 2006 c 243 s 4; 2009 c 101 art 2 s 109*

## 116P.05 LEGISLATIVE-CITIZEN COMMISSION ON MINNESOTA RESOURCES.

Subdivision 1. **Membership.** (a) A Legislative-Citizen Commission on Minnesota Resources of 17 members is created in the legislative branch, consisting of the chairs of the house of representatives and senate committees on environment and natural resources finance or designees appointed for the terms of the chairs, four members of the senate appointed by the

Subcommittee on Committees of the Committee on Rules and Administration, and four members of the house of representatives appointed by the speaker.

At least two members from the senate and two members from the house of representatives must be from the minority caucus. Members are entitled to reimbursement for per diem expenses plus travel expenses incurred in the services of the commission.

Seven citizens are members of the commission, five appointed by the governor, one appointed by the Senate Subcommittee on Committees of the Committee on Rules and Administration, and one appointed by the speaker of the house. The citizen members are selected and recommended to the appointing authorities according to subdivision 1a and must:

(1) have experience or expertise in the science, policy, or practice of the protection, conservation, preservation, and enhancement of the state's air, water, land, fish, wildlife, and other natural resources;

(2) have strong knowledge in the state's environment and natural resource issues around the state; and

(3) have demonstrated ability to work in a collaborative environment.

(b) Members shall develop procedures to elect a chair that rotates between legislative and citizen members. The chair shall preside and convene meetings as often as necessary to conduct duties prescribed by this chapter.

(c) Appointed legislative members shall serve on the commission for two-year terms, beginning in January of each odd-numbered year and continuing through the end of December of the next even-numbered year. Citizen and legislative members continue to serve until their successors are appointed.

(d) A citizen member may be removed by an appointing authority for cause. Vacancies occurring on the commission shall not affect the authority of the remaining members of the commission to carry out their duties, and vacancies shall be filled for the remainder of the term in the same manner under paragraph (a).

(e) Citizen members shall be initially appointed according to the following schedule of terms:

(1) two members appointed by the governor for a term ending the first Monday in January 2010;

(2) one member appointed by the senate Subcommittee on Committees of the Committee on Rules and Administration for a term ending the first Monday in January 2010 and one member appointed by the speaker of the house for a term ending the first Monday in January 2010;

(3) two members appointed by the governor for a term ending the first Monday in January 2009; and

(4) one member appointed by the governor for a term ending the first Monday in January 2008.

(f) Citizen members are entitled to per diem and reimbursement for expenses incurred in the services of the commission, as provided in section 15.059, subdivision 3.

(g) The governor's appointments are subject to the advice and consent of the senate.

Subd. 1a. **Citizen selection committee.** The governor shall appoint a Trust Fund Citizen Selection Committee of five members who come from different regions of the state and who have knowledge and experience of state environment and natural resource issues.

The duties of the Trust Fund Citizen Selection Committee shall be to:

(1) identify citizen candidates to be members of the commission as part of the open appointments process under section 15.0597;

(2) request and review citizen candidate applications to be members of the commission; and

(3) interview the citizen candidates and recommend an adequate pool of candidates to be selected for commission membership by the governor, the senate, and the house of representatives.

Members are entitled to travel expenses incurred to fulfill their duties under this subdivision as provided in section 15.059, subdivision 6.

Subd. 2. **Duties.** (a) The commission shall recommend an annual or biennial legislative bill for appropriations from the environment and natural resources trust fund and shall adopt a strategic plan as provided in section 116P.08. Approval of the recommended legislative bill requires an affirmative vote of at least 12 members of the commission.

(b) It is a condition of acceptance of the appropriations made from the Minnesota environment and natural resources trust fund, and oil overcharge money under section 4.071, subdivision 2, that the agency or entity receiving the appropriation must submit a work program and semiannual progress reports in the form determined by the Legislative-Citizen Commission on Minnesota Resources, and comply with applicable reporting requirements under section 116P.16. None of the money provided may be spent unless the commission has approved the pertinent work program.

(c) The peer review panel created under section 116P.08 must also review, comment, and report to the commission on research proposals applying for an appropriation from the oil overcharge money under section 4.071, subdivision 2.

(d) The commission may adopt operating procedures to fulfill its duties under this chapter.

(e) As part of the operating procedures, the commission shall:

(1) ensure that members' expectations are to participate in all meetings related to funding decision recommendations;

(2) recommend adequate funding for increased citizen outreach and communications for trust fund expenditure planning;

(3) allow administrative expenses as part of individual project expenditures based on need;

(4) provide for project outcome evaluation;

(5) keep the grant application, administration, and review process as simple as possible; and

(6) define and emphasize the leveraging of additional sources of money that project proposers should consider when making trust fund proposals.

Subd. 3. **Sunset.** This section expires June 30, 2016, unless extended by law.

**History:** *1988 c 690 art 1 s 9; 1989 c 335 art 1 s 269; 1990 c 594 art 1 s 56; 1991 c 254 art 2 s 39; 1991 c 343 s 2; 1993 c 4 s 15; 1994 c 580 s 1; 1997 c 202 art 2 s 36; 2003 c 128 art 1 s 147; 1Sp2005 c 1 art 2 s 135; 2006 c 243 s 5; 2009 c 143 s 3; 1Sp2011 c 2 art 4 s 23*

**116P.06** [Repealed, 2006 c 243 s 22]

**116P.07 INFORMATION GATHERING.**

The commission may convene public forums or employ other methods to gather information for establishing priorities for funding.

**History:** *1988 c 690 art 1 s 11; 1991 c 254 art 2 s 41; 1991 c 343 s 4; 2002 c 225 s 2; 2006 c 243 s 6*

**116P.08 TRUST FUND EXPENDITURES.**

Subdivision 1. **Expenditures.** Money in the trust fund may be spent only for:

(1) the reinvest in Minnesota program as provided in section 84.95, subdivision 2;

(2) research that contributes to increasing the effectiveness of protecting or managing the state's environment or natural resources;

(3) collection and analysis of information that assists in developing the state's environmental and natural resources policies;

(4) enhancement of public education, awareness, and understanding necessary for the protection, conservation, restoration, and enhancement of air, land, water, forests, fish, wildlife, and other natural resources;

(5) capital projects for the preservation and protection of unique natural resources;

(6) activities that preserve or enhance fish, wildlife, land, air, water, and other natural resources that otherwise may be substantially impaired or destroyed in any area of the state;

(7) administrative and investment expenses incurred by the State Board of Investment in investing deposits to the trust fund; and

(8) administrative expenses subject to the limits in section 116P.09.

Subd. 2. **Exceptions.** Money from the trust fund may not be spent for:

(1) purposes of environmental compensation and liability under chapter 115B and response actions under chapter 115C;

(2) purposes of municipal water pollution control under the authority of chapters 115 and 116;

(3) costs associated with the decommissioning of nuclear power plants;

(4) hazardous waste disposal facilities;

(5) solid waste disposal facilities; or

(6) projects or purposes inconsistent with the strategic plan.

Subd. 3. **Strategic plan required.** (a) The commission shall adopt a strategic plan for making expenditures from the trust fund, including identifying the priority areas for funding for the next six years. The strategic plan must be reviewed every two years. The strategic plan must have clearly stated short- and long-term goals and strategies for trust fund expenditures, must provide measurable outcomes for expenditures, and must determine areas of emphasis for funding.

(b) The commission shall consider the long-term strategic plans of agencies with environment and natural resource programs and responsibilities and plans of conservation and environmental organizations during the development and review of the strategic plan.

Subd. 4. **Legislative recommendations.** (a) Funding may be provided only for those projects that meet the categories established in subdivision 1.

(b) The commission must recommend an annual or biennial legislative bill to make appropriations from the trust fund for the purposes provided in subdivision 1. The recommendations must be submitted to the governor for inclusion in the biennial budget and supplemental budget submitted to the legislature.

(c) The commission may recommend regional block grants for a portion of trust fund expenditures to partner with existing regional organizations that have strong citizen involvement, to address unique local needs and capacity, and to leverage all available funding sources for projects.

(d) The commission may recommend the establishment of an emerging issues account in its legislative bill for funding emerging issues, which come up unexpectedly, but which still adhere to the commission's strategic plan, to be approved by the governor after initiation and recommendation by the commission.

(e) Money in the trust fund may not be spent except under an appropriation by law.

Subd. 5. **Public meetings.** (a) Meetings of the commission, committees or subcommittees of the commission, technical advisory committees, and peer review panels must be open to the public. The commission shall attempt to meet throughout various regions of the state during each biennium. For purposes of this subdivision, a meeting occurs when a quorum is present and action is taken regarding a matter within the jurisdiction of the commission, a committee or subcommittee of the commission, a technical advisory committee, or a peer review panel.

(b) For legislative members of the commission, enforcement of this subdivision is governed by section 3.055, subdivision 2. For nonlegislative members of the commission, enforcement of this subdivision is governed by section 13D.06, subdivisions 1 and 2.

Subd. 6. **Peer review.** (a) Research proposals must include a stated purpose directly connected to the trust fund's constitutional mandate, this chapter, and the adopted strategic plan under subdivision 3, a timeline, potential outcomes, and an explanation of the need for the research. All research proposals must be reviewed by a peer review panel before receiving an appropriation.

(b) In conducting research proposal reviews, the peer review panel shall:

(1) comment on the methodology proposed and whether it can be expected to yield appropriate and useful information and data;

(2) comment on the need for the research and about similar existing information available, if any; and

(3) report to the commission on clauses (1) and (2).

(c) The peer review panel also must review completed research proposals that have received an appropriation and comment and report upon whether the project reached the intended goals.

Subd. 7. **Peer review panel membership.** (a) The peer review panel must consist of at least five members who are knowledgeable in general research methods in the areas of environment and natural resources. Not more than two members of the panel may be employees of state agencies in Minnesota.

(b) The commission shall select a chair every two years who shall be responsible for convening meetings of the panel as often as is necessary to fulfill its duties as prescribed in this section. Compensation of panel members is governed by section 15.059, subdivision 3.

**History:** *1988 c 690 art 1 s 12; 1989 c 335 art 1 s 178; 1991 c 254 art 2 s 42,43; 1991 c 343 s 5,6; 1994 c 580 s 2,3; 2001 c 7 s 31; 2004 c 284 art 2 s 14; 2006 c 243 s 7-10; 2007 c 30 s 3; 2009 c 143 s 4*

**116P.09 ADMINISTRATION.**

Subdivision 1. **Administrative authority.** The commission may appoint legal and other personnel and consultants necessary to carry out functions and duties of the commission. Permanent employees shall be in the unclassified service. In addition, the commission may request staff assistance and data from any other agency of state government as needed for the execution of the responsibilities of the commission and an agency must promptly furnish it.

Subd. 2. **Liaison officers.** The commission shall request each department or agency head of all state agencies with a direct interest and responsibility in any phase of environment and natural resources to appoint, and the latter shall appoint for the agency, a liaison officer who shall work closely with the commission and its staff.

Subd. 3. **Appraisal and evaluation.** The commission shall obtain and appraise information available through private organizations and groups, utilizing to the fullest extent possible studies, data, and reports previously prepared or currently in progress by public agencies, private organizations, groups, and others, concerning future trends in the protection, conservation, preservation, and enhancement of the state's air, water, land, forests, fish, wildlife, native vegetation, and other natural resources. Any data compiled by the commission shall be made available to any standing or interim committee of the legislature upon the request of the chair of the respective committee.

Subd. 4. **Personnel.** Persons who are employed by a state agency to work on a project and are paid by an appropriation from the trust fund are in the unclassified civil service, and their continued employment is contingent upon the availability of money from the appropriation. When the appropriation has been spent, their positions must be canceled and the approved complement of the agency reduced accordingly. Part-time employment of persons for a project is authorized. The use of classified employees is authorized when approved as part of the work program required by section 116P.05, subdivision 2, paragraph (c).

Subd. 5. **Administrative expense.** The prorated expenses related to commission administration of the trust fund may not exceed an amount equal to four percent of the amount available for appropriation of the trust fund for the biennium.

Subd. 6. **Conflict of interest.** A commission member, a technical advisory committee member, a peer review panelist, or an employee of the commission may not participate in or vote on a decision of the commission, advisory committee, or peer review panel relating to an organization in which the member, panelist, or employee has either a direct or indirect personal financial interest. While serving on the commission, technical advisory committee, or peer review panel, or being an employee of the commission, a person shall avoid any potential conflict of interest.

Subd. 7. **Report required.** The commission shall, by January 15 of each odd-numbered year, submit a report to the governor, the chairs of the house of representatives appropriations and senate finance committees, and the chairs of the house of representatives and senate committees

on environment and natural resources. Copies of the report must be available to the public. The report must include:

(1) a copy of the current strategic plan;

(2) a description of each project receiving money from the trust fund during the preceding biennium;

(3) a summary of any research project completed in the preceding biennium;

(4) recommendations to implement successful projects and programs into a state agency's standard operations;

(5) to the extent known by the commission, descriptions of the projects anticipated to be supported by the trust fund during the next biennium;

(6) the source and amount of all revenues collected and distributed by the commission, including all administrative and other expenses;

(7) a description of the assets and liabilities of the trust fund;

(8) any findings or recommendations that are deemed proper to assist the legislature in formulating legislation;

(9) a list of all gifts and donations with a value over $1,000;

(10) a comparison of the amounts spent by the state for environment and natural resources activities through the most recent fiscal year; and

(11) a copy of the most recent compliance audit.

Subd. 8. **Technical advisory committees.** The commission shall make use of available public and private expertise on environment and natural resource issues by appointing necessary technical advisory committees to review funding proposals and evaluate project outcomes. Compensation for technical advisory committee members is governed by section 15.059, subdivision 6.

**History:** *1988 c 690 art 1 s 13; 1991 c 254 art 2 s 44-46; 1991 c 343 s 7-10; 1994 c 580 s 4; 2003 c 128 art 1 s 148-150; 2006 c 243 s 11-13*

## 116P.10 ROYALTIES, COPYRIGHTS, PATENTS, AND SALE OF PRODUCTS AND ASSETS.

(a) This section applies to projects supported by the trust fund and the oil overcharge money referred to in section 4.071, subdivision 2, each of which is referred to in this section as a "fund."

(b) The fund owns and shall take title to the percentage of a royalty, copyright, or patent resulting from a project supported by the fund equal to the percentage of the project's total funding provided by the fund. Cash receipts resulting from a royalty, copyright, or patent, or the sale of the fund's rights to a royalty, copyright, or patent, must be credited immediately to the principal of the fund. Receipts from Minnesota future resources fund projects must be credited to the trust fund. The commission may include in its legislative bill a recommendation to relinquish the ownership or rights to a royalty, copyright, or patent resulting from a project supported by the fund to the project's proposer when the amount of the original grant or loan, plus interest, has been repaid to the fund.

(c) If a project supported by the fund results in net income from the sale of products or assets developed or acquired by an appropriation from the fund, the appropriation must be repaid to the fund in an amount equal to the percentage of the project's total funding provided by the

fund. The commission may include in its legislative bill a recommendation to relinquish the income if a plan is approved for reinvestment of the income in the project or when the amount of the original grant or loan, plus interest, has been repaid to the fund.

**History:** *1988 c 690 art 1 s 14; 1993 c 172 s 79; 2003 c 128 art 1 s 151; 2008 c 367 s 3; 2009 c 143 s 5*

### 116P.11 AVAILABILITY OF FUNDS FOR DISBURSEMENT.

(a) The amount annually available from the trust fund for the legislative bill developed by the commission is as defined in the Minnesota Constitution, article XI, section 14.

(b) Any appropriated funds not encumbered in the biennium in which they are appropriated cancel and must be credited to the principal of the trust fund.

**History:** *1988 c 690 art 1 s 15; 1990 c 594 art 1 s 57; 1990 c 612 s 14; 1992 c 513 art 2 s 27; 1992 c 539 s 10; 1993 c 300 s 10; 1994 c 580 s 5; 1995 c 220 s 111; 2002 c 225 s 3; 2006 c 243 s 14*

### 116P.12 WATER SYSTEM IMPROVEMENT LOAN PROGRAM.

Subdivision 1. **Loans authorized.** (a) If the principal of the trust fund equals or exceeds $200,000,000, the commission may vote to set aside up to five percent of the principal of the trust fund for water system improvement loans. The purpose of water system improvement loans is to offer below market rate interest loans to local units of government for the purposes of water system improvements.

(b) The interest on a loan shall be calculated on the declining balance at a rate four percentage points below the secondary market yield of one-year United States Treasury bills calculated according to section 549.09, subdivision 1, paragraph (c).

(c) An eligible project must prove that existing federal or state loans or grants have not been adequate.

(d) Payments on the principal and interest of loans under this section must be credited to the trust fund.

(e) Repayment of loans made under this section must be completed within 20 years.

(f) The Minnesota Public Facilities Authority must report to the commission each year on the loan program under this section.

Subd. 2. **Application and administration.** (a) The commission must adopt a procedure for the issuance of the water system improvement loans by the Public Facilities Authority.

(b) The commission also must ensure that the loans are administered according to its fiduciary standards and requirements.

**History:** *1988 c 690 art 1 s 16*

### 116P.13 MINNESOTA FUTURE RESOURCES FUND.

Subdivision 1. **Revenue sources.** The money in the Minnesota future resources fund consists of revenue credited under section 297F.10, subdivision 1, paragraph (b), clause (1).

Subd. 2. **Interest.** The interest attributable to the investment of the Minnesota future resources fund must be credited to the fund.

Subd. 3. **Revenue purposes.** Revenue in the Minnesota future resources fund may be spent for purposes of natural resources acceleration and outdoor recreation, including but not limited to

the development, maintenance, and operation of the state outdoor recreation system under chapter 86A and regional recreation open space systems as defined under section 473.351, subdivision 1.

**History:** *1988 c 690 art 1 s 17; 1989 c 335 art 1 s 179; 1997 c 106 art 2 s 4*

**116P.14** [Repealed, 1Sp2011 c 2 art 4 s 36]

**116P.15 LAND ACQUISITION RESTRICTIONS.**

Subdivision 1. **Scope.** A recipient of an appropriation from the trust fund or the Minnesota future resources fund who acquires an interest in real property with the appropriation must comply with this section. If the recipient fails to comply with the terms of this section, ownership of the interest in real property transfers to the state. For the purposes of this section, "interest in real property" includes, but is not limited to, an easement or fee title to property.

Subd. 2. **Restrictions; modification procedure.** (a) An interest in real property acquired with an appropriation from the trust fund or the Minnesota future resources fund must be used in perpetuity or for the specific term of an easement interest for the purpose for which the appropriation was made.

(b) A recipient of funding who acquires an interest in real property subject to this section may not alter the intended use of the interest in real property or convey any interest in the real property acquired with the appropriation without the prior review and approval of the commission. The commission shall establish procedures to review requests from recipients to alter the use of or convey an interest in real property. These procedures shall allow for the replacement of the interest in real property with another interest in real property meeting the following criteria:

(1) the interest is at least equal in fair market value, as certified by the commissioner of natural resources, to the interest being replaced; and

(2) the interest is in a reasonably equivalent location, and has a reasonably equivalent usefulness compared to the interest being replaced.

(c) A recipient of funding who acquires an interest in real property under paragraph (a) must separately record a notice of funding restrictions in the appropriate local government office where the conveyance of the interest in real property is filed. The notice of funding agreement must contain:

(1) a legal description of the interest in real property covered by the funding agreement;

(2) a reference to the underlying funding agreement;

(3) a reference to this section; and

(4) the following statement:

"This interest in real property shall be administered in accordance with the terms, conditions, and purposes of the grant agreement or work program controlling the acquisition of the property. The interest in real property, or any portion of the interest in real property, shall not be sold, transferred, pledged, or otherwise disposed of or further encumbered without obtaining the prior written approval of the Legislative-Citizen Commission on Minnesota Resources or its successor. If the holder of the interest in real property fails to comply with the terms and conditions of the grant agreement or work program, ownership of the interest in real property shall transfer to this state."

**History:** *1Sp2001 c 2 s 141; 2002 c 225 s 4; 2006 c 243 s 21*

**116P.16 REAL PROPERTY INTEREST REPORT.**

By December 1 each year, a recipient of an appropriation from the trust fund, that is used for the acquisition of an interest in real property, must submit annual reports on the status of the real property to the Legislative-Citizen Commission on Minnesota Resources in a form determined by the commission. The responsibility for reporting under this section may be transferred by the recipient of the appropriation to another person who holds the interest in the real property. To complete the transfer of reporting responsibility, the recipient of the appropriation must:

(1) inform the person to whom the responsibility is transferred of that person's reporting responsibility;

(2) inform the person to whom the responsibility is transferred of the property restrictions under section 116P.15; and

(3) provide written notice to the commission of the transfer of reporting responsibility, including contact information for the person to whom the responsibility is transferred.

After the transfer, the person who holds the interest in the real property is responsible for reporting requirements under this section.

**History:** *1Sp2005 c 1 art 2 s 136; 2006 c 243 s 21*

**116P.17 ACQUISITION OF LANDS TO BE CONVEYED TO THE STATE; COMMISSIONER APPROVAL.**

(a) A recipient of an appropriation from the trust fund who acquires an interest in real property must receive written approval from the commissioner of natural resources prior to the acquisition, if the interest:

(1) is acquired in whole or in part with the appropriation; and

(2) will be conveyed to the state for management by the commissioner.

(b) The commissioner shall approve acquisitions under this section only when the interest in real property:

(1) is identified as a high priority by the commissioner; or

(2) meets the objectives and criteria identified in the applicable acquisition plan for the intended management status of the property.

**History:** *2010 c 362 s 3*

**4.071 OIL OVERCHARGE MONEY.**

Subdivision 1. **Appropriation required.** "Oil overcharge money" means money received by the state as a result of litigation or settlements of alleged violations of federal petroleum pricing regulations. Oil overcharge money may not be spent until it is specifically appropriated by law.

Subd. 2. **Minnesota resources projects.** The legislature intends to appropriate one-half of the oil overcharge money for projects that have been reviewed and recommended by the Legislative-Citizen Commission on Minnesota Resources. A work plan must be prepared for each proposed project for review by the commission. The commission must recommend specific projects to the legislature.

Subd. 3. [Repealed, 1998 c 273 s 15]

**History:** *1988 c 686 art 1 s 36; 1988 c 690 s 1; 1989 c 335 art 1 s 269; 1990 c 568 art 2 s 1; 1994 c 483 s 1; 2006 c 243 s 21*

**116Q.02 STATE RECEIPTS FROM THE FUND.**

Subdivision 1. **Great Lakes protection account.** Any money received by the state from the Great Lakes protection fund, whether in the form of annual earnings or otherwise, must be deposited in the state treasury and credited to a special Great Lakes protection account. Money in the account must be spent only as specifically appropriated by law for protecting water quality in the Great Lakes. Approved purposes include, but are not limited to, supplementing in a stable and predictable manner state and federal commitments to Great Lakes water quality programs by providing grants to finance projects that advance the goals of the regional Great Lakes toxic substances control agreement and the binational Great Lakes water quality agreement.

Subd. 2. **LCCMR review.** The legislature intends not to appropriate money from the Great Lakes protection account until projects have been reviewed and recommended by the Legislative-Citizen Commission on Minnesota Resources. A work plan must be prepared for each project for review by the commission. The commission must recommend specific projects to the legislature.

**History:** *1990 c 594 art 1 s 59; 2006 c 243 s 21*