

# LCMR

## Legislative Commission on Minnesota Resources

### BIENNIAL REPORT

PURSUANT TO:  
M.S.116P.09, Subd. 7

January 17, 1995

#### COMMISSION MEMBERS

*Senators: Dennis Frederickson, Janet Johnson, Gary Laidig, Bob Lessard,  
Gene Merriam, James Metzen, Steven Morse, Leonard Price*

*Representatives: Phyllis Kahn, Chair, David Battaglia\*, Virgil Johnson, Tony Kinkel,  
Willard Munger, Tom Osthoff, Dennis Ozment, John Sarna*

(\*Term Expired January 3, 1995)

#### CITIZEN ADVISORY COMMITTEE MEMBERS

Arlan Anderson, C. Merle Anderson\*\*, Chair, Patricia Baker, Ty Bischoff,  
Marilee Hein, Nancy Gibson, Guy Glover, Christine Kneeland, Jack LaVoy, Jean Sanford

(\*\*Resigned 1/1/95)

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This publication can be made available in alternate formats upon request.

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## M.S. 116P.09

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 appropriations and senate finance committees, and the chairs of the house 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 and Minnesota future resources 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 and Minnesota future resources account 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 and the Minnesota future resources 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.

HIST: 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

# LEGISLATIVE COMMISSION ON MINNESOTA RESOURCES

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JOHN R. VELIN

Director

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## LEGISLATIVE COMMISSION ON MINNESOTA RESOURCES FACT SHEET

The Legislative Commission on Minnesota Resources (LCMR) consists of 16 select legislators who are appointed by their peers (M.S. 116P.05). The function of the LCMR is to make funding recommendations to the legislature for special natural resource projects. These projects help maintain and enhance Minnesota's natural resources. Today's LCMR developed from a program initiated in 1963. Since that time, over \$270 million has been spent on projects recommended by LCMR to protect and enhance Minnesota's natural resources.

Recommendations are funded by the legislature from three sources: (1) the Minnesota Future Resources Fund, which receives money from tax on cigarettes (M.S. 116P.13); (2) federal oil overcharge funds (M.S. 4.071, Subd. 2); and (3) the Minnesota Environment and Natural Resources Trust Fund (Trust Fund) (M.S. 116P).

*The Trust Fund was established by constitutional amendment in 1988. The corpus of the trust will receive 40% of the net state lottery receipts through the year 2000. The income from the trust fund will provide a perpetual source of funding for projects according to the strategic plan. A strategic plan for the Trust fund was developed from a grass roots approach by conducting a series of regional forums and a statewide natural resources congress in which all citizens were encouraged to attend and provide comments. An 11 member statewide citizens' advisory committee presented a draft strategic plan for approval by the LCMR and referral to the legislature.*

*The Trust fund is designed to supplement existing natural resource activities and provide a long-term permanent and stable source of funding. Money will be spent to pay for projects such as conservation easements on wetlands to provide resources for protection and management of natural resources, enhance public education about natural resources and the environment and preserve and enhance fish, wildlife, land, water, and other natural resources.*

Biennially, proposed projects are submitted to the LCMR for their recommendation to the legislature and ultimately to be included in the state's budget plan. The LCMR recommends which of the three funding sources to use for each project in their recommendations. Research proposals are also referred to an expert peer review panel. Approved projects must be conducted and completed according to an approved work plan. After a project is completed, the results and final report are reviewed by the LCMR.

Any individual, organization (profit or nonprofit), community or state agency can submit a proposal for consideration. The Request for Proposals for the 1995-97 biennium was announced in December, 1993. Recommendations for allocations will be announced by the LCMR during the summer of 1994.

**COMMISSION MEMBERS:** *Senators:* Dennis Frederickson, Janet Johnson, Gary Laidig, Bob Lessard, Gene Meriam, James Metzen, Steven Morse, Leonard Price; *Representatives:* Phyllis Kahn, Chair, David Battaglia\*, Virgil Johnson, Tony Kinkel, Willard Munger, Tom Osthoff, Dennis Ozment, John Sarna.

(\*Term expired 1/3/95)

**CITIZEN ADVISORY COMMITTEE MEMBERS:** C. Merle Anderson\*\*, Chair, Arlan Anderson, Patricia Baker, Ty Bischoff, Guy Glover, Nancy Gibson, Marilee Hein, Christine Kneeland, Jack LaVoy, Jean Sanford, Michael Triggs.

(\*\*Resigned as of 1/1/95)

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*This information can be made available in alternate formats, such as large print or cassette tape, upon request.*

## **BACKGROUND AND PROPOSAL REVIEW TIMELINE**

**Spring 1993:** Citizen Advisory Committee (CAC) begins participation in the Sustainable Development Initiative of the Environmental Quality Board (EQB) as part of its factfinding for the development of a draft strategic plan for the Trust Fund.

**Summer 1993:** Legislative Commission on Minnesota Resources (LCMR) summer factfinding and public Natural Resource Congresses in Owatonna with interactive video (ITV) remotes held at Mankato and Austin; in Lakefield with ITV remotes held at Jeffers and Springfield; and in Detroit Lakes. Agendas were developed from the 1992-1998 six-year Strategic Plan for Expenditure. Regional Natural Resource Congresses requested input on the revision to the Strategic Plan to guide expenditures and review of 1991 Trust Fund projects and the Reinvest in Minnesota (RIM) program.

**August 1993:** Revision of Strategic Plan for Trust Fund by Citizen Advisory Committee.

**October 1993:** Adoption of comprehensive Strategic Plan for the Trust Fund, Future Resources Fund, Oil Overcharge money and Great Lakes Protection Account by the Legislative Commission on Minnesota Resources.

**December 1993:** Request for Proposal (RFP) for 1995-97 biennium funding issued by Legislative Commission on Minnesota Resources for the Minnesota Future Resources Fund (MS 116P.13), Trust Fund (MS 116P.08), Oil Overcharge (MS 4.071), and Great Lakes Protection Account (MS 116Q.02); one RFP for all funding sources.

**January 1994:** Hold workshop sessions for assistance with proposals.

**February 4, 1994:** Proposals due to the LCMR.

**Spring and Summer 1994:** Proposal Review based on priorities and criteria in RFP. LCMR members select projects for further review. Hearings held by LCMR on selected proposals.

**Summer 1994:** LCMR adoption of project recommendations (allocations) for submission to the 1995 Legislature for funding beginning July 1, 1995.

**August 1994:** Workshops held for assistance with development of LCMR workprograms for projects selected for recommendation.

**Fall 1994:** Submission of workprograms to the LCMR for recommended projects.

**Fall 1994:** Peer Review of Research Proposals recommended by LCMR.

**January 15, 1995:** Biennial Report due to the Legislature from LCMR.

**January - May 1995:** Consideration of LCMR recommendations for appropriation by the Minnesota Legislature.

**June 1995:** LCMR workprogram review and approval of project recommendations as appropriated by the Legislature.

**July 1995-June 1997:** Project implementation begins July 1, 1995 (6-month status reports, final report due July 1, 1997).

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## **I. LEGISLATIVE COMMISSION ON MINNESOTA RESOURCES**

The Legislative Commission on Minnesota Resources (LCMR) was created in 1963 to provide the Legislature with the background necessary to evaluate programs proposed to preserve, develop and maintain Minnesota's natural resources.

The LCMR is comprised of 16 members, consisting of the chairs of the House and Senate committees on environment and natural resources (or designees appointed for the terms of the chairs), the chairs of the House ways and means and Senate finance committees (or designees appointed for the terms of the chairs); six members of the Senate appointed by the subcommittee on committees of the Committee on Rules and Administration and six members of the House appointed by the Speaker. At least two members from the Senate and two members from the House must be from the minority caucus. The members elect their officers, rotating the Chair from the Senate to the House every two years. The LCMR employs a full time professional and support staff.

The LCMR recommends projects to enhance and protect Minnesota's natural resources to the Legislature from four funding sources: (1) the Minnesota Future Resources Fund (MS 116P.13); (2) the Minnesota Environment and Natural Resources Trust Fund (MS 116P); (3) Oil Overcharge Money (MS 4.071); and (4) the Great Lakes Protection Account ( MS 116Q.02).

The LCMR makes recommendations to the Legislature each odd year. The appropriations from the Minnesota Future Resources Fund are supported by a portion of the state cigarette tax. In 1988, the LCMR was charged to make funding recommendations for a portion of the oil overcharge money and for the Environment and Natural Resources Trust Fund. The first funding recommendations from the Trust Fund were approved in 1991 for a two-year period and were designated for projects completed in June 1993. The second cycle of Trust Fund expenditures began in July 1993 and is scheduled for completion in June 1995. The next appropriations are scheduled to begin in July 1995. In 1990, the LCMR was given responsibility for review and recommendation of projects from the Great Lakes Protection Account. The 1995-97 funding biennium is the first funding cycle for the Great Lakes Protection Account.

The LCMR develops its recommendations after an extensive review of natural resource issues. The LCMR requests both written and oral advice from a wide variety of interested and knowledgeable citizens. After examination and discussion of the issues, the members suggest projects as recommended appropriations. The LCMR recommendations become law when enacted by the Legislature.

### **PLANNING PROCESS**

The Citizen Advisory Committee (CAC), consisting of 11 citizen members, advises the LCMR on the development of a statewide Strategic Plan to guide expenditure recommendations from the Trust Fund. The CAC recommended plan for Trust Fund Expenditure is advisory to the LCMR and is used in the development of a comprehensive Strategic Plan for all of the funding sources from which the LCMR makes recommendations. The Governor appoints the CAC Chair, one member from each congressional district, and three additional at large members.

The Strategic Plan is a six-year plan first adopted in December 1989. The plan is to guide recommendations for natural resource expenditures. The plan is revised every two years. This plan is the second biennial revision and incorporates all four funding sources.

The priority strategies in the plan are to guide the LCMR's biennial recommendations for expenditure from the four funding sources. These strategies are incorporated in the Request for Proposals (RFP) issued by the Commission in December 1993. The proposals received in response to the RFP will be evaluated against the criteria in the plan (also incorporated into the RFP). These strategies and criteria may be modified each time the plan is revised.

#### **RECOMMENDATIONS**

The Commission will make its funding recommendations to the Legislature in Summer 1994. The Commission will determine which funding source is appropriate for a proposed project recommendation based on the funding criteria. When acted upon by the 1995 Legislature, and with Commission workprogram approval, funds will be available for projects beginning July 1, 1995.

## II. FUNDING SOURCES

The Strategic Plan guides expenditure recommendations from the Legislative Commission on Minnesota Resources to the Minnesota Legislature for natural resource projects. Funding recommendations are from four sources.

### FUNDING SOURCES:

- **Minnesota Future Resources Fund (MS 116P.13)** estimated amount available, \$15 million for July 1995 - June 1997 biennium funding. This funding is from a portion of the cigarette tax:

For new, innovative or accelerative natural resource projects designed to help maintain and enhance Minnesota's natural resources.

- **Minnesota Environment and Natural Resource Trust Fund (Trust Fund) (MS 116P.08)** estimated amount available \$11.8 million for July 1995 - June 1997 biennium funding. The state lottery contributes approximately 7 cents per dollar of sales to the Trust Fund. The amount estimated is from earnings of the Trust Fund:

For the management, preservation and enhancement of Minnesota's environment and natural resources. Trust Fund expenditures must conform to the Strategic Plan and Trust Fund law.

#### A. Trust Fund Vision

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.

#### B. Trust Fund Mission

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

- **Oil Overcharge Money (MS 4.071)** estimated amount available \$1 million for July 1995 - June 1997 biennium funding. This funding is from a federal court case settlement apportioned among the states:

For projects resulting in decreased dependence on fossil fuels and for technology transfer with the same purpose.

- **Great Lakes Protection Account (MS 116Q.02)** estimated amount available \$52,000 for July 1995 - June 1997. This funding is from Minnesota's contribution to the Great Lakes Protection Fund:

For protecting water quality in the Great Lakes. Including supplementing Great Lakes water quality programs and advancing the goals of the regional Great Lakes Toxic Substances Control Agreement and the Binational Great Lakes Water Quality Agreement.

### III. PRIORITY FUNDING STRATEGIES

The Commission seeks proposals based on priority strategies that are developed through fact-finding, public input, the results of previous projects, and Natural Resource Congresses. In 1993, the statewide Natural Resource Congress was expanded to three regional Natural Resource Congresses. Priority strategies are modified on a two-year time frame.

For the biennium ending June 1997, the priority strategies are listed below. These strategies are included in the Request for Proposals issued in December 1993. Projects selected from among the proposals submitted in response to the RFP will receive funding beginning July 1995 (two year duration) if approved by the Legislature.

#### NOTES ON STRATEGIES:

- **All strategies are priorities for funding. The order does not reflect any other prioritization. Although other proposals may be considered, stated strategies will receive priority.**
- **The strategies apply to all four funding sources.**

#### PRIORITY STRATEGIES

- A. Rehabilitate state and regional parks and trails (as described in MS 116P.02, Subd. 5).
- B. Acquire and develop state and regional parks and trails (as described in MS 116P.02, Subd. 5).
- C. Acquire, protect, and enhance critical habitat, native prairies, unique and or sensitive areas, scenic bluffs, aquatic resources, old-growth forests, and historic sites.
- D. Expand rural and urban revegetation with native species, including community shade tree programs. Implement native species tree planting for energy conservation, CO<sub>2</sub> abatement, erosion control, wildlife habitat and other benefits. This strategy includes the demonstration of planting and protection of native species on public and private land and roadways without continuous cutting.
- E. Research and demonstrate ecologically sound methods to control or eradicate exotic species of plants or animals which are or may become a threat to the environment.
- F. Accelerate the implementation of measures to reduce nonpoint source pollution.
- G. Provide for all types of wetland purchase, restoration and easement acquisition to enhance wildlife habitat, erosion control, water storage, flood control, and water quality.
- H. Accelerate use of farming practices consistent with wildlife habitat and environmental and human health protection through the development of improved management techniques, incentives and other programs.
- I. Create qualitative and quantitative benchmarks, including biological indicators, for key natural resources to permit effective monitoring and assessment of environmental trends.
- J. Enhance intellectual infrastructure in natural resource decisions through geographic information systems (GIS), comparative risk assessment, economic and externality analyses, and research that facilitates ecosystem-based management.

K. Develop research or a research program to collect human health data and correlate how environmental factors affect health risks.

L. Establish or expand the delivery systems for environmental education programs to local government officials to assist environmentally sound decision making.

M. Accelerate implementation of the Minnesota Environmental Education Plan especially by:  
(1) providing teacher training of post-secondary students and K-12 teachers to integrate environmental education topics into curricula; (2) establishing an environmental education clearinghouse for ongoing assessment, evaluation, and dissemination of environmental education resources and information; and  
(3) providing for student access to out-of-classroom environmental education experiences.

N. Enhance natural resource programs to meet the needs of culturally diverse groups.

O. Stimulate application of renewable, nonfossil fuel energy sources and strategies that have a high probability for successful demonstration and transfer.

P. Implement applications of renewable fuels and energy conservation efficiencies in public facilities and enterprises.

Q. Accelerate the development and use of waste materials as a substitute for natural resources. This strategy includes enhancing the marketability of products produced from waste materials.

R. Accelerate research and utilization of life-cycle cost/benefit analysis for the use of secondary materials as substitutes for virgin materials in new products.

#### **IV. CRITERIA FOR EVALUATION OF PROPOSALS**

For proposals submitted for the biennium ending June 1997, the LCMR will apply the criteria under A, B, and C for proposal evaluation.

A. Project Managers must be accountable and able to complete project objectives.

B. Highest priority will be given to proposals that best meet the following criteria. The total potential score for each criterion is written in parentheses. All points will be awarded on a sliding scale.

1. **SIGNIFICANCE** - Addresses significant environmental or natural resource issues. (9)
2. **UNDERLYING CAUSES** - Addresses underlying causes, stresses prevention of environmental degradation and emphasizes wise stewardship. (9)
3. **LEGISLATIVE ANALYSIS** - Addresses needs identified through other legislative initiatives. (9)
4. **LEVERAGING** - Leverages funding (nonstate). (9) A cash match will receive higher points than an in-kind contribution.
5. **ADDRESSES PRIORITY STRATEGY** - Responds to a priority strategy. (9)
6. **COORDINATION** - Demonstrates a coordinated, multidisciplinary approach. (7)
7. **SHORT DURATION** - Completed by June 30, 1997. (7)
8. **INNOVATION** - Innovative approach. (7)
9. **INFORMATION BASE** - Provides a significant useful addition to the information base. (5)
10. **ACCELERATION** - Accelerates natural resource programs, does not supplant existing funding. (5)
11. **STATEWIDE SIGNIFICANCE** - (5)

C. In addition, Trust Fund expenditures must conform to the Trust Fund law (M.S. 116P.08).

## V. BACKGROUND AND PROPOSAL REVIEW PROCESS

**Spring 1993:** Citizen Advisory Committee (CAC) begins participation in the Sustainable Development Initiative of the Environmental Quality Board (EQB) as part of its factfinding for the development of a draft strategic plan for the Trust Fund.

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## VI. TRUST FUND LAW HIGHLIGHTS AND CONSTITUTIONAL AMENDMENT

### TRUST FUND LAW ELIGIBILITY

#### A. THE TRUST FUND LAW ALLOWS FUNDING IN THE FOLLOWING AREAS:

1. the Reinvest in Minnesota program as provided in section 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;
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.

■ The state recreation system and the metro regional recreation system are included in the definition of natural resources and therefore are eligible for funding.

#### B. ACTIVITIES INELIGIBLE FOR FUNDING FROM THE TRUST FUND ARE:

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, including combined sewer overflow under Section 116.162;
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.

#### C. 116P.03 TRUST FUND NOT TO SUPPLANT EXISTING FUNDING

*(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.*

#### D. CONSTITUTION OF THE STATE OF MINNESOTA

##### ARTICLE XI

##### APPROPRIATIONS AND FINANCES

*Sec. 14. Environment and natural resources fund. A permanent Minnesota environment and natural resources trust fund is established in the state treasury. The principal of the environment and natural resources trust fund must be perpetual and inviolate forever, except appropriations may be made from up to 25 percent of the annual revenues deposited in the fund until fiscal year 1997 and loans may be made of up to five percent of the principal of the fund for water system improvements as provided by law. This restriction does not prevent the sale of investments at less than the cost to the fund, however, all losses not offset by gains shall be repaid to the fund from the earnings of the fund. The net earnings from the fund shall be appropriated in a manner prescribed 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. Not less than 40 percent of the net proceeds from any state-operated lottery must be credited to the fund until the year 2001. (Adopted, November 8, 1988; Amended November 6, 1990)*

## VII. TRUST FUND LAW

### Environmental Protection Funds

#### CHAPTER 116P ENVIRONMENT AND NATURAL RESOURCES TRUST FUND

##### **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.

HIST: 1988 c 690 art 1 s 5

##### **116P.02 DEFINITIONS.**

Subdivision 1. **Applicability.** The definitions in this section apply to sections 116P.01 to 116P.13.

Subd. 2. **Advisory committee.** "Advisory committee" means the advisory committee created in section 116P.06.

Subd. 3. **Board.** "Board" means the state board of investment.

Subd. 4. **Commission.** "Commission" means the legislative 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.

HIST: 1988 c 690 art 1 s 6; 1989 c 335 art 1 s 269

##### **116P.03 TRUST FUND NOT TO SUPPLANT EXISTING FUNDING.**

(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.

HIST: 1988 c 690 art 1 s 7

##### **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 finance 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 provided in the commission's budget plan.

HIST: 1988 c 690 art 1 s 8; 1990 c 610 art 1 s 44; 1991 c 343 s 1

#### **116P.05 LEGISLATIVE COMMISSION ON MINNESOTA RESOURCES.**

Subdivision 1. **Membership.** (a) A legislative commission on Minnesota resources of 16 members is created, consisting of the chairs of the house and senate committees on environment and natural resources or designees appointed for the terms of the chairs, the chairs of the house ways and means and senate finance committees or designees appointed for the terms of the chairs, six members of the senate appointed by the subcommittee on committees of the committee on rules and administration, and six members of the house appointed by the speaker.

At least two members from the senate and two members from the house 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.

(b) Members shall appoint a chair who shall preside and convene meetings as often as necessary to conduct duties prescribed by this chapter.

(c) Members shall serve on the commission until their successors are appointed.

(d) 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 in the same manner under paragraph (a).

Subd. 2. **Duties.** (a) The commission shall recommend a budget plan for expenditures from the environment and natural resources trust fund and shall adopt a strategic plan as provided in section 116P.08.

(b) The commission shall recommend expenditures to the legislature from the Minnesota future resources fund under section 116P.13.

(c) It is a condition of acceptance of the appropriations made from the Minnesota future resources fund, 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 commission on Minnesota resources. None of the money provided may be spent unless the commission has approved

the pertinent work program.

(d) 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 Minnesota resources fund and from oil overcharge money under section 4.071, subdivision 2.

(e) The commission may adopt operating procedures to fulfill its duties under sections 116P.01 to 116P.13.

HIST: 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

#### **116P.06 ADVISORY COMMITTEE.**

Subdivision 1. **Membership.** (a) An advisory committee of 11 citizen members shall be appointed by the governor to advise the legislative commission on Minnesota resources on project proposals to receive funding from the trust fund and the development of budget and strategic plans. The governor shall appoint at least one member from each congressional district. The governor shall appoint the chair. (b) The governor's appointees must be confirmed with the advice and consent of the senate. The membership terms, compensation, removal, and filling of vacancies for citizen members of the advisory committee are governed by section 15.0575.

Subd. 2. **Duties.** (a) The advisory committee shall:

- (1) prepare and submit to the commission a draft strategic plan to guide expenditures from the trust fund;
- (2) review the reinvest in Minnesota program during development of the draft strategic plan;
- (3) gather input from the resources congress during development of the draft strategic plan;
- (4) advise the commission on project proposals to receive funding from the trust fund; and
- (5) advise the commission on development of the budget plan.

(b) The advisory committee may review all project proposals for funding and may make recommendations to the commission on whether the projects:

- (1) meet the standards and funding categories set forth in sections 116P.01 to 116P.12;
- (2) duplicate existing federal, state, or local projects being conducted within the state; and
- (3) are consistent with the most recent strategic plan adopted by the commission.

HIST: 1988 c 690 art 1 s 10; 1989 c 335 art 1 s 269; 1991 c 254 art 2 s 40; 1991 c 343 s 3

#### **116P.07 RESOURCES CONGRESS.**

The commission must convene a resources congress at least once every biennium and shall develop procedures for the

congress. The congress must be open to all interested individuals. The purpose of the congress is to collect public input necessary to allow the commission, with the advice of the advisory committee, to develop a strategic plan to guide expenditures from the trust fund. The congress also may be convened to receive and review reports on trust fund projects. The congress shall also review the reinvest in Minnesota program.

HIST: 1988 c 690 art 1 s 11; 1991 c 254 art 2 s 41; 1991 c 343 s 4

#### **116P.08 TRUST FUND EXPENDITURES; EXCEPTIONS; PLANS.**

**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, including combined sewer overflow under section 116.162;
- (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 updated every two years. The plan is advisory only. The commission shall submit the plan, as a recommendation, to the house of representatives appropriations and senate finance committees by January 1 of each odd-numbered year.

(b) The commission may accept or modify the draft of the strategic plan submitted to it by the advisory committee before voting on the plan's adoption.

**Subd. 4. Budget plan.** (a) Funding may be provided only for those projects that meet the categories established in subdivision 1.

(b) Projects submitted to the commission for funding may be referred to the advisory committee for recommendation.

(c) The commission must adopt a budget plan to make expenditures from the trust fund for the purposes provided in subdivision 1. The budget plan must be submitted to the governor for inclusion in the biennial budget and supplemental budget submitted to the legislature.

(d) Money in the trust fund may not be spent except under an appropriation by law.

**Subd. 5. Public meetings.** All advisory committee and commission meetings must be open to the public. The commission shall attempt to meet at least once in each of the state's congressional districts during each biennium.

**Subd. 6. Peer review.** (a) Research proposals must include a stated purpose, 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 and advisory committee 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.

HIST: 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

### **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 advisory committee 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 or Minnesota future resources 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 administrative expenses of the commission shall be paid from the various funds administered by the commission as follows:

(1) Through June 30, 1993, the administrative expenses of the commission and the advisory committee shall be paid from the Minnesota future resources fund. After that time, the prorated expenses related to administration of the trust fund shall be paid from the earnings of the trust fund.

(2) After June 30, 1993, the prorated expenses related to administration of the trust fund may not exceed an amount equal to four percent of the projected earnings of the trust fund for the biennium.

Subd. 6. **Conflict of interest.** A commission member, advisory committee member, 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 legislative commission, 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 appropriations and senate finance committees, and the chairs of the house 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 and Minnesota future resources 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 and Minnesota future resources account 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 and the Minnesota future resources 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.

HIST: 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

#### **116P.10 ROYALTIES, COPYRIGHTS, PATENTS.**

This section applies to projects supported by the trust fund, the Minnesota future resources 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." 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. Before a project is included in the budget plan, the commission may vote 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.

HIST: 1988 c 690 art 1 s 14; 1993 c 172 s 79

#### **116P.11 AVAILABILITY OF FUNDS FOR DISBURSEMENT.**

(a) The amount biennially available from the trust fund for the budget plan developed by the commission consists of the earnings generated from the trust fund. Earnings generated from the trust fund shall equal the amount of interest on debt securities and dividends on equity securities. Gains and losses arising from the sale of securities shall be apportioned as follows:

(1) if the sale of securities results in a net gain during a fiscal year, the gain shall be apportioned in equal installments over the next ten fiscal years to offset net losses in those years. If any portion of an installment is not needed to recover subsequent losses identified in paragraph (b), it shall be added to the principal of the fund; and

(2) if the sale of securities results in a net loss during a fiscal year, the net loss shall be recovered from the gains in paragraph (a) apportioned to that fiscal year. If such gains are insufficient, any remaining net loss shall be recovered from interest and dividend income in equal installments over the following ten fiscal years.

(b) For funding projects until fiscal year 1997, the following additional amounts are available from the trust fund for the budget plans developed by the commission:

(1) for the 1991-1993 biennium, up to 25 percent of the revenue deposited in the trust fund in fiscal years 1990 and 1991;

(2) for the 1993-1995 biennium, up to 20 percent of the revenue deposited in the trust fund in fiscal year 1992 and up to 15 percent of the revenue deposited in the fund in fiscal year 1993;

(3) for the 1993-1995 biennium, up to 25 percent of the revenue deposited in the trust fund in fiscal years 1994 and 1995, to be expended only for capital investments in parks and trails; and

(4) for the 1995-1997 biennium, up to ten percent of the revenue deposited in the fund in fiscal year 1996.

(c) 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.

HIST: 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

**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.

HIST: 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 297.13, subdivision 1, 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.

HIST: 1988 c 690 art 1 s 17; 1989 c 335 art 1 s 179

## **VIII. THE LEGISLATIVE COMMISSION ON MINNESOTA RESOURCES**

**COMMISSION MEMBERS:** Representative Phyllis Kahn, Chair

**Senators:** Dennis Frederickson, Janet Johnson, Gary Laidig, Bob Lessard, Gene Merriam, James Metzen, Steve Morse, Leonard Price

**Representatives:** David Battaglia, Virgil Johnson, Tony Kinkel, Willard Munger, Tom Osthoff, Dennis Ozment, John Sarna

### **CITIZEN ADVISORY COMMITTEE (CAC) FOR THE ENVIRONMENT AND NATURAL RESOURCES TRUST FUND**

**C. Merle Anderson, Chair, Arlan Anderson, Patricia Baker, Ty Bischoff, Al Brodie, Bob DeVries, Nancy Gibson, Christine Kneeland, Jack LaVoy, Darby Nelson, Jean Sanford**



Laws 1991 Chapter 254 Including Projects From:  
MN FUTURE RESOURCES FUND (MFRF) - OIL OVERCHARGE FUND (OOC)-  
ENVIRONMENT AND NATURAL RESOURCES TRUST FUND (TF) - M.L. 1991, Chapter 254, Art. 1, Sec. 14\*  
July 1, 1991 - June 30, 1993

## **LEGISLATIVE COMMISSION ON MINNESOTA RESOURCES (LCMR)**

**Completed Projects: July 1, 1991 - June 30, 1993**

### **Commission Members**

**Senators:** Dennis Frederickson, Janet Johnson, Gary Laidig, Bob Lessard, Gene Merriam,  
James Metzen, Steven Morse, Leonard Price

**Representatives:** David Battaglia, Virgil Johnson, Phyllis Kahn (Chair), Tony Kinkel, Willard  
Munger, Dennis Ozment, Tom Osthoff, John Sarna

### **Citizen Advisory Committee Members**

Arlan Anderson, C. Merle Anderson (Chair), Ty Bischoff, Patricia Baker, Al Brodie, Bob  
DeVries, Nancy Gibson, Christine Kneeland, Jack LaVoy, Darby Nelson, Jean Sanford

John Velin, Director

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January 31, 1994

Section E

Laws 1991 Chapter 254 Including Projects From:  
***MN FUTURE RESOURCES FUND (MFRF)***  
***OIL OVERCHARGE FUND (OOC)***  
***ENVIRONMENT AND NATURAL RESOURCES TRUST FUND (TF)***  
M.L. 1991, Chapter 254, Art. 1, Sec. 14\*  
July 1, 1991 - June 30, 1993

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## RECREATION

### **Off-Highway Vehicle Recreation Areas**

**M.L. 1991, Ch. 254, Sec. 14, Subd. 3(a) \$75,000 MFRF**

*Dan Collins*

*MN DNR*

*500 Lafayette Road*

*St. Paul, MN 55155*

*(612) 296-3093*

This project analyzed the feasibility of creating a recreation area in Minnesota for off-highway vehicles (OHV). After measuring OHV concerns, an advisory council concluded that an off-highway vehicle recreation area is technically feasible, and they developed five criteria to aid final sight selection.

Council members reviewed 13 areas in the Twin Cities region and found them to be appropriate for OHV recreation sites. They recommended siting a park-like recreation area of at least 25000 acres within 80 miles of the Twin Cities and recommended that DNR manage the process in cooperation with the local authorities, residents, federal agencies, and OHV owners.

### **Superior Hiking Trail**

**M.L. 1991, Ch. 254, Sec. 14, Subd. 3(b) \$400,000 MFRF**

*Thomas L. Peterson*

*MN DNR*

*1300 Highway 61 E.*

*Two Harbors, MN 55616*

*(218) 834-4556*

This appropriation was used to plan and build 65 miles of hiking and backpacking trail, 15 bridges, three parking areas, and ten separate campsites between Knife River and the Canadian border. This biennium's construction brings the total length of the Superior Trail to 200 miles.

Corresponding to this growth in trail length, membership in the Superior Hiking Trail Association has also grown from 700 to 1400 and has been featured in newspaper, magazine, radio, and TV stories. Through volunteer labor and various funding sources, the Association is committed to completing the remaining segments of the Superior Hiking Trail.

### **Local River Planning**

**M.L. 1991, Ch. 254, Sec. 14, Subd. 3(c) \$400,000 MFRF**

*Daniel G. Retka*

*DNR Division of Waters*

*1201 E. Highway 2*

*Grand Rapids, MN 55744*

*(218) 327-4416*

This project assisted local units of government in the wise management of rivers within their jurisdiction. Collaborative teams created river plans – consisting of land use zoning criteria, recreational objectives, water quality considerations, and historic/cultural recommendations – for the St. Louis, Cloquet, Whiteface, Rainy, and Rapid rivers. These locally designed plans all contain more restrictive zoning provisions than the statewide standards and are tailored to specific local needs and concerns.

The plans for the St. Louis, Cloquet, and Whiteface rivers have resulted in a program to purchase large blocks of land for protection, and it is intended that all the plans will be distributed widely as examples of river management. This project is continuing into the 1993-95 biennium (M.L. 1993, Ch. 172, Sec. 14, Subd. 11(b)).

**Access to Lakes and Rivers**

**M.L. 1991, Ch. 254, Sec. 14, Subd. 3(d) \$1,000,000 MFRF**

*Michael T. Markell*

*Trails and Waterways*

*MN DNR*

*500 Lafayette Road*

*St. Paul, MN 55155-4052*

*(612)296-6413*

This program provided new or improved public access to lakes and rivers statewide in order to increase the opportunities for enjoying MN's water resources. During this biennium, two access sites were purchased (Lake Minnetonka and Green Lake), one boat access site is being developed (Mississippi), 22 fishing piers were purchased, and the Metro Shore Fishing Map was published – showing over 180 public fishing sites.

Five of these sites are being improved to meet the needs of children, elderly, and people with disabilities. This project is continuing into the 1993-1995 biennium through additional LCMR funding (M.L. 1993 Chapter 172, Sect. 14, Subd. 10(l)).

**Land and Water Resource Management for the Lower St. Croix National Scenic Riverway**

**M.L. 1991, Ch. 254, Sec. 14, Subd. 3(e) \$360,000 TF**

*Dan McGuinness*

*The MN-Wisconsin Boundary Area Commission*

*619 Second Street*

*Hudson, WI 54016*

*(612)436-7131*

This appropriation was used to develop better management and increased local stewardship of the land and water resources in the Lower St. Croix National Scenic Riverway. The resulting outcomes were threefold.

First, a Geographical Information System (GIS) for the Lower St. Croix Watershed was created in order to assess the ecological and visual impacts of growing use. The GIS includes geo-referenced data about water quality, aquatic habitat, cultural settlement patterns, and topographic conditions for the waterway.

Second, an assessment of current management strategies and needed changes was completed.

And lastly, the project expanded communication and coordination efforts among stakeholders and designed a program that will provide ongoing assistance, information, and education.

**Mississippi River Valley Blufflands Initiative**

**M.L. 1991, Ch. 254, Sec. 14, Subd. 3(f) \$150,000 TF**

*Steven P. Johnson*

*DNR/Rt. 2, Box 230*

*Lake City, MN 55041*

*(612)345-3331*

This project provided technical assistance to local governments for developing land-use planning tools that protect the scenic and biological resources of the blufflands region. To this end, blufflands zoning plans were developed in Goodhue and Houston counties, and information on land-use policy was disseminated to Wabasha and Winona counties and other interested communities.

The Blufflands initiative heightened awareness of the significance and the sensitivity of bluffland resources and generated enthusiasm among citizen groups for long-term blufflands stewardship, as well as enhancing the cooperative working relationships among concerned individuals and organizations. The project also published a booklet entitled "Visions and Vistas – Blufflands Forever" that will be widely distributed in visitor centers, state parks, chambers of commerce and other public places.

**Reclamation of Recreational Systems and Environmental Resources from Existing Urban/Suburban Neighborhoods**

**M.L. 1991, Ch. 254, Sec. 14, Subd. 3(g) \$200,000 MFRF**

*William R. Morrish, Director*

*Design Center for American Urban Landscape, U of MN*

*320 Wulling Hall*

*Minneapolis, MN 55455*

*(612)626-0333*

This project investigated the potential for enhancing and enriching the open space, recreational amenities, and overall physical quality of existing urban/suburban neighborhoods as part of future capital improvement programs. To this end, the project group completed case studies of Chanhassen, Maple Grove, Farmington, and Saint Paul's Phalen Neighborhood which examined the inter-relationship of urban design, capital infrastructure, and ecology.

The case study process included the following components: an urban design education/workshop format was developed for city administrative staff and elected officials; urban design principles were studied which link civic design, recreation, site ecology, and community capital improvements; and the results of the case studies were synthesized for application to other communities in the metropolitan area.

The case studies were disseminated in newsletter format to participating communities and are available with the summary report at the U of MN Architecture library and the Metropolitan Council library in St. Paul.

**Preservation of Historic Shipwrecks in Lake Superior**

**M.L. 1991, Ch. 254, Sec. 14, Subd. 3(h) \$100,000 MFRF**

*Donn Coddington*

*MN Historical Society*

*345 Kellogg Blvd.*

*St. Paul, MN 55111*

*(612)297-7451*

This appropriation was used to survey shipwrecks that were not surveyed during the first phase (1989-1991) of the LCMR-funded Lake Superior shipwreck project (M.L. 89, Ch. 335, Sec. 29, Subd. 9(f)). The Minnesota Historical Society spearheaded this project in conjunction with the State Historic Preservation Office (SHPO) and private contractors with expertise in maritime history and archaeology.

The surveys from this biennium resulted in the nomination of five shipwrecks to the National Register of Historic Places and the creation of three survey reports, research files, wreck drawings, video tapes, color slides, and black and white photographs. A draft management plan and educational materials were also produced. The SHPO plans to work with the MN Historical Society Press to publish the results of the Lake Superior Shipwrecks Study.

An additional component of this project consisted of planning and constructing diver access facilities along the north shore of Lake Superior. DNR has entered into a contract with the city of Silver Bay to construct the diver access.

**Land and Water Conservation Fund Administration**

**M.L. 1991, Ch. 254, Sec. 14, Subd. 3(i) \$84,000 MFRF**

*William H. Becker*

*MN DNR*

*500 Lafayette Road*

*St. Paul, MN 55155-4010*

*(612)296-3093*

This appropriation was designated for the administration of the federal Land and Water Conservation Fund grant program to maximize federal receipts and ensure Minnesota's continuing eligibility to participate. This appropriation was also used for the administration of other grant activities assigned to

the DNR commissioner through contracts with outside organizations for conducting LCMR projects assigned to the DNR in Chapter 254.

Under this administration, federal reimbursements totaling \$287,000 were captured, and the remaining \$378,000 due from L&WCF grant funds will be reimbursed to the state as the designated projects are completed. Of the 27 "pass-through" LCMR appropriations made to the commissioner, 24 contracts were executed and three were canceled.

#### **Historic Records Database**

**M.L. 1991, Ch. 254, Sec. 14, Subd. 3(j) \$180,000 MFRF**

*Michael Fox*

*MN Historical Society*

*345 Kellogg Blvd.*

*St. Paul, MN 55101*

*(612)296-1014*

This project increased the accessibility of the Minnesota Historical Society's resources by converting older card files and published lists into electronic form and entering them into the PALS computer network. During this biennium, catalog records for 169,272 items in the Historical Society's collections were completed and are now available for searching at 15 terminals in the History Center, at over 500 other terminals connected to PALS, and by dial access from any home in the state with a computer and modem.

There is strong evidence of increased use of the collections because the number of database searches by History Center patrons has grown from 16,000 to more than 103,000 per month, and the demand for loans of books, articles, and microfilm is also growing.

#### **Fur Trade Research and Planning**

**M.L. 1991, Ch. 254, Sec. 14, Subd. 3(k) \$250,000 MFRF**

*Donn Coddington*

*MN Historical Society*

*345 Kellogg Blvd.*

*St. Paul, MN 55111*

*(612)297-7451*

This appropriation was used to expand research about the North West Fur Post on the Snake River near Pine City, MN and to improve educational programming and facilities planning at the fur post. In close cooperation with the citizens of Pine City, the master plan for the North West Fur Post was expanded and improved. Designs for an education building and an exhibit program were completed, and comprehensive education planning was conducted to provide for both coordinated and expanded programming between the fur post and the Ojibwe encampment's interpretation, exhibits, trail signage and on- and off-site education programs.

New research was also completed regarding the fur trade and Ojibwe life of the early 1800s in the Snake River area. The research document, "Angwammas (It's About Time) – A Research Report on the Ojibwe/European Fur Trade Relations From an Ojibwe Perspective," provides a way to tell the stories of the North West Fur Post from multiple perspectives.

#### **Mystery Cave Resource Evaluation**

**M.L. 1991, Ch. 254, Sec. 14, Subd. 3(l) \$150,000 MFRF**

*Warren Netherton*

*MN DNR*

*Forestville State Park*

*Preston, MN 55965*

*(507)937-3251*

This appropriation was used to carry out an in-depth resource inventory and study of Mystery Cave which included groundwater quality, cave meteorology, geology, and biology. One important outcome is a

better understanding of the dynamic relationships between surface and cave meteorology and between surface precipitation and cave water quality.

Other results include the creation of a detailed geologic map including stratigraphic profiles and cross sections and the collection of various aquatic invertebrates, including two species not previously reported in Minnesota.

The researchers disseminated their findings at training sessions and through written narratives which the Forestville State Park staff will utilize during environmental education programs and public cave tours.

#### **Rails-to-Trails Acquisition and Development**

**M.L. 1991, Ch. 254, Sec. 14, Subd. 3(c) \$1,000,000 TF**

*Dennis W. Asmussen*

*Trails and Waterways*

*DNR 500 Lafayette Road*

*St. Paul, MN 55155*

*(612)296-4822*

This appropriation was used to acquire the abandoned Burlington Northern grade from Hawick to Richmond and the remaining abandoned Burlington Northern grade needed for the Paul Bunyan State Trail.

The acquisition of the Hawick to Richmond grade now provides contiguous ownership of the abandoned grade from Willmar to Richmond; trail development has been initiated on the Willmar to Hawick segment. The Paul Bunyan State Trail will span 95 miles from Baxter to Bemidji (excluding the towns of Pine River, Nisswa, and Pequot Lakes), and trail development will be initiated in the near future.

## **WATER**

#### **Stream and Watershed Information System**

**M.L. 1991, Ch. 254, Sec. 14, Subd. 4(a) \$200,000 TF**

*Susanne Maeder*

*LMIC/ Department of Administration*

*330 Centennial Building*

*658 Cedar Street*

*St. Paul, MN 55155*

*(612)297-4986*

This appropriation was used to develop an integrated information system describing Minnesota's streams and associated watersheds. The system combines Geographic Information System (GIS) layers describing the river traces and land characteristics of the watershed with tabular information describing stream flow, water quality, water appropriation, and other features.

A menu interface was designed to allow both experienced and inexperienced users to define their search by geographic area (county or watershed), display map information on the screen, query the system about streams, lakes, monitoring activity, or appropriations, create reports from the data, and create hard-copy maps. This Stream and Watershed Information System is designed to be expanded as data layers become available, and users of the system will include state and local agencies and local water planning groups.

**South Central MN Surface Water Resources Atlases and Data Base**

**M.L. 1991, Ch. 254, Sec. 14, Subd. 4(b) \$300,000 TF**

*Henry W. Quade  
Water Resources Center  
MSU/ Box 34  
Mankato State University  
Mankato, MN 56002  
(507)389-5492*

This project produced thirteen county surface water resources atlases with the same mapping base as MN's geologic atlases. They have been recorded in both hard copy and electronic (GIS) format. These surface water references can be directly compared with subsurface geologic-hydrogeologic maps for interpretation, planning, and management.

The database provides broad-based water resource data in a coherent and accessible format. Training workshops on the database were conducted at Mankato State University's Information Sciences Institute. This project is continuing in the 1993-1995 biennium with additional LCMR funding (M.L. 93, Ch. 172, Sec. 14, Subd. 11(e)).

**MN River Basin Water Quality Monitoring**

**M.L. 1991, Ch. 254, Sec. 14, Subd. 4(c) \$700,000 TF**

*Wayne Anderson  
Water Quality, Pollution Control Agency  
520 Lafayette Rd.  
St. Paul, MN 55155  
(612) 296-7323*

This appropriation was used to conduct a comprehensive nonpoint source pollution (NPS) evaluation of the entire Minnesota River system. The monitoring program was a collaboration between federal, state, and local operators and included physical/chemical assessment, biological/toxicological assessment, and land use assessment.

The study found that most of the NPS loading occurs during runoff events, when large amounts of fine-particle sediment and nutrients are washed into the system. The biological communities at many locations were less diverse and had fewer species than expected due to the effects of channelization, siltation, and organic enrichment.

To prevent the run-off and leaching of fine-particle sediment and nutrients, the study recommends several management practices including: conservation tillage, nutrient management, feedlot runoff controls, buffer strips along all open channels, strategic wetland restoration, clandestine dump site cleanups, more work to address open tile intakes, and the correction of faulty septic systems.

The results of this project are recorded in a four-volume report given to all SWCD offices and local river planners. The overall summary report will be available upon request from MPCA. The nonpoint source control strategies generated by this project will be documented in the Nonpoint Source Management Program prepared under Section 319 of the Federal Clean Water Act.

**Waterwatch – Citizen Monitoring and Protection Program**

**M.L. 1991, Ch. 254, Sec. 14, Subd. 4(d) \$272,000 MFRF**

*David Christopherson  
Minnesota Pollution Control Agency  
520 Lafayette Road  
St. Paul, MN 55155  
(612)296-8856*

This project encouraged and coordinated public involvement in water quality monitoring by building partnerships between local interests and state agencies. The main components consisted of developing and implementing monitoring programs for the Upper Mississippi River, Itasca County lakes, and the St.

Louis River.

The Mississippi Headwaters Board (MHB) River Watch involved students from nine schools in monitoring the upper Mississippi and conducted an inventory of natural, cultural, scenic, scientific, and recreational values for the first 400 miles. This data was then entered into a GIS format.

Itasca County undertook an extensive monitoring program of its lakes in order to start developing a lake management plan in collaboration with other stakeholders. Several lake and school groups assisted the Conservation District with water sampling.

The St. Louis River Watch involved 16 schools in water quality monitoring that included both chemical and biological parameters and the first comprehensive survey of benthic macro-invertebrates on the St. Louis.

Other project outcomes included a Frog Watch program, a radio show produced by students, a river congress attended by 200 students, and a program called Keepers of the Waters that brings scientists and artists together over water-quality concerns. Water quality data from these monitoring efforts was also entered into a database and is available through the national STORET database.

**Demonstration of Biotechnology for Removing Organic Chemicals from Aquifers and Groundwater  
M.L. 1991, Ch. 254, Sec. 14, Subd. 4(e) \$96,000 MFRF**

*Walter Maier*

*Dept. of Civil and Mineral Engineering, U of MN*

*Minneapolis, MN 55455*

*(612) 625-3016*

This appropriation was used to develop and demonstrate in situ methods for bioremediation of organic pollutants in groundwater. Several compounds were shown to completely biodegrade through oxidation, and higher molecular weight polynuclear aromatic hydrocarbons were shown to degrade by resident soil organisms as long as sufficient oxygen was present. The compounds that are less soluble in water took longer to biodegrade.

A protocol for testing minimally disturbed soil cores was developed which utilizes columns to assess the spatial distribution of pollutants and oxygen. Column testing was carried out at the Reilly Superfund Site in St. Louis Park, where the results showed that rates of biodegradation were limited by oxygen availability. Oxygen enrichment resulted in the complete biodegradation of all polynuclear aromatic hydrocarbons (PAH's) without the addition of either nutrients or specially adapted microorganisms. These studies are ongoing using funding from other agencies.

The column studies generated a large database of information, and mathematical models have been developed to analyze the data. One model helps interpret changes in soluble and absorbed PAH concentrations, and the other is most useful for simulating the dynamics of oxygen deficiencies. The latter model, however, was not adequate for fitting the column test results; this was resolved by working with the staff at the Army High Performance Computer Center to develop a model that is capable of finding best fit values of selected coefficients that cannot be measured directly. The results of this research have been presented at two conferences, and five papers have been submitted for publication.

**County Geologic Atlas (MGS)/Groundwater Sensitivity Mapping (DNR)**  
**M.L. 1991, Ch. 254, Sec. 14, Subd. 4(f) \$1,400,000 TF**

*Priscilla Grew*  
*MN Geological Survey*  
*2642 University Ave.*  
*St. Paul, MN 55114*  
*(612)627-4780*

*Sarah Tufford*  
*MN DNR*  
*500 Lafayette Rd.*  
*St. Paul, MN 55155*  
*(612)297-2431*

This appropriation was used to accelerate the production of County Geologic Atlases (CGA) and Regional Hydrogeologic Assessments (RHA). During this biennium, the Ramsey County CGA was published, and the Anoka Sand Plain RHA was completed. Work is in progress on the Rice, Fillmore, and Stearns CGA's and on the Red River and Southwestern RHA's. Public presentations and workshops have been held in each project area.

These CGA's and RHA's will expedite the acquisition, verification, interpretation, and transfer of geologic and hydrogeologic information at an appropriate scale for planners, resource managers and educators to make well-informed decisions about local land use. Production of county geologic atlases and regional hydrogeologic assessments will be expanded during the 1993-1995 biennium through continued LCMR funding (M.L. 93 Ch. 172 Sec.14, Subd. 11(g)).

**Aquifer Analysis in Southeast Minnesota**  
**M.L. 1991, Ch. 254, Sec. 14, Subd. 4(g) \$73,000 MFRF**

*Nancy O. Jannik*  
*Department of Geology*  
*Winona State University*  
*Winona, MN 55987*  
*(507)457-5267*

This appropriation was used to perform pumping tests of two widely used aquifers in Southeast Minnesota in order to analyze aquifer characteristics and interaction. Two key findings were that aquifer characteristics varied considerably over the study region, and that interaction between the two aquifers is not as clearly defined as was widely proposed.

This study found that the transmission and storage parameters for the two aquifers need to be determined based on local characteristics and stratigraphy. This research involved undergraduates and local citizens in the scientific process.

**Clean Water Partnership Grants to Local Units of Governments**  
**M.L. 1991, Ch. 254, Sec. 4(h) \$700,000 TF**

*Gayleen Reetz*  
*MN Pollution Control Agency*  
*520 Lafayette Road*  
*St. Paul, MN 55155*  
*(612)296-7323*

This project accelerated the Clean Water Partnership program by providing grants to local units of government to solve surface and groundwater quality problems resulting from nonpoint sources of pollution. Three projects were selected and received funding.

The Lambert Creek Improvement project focused on the domestic water supply for St. Paul and included the impoundment of three areas and, if necessary, the chemical treatment of sediments to

enhance nutrient retention.

The Brown-Nicollett-Cottonwood Groundwater Implementation project goals include reduction of nitrate-nitrogen contamination in drinking water, prevention of drinking water contamination in the future, and increasing public awareness of the linkage between land use practices, water quality, and public health.

The Lake Shaokatan Restoration Implementation Project has defined specific watershed sources of excess nutrients which will be reduced by implementation of various management practices such as feedlot management, wetland restorations, and agricultural nutrient management. Results from these three projects will be shared with other local governments so they can learn from the experiences of these and the other 32 Clean Water Partnership projects.

#### **Cannon River Watershed Grants**

**M.L. 1991, Ch. 254, Sec. 14, Subd.4(i) \$60,000 TF**

*David Peterson*

*Board of Water and Soil Resources*

*1200 S. Broadway, Rm. 135*

*Rochester, MN 55904*

*(507)285-7458*

This appropriation was used to provide grants for research and demonstration projects in the Cannon River Watershed that promote proper resource management techniques or investigate unique watershed features. Grants were awarded to nine applicants. Three projects demonstrated management practices for minimizing agricultural non-point pollution from nutrients and soil erosion. Two projects demonstrated forestry practices to improve understandings and promote forest management in the watershed.

A grant to the Cannon Falls school district was used to establish an on-site school nature area in conjunction with St. Olaf College. The French Lake Association demonstrated planting of selected aquatic vegetation with a technique called aquascaping. A project by Carleton College dealt with management needs to maintain a threatened species of turtles. St. Olaf College conducted a survey to determine wetland biodiversity in the watershed.

#### **Mitigating Mercury in Minnesota Lakes and Streams**

**M.L. 1991, Ch. 254, Sec. 14, Subd. 4(j) \$300,000 TF**

*Dan Helwig*

*MN Pollution Control Agency*

*520 Lafayette Road*

*St. Paul, MN 55155*

*(612)296-7215*

Continuing from the 1989-1991 biennium (M.L. 1989, Ch. 335, Art. 1, Sec. 29, Subd. 4(c)), this project investigated the mechanism of mercury bioaccumulation in fish and began to develop and test methods for mitigating this accumulation. First, an in-water test chamber was modified to accommodate experiments, then an impact assessment protocol and sampling regime were developed and tested.

Various methods for mitigating mercury contamination in fish were then tested. The results were threefold: 1) Addition of bioactive carbon (vegetation) significantly increased mercury contaminations in fish; 2) Addition of a micronutrient significantly decreased the concentration of mercury in fish and, 3) Addition of mercury absorbing polymer and chelator also decreased the concentration of mercury in fish but to a lesser extent than the micronutrient. Experimentation will continue during the next biennium (M.L. 93, Ch. 172, Sec. 14, Subd. 11(c)).

**Development and Application of Aeration Technologies**  
**M.L. 1991, Ch. 254, Sec. 14, Subd. 4(k) \$148,000 MFRF**  
*Heinz Stefan*  
*St. Anthony Falls Hydraulic Lab, U of MN*  
*Minneapolis, MN 55414*  
*(612)627-4010*

This research project explored the relationship between sedimentary oxygen demand and water velocities above the sediment bed in order to optimize the placement of lake aerators, the selection of aerator capacity, and the design of membrane aerators.

The experiments and analysis showed that sedimentary oxygen demand (SOD) increases in proportion to the velocity of the water moving over the sediments. Aeration devices can also artificially create water velocities near the sediment water interface which are not usually factored into the estimation of aerator capacity but were recognized in this research. During this project, the laboratory measurements of sedimentary oxygen demand rates agreed with the range of values determined for natural lakes.

A design that employs hollow fiber modules was found to be applicable as an instream aerator and hypolimnetic aerator because no bubbles are produced and 100% transfer efficiency is approached. Using the results of laboratory experiments, researchers developed a parametric relationship that may be used to predict the performance of instream or hypolimnetic aerators in the field. The results of this research are available from the St. Anthony Falls Hydraulic Laboratory and have also been disseminated through presentations at conferences and publication in professional journals.

**Lake Superior Initiative/ Institute for Research**  
**M.L. 1991, Ch.254, Sec. 14, Subd. 4(l) \$400,000 MFRF**  
*Dr. Robert M. Carlson*  
*U of MN-Duluth, Dept. of Chemistry*  
*10 University Drive*  
*Duluth, MN 55812*

The purpose of this appropriation was to form and staff the Institute for Lake Superior Research and to develop a coordinated program of research on Lake Superior. A permanent director was not appointed during this biennium. The interim director and associate director initiated a symposium to ascertain the state of knowledge about Lake Superior. Science and policy groups from several American Universities and Canada attended and exchanged research priorities.

Research projects carried out this biennium under the auspices of the Institute for Lake Superior Research include: 1) the cataloging and partial analysis of lake core samples, 2) the development of a new method for analysis of reactive toxicants, 3) a set of lake investigations using conceptual and mathematical models previously applied on a similar lake in Russia, and 4) an investigation of the accumulation and sources of natural and anthropogenic organic chemicals in lake sediments. Currently eight publications describing this work are in preparation or have been accepted.

~~— CANCELLED — Personnel problems~~

~~**Lake Mille Lacs Public Land Use**  
**M.L. 1991, Ch. 254, Sec. 14, Subd. 4(m) \$20,000 MFRF**  
*Robert E. Hanco, Jr.*  
*MN-DNR*  
*1601 Minnesota Drive*  
*Brainerd, MN 56401*  
*(218)828-2613*~~

~~The goal of this project was to survey public land adjacent to Lake Mille Lacs to determine which governmental unit has administrative control and assess current use by the public.~~

**Ecological Evaluation of Year-Round Aeration**  
M.L. 1991, Ch. 254, Sec. 14, Subd. 4(n) \$100,000 TF  
*David Wright*  
MN DNR  
Box 25-500 Lafayette Rd.  
St. Paul, MN 55155  
(612)297-4886

This program explored the ecological impacts of year-round aeration on MN lakes in order to evaluate the claim that aeration mitigates a variety of water quality problems. The key finding was that the impact of aeration on lake ecology varied as a function of lake type. Deep lakes were affected both physically and chemically by aeration, showing higher nutrient levels, more algae, poorer water clarity, but less blue-green algae. Shallow lakes, however, showed no such response.

Researchers will present project results at the 1993 meeting on the North American Lake Management Society and will disseminate information to interested groups through the Ecological Services section of the DNR.

**Erosion Control Cost-Share Grants**  
W.L. 1991, Ch. 254, Sec.14, Subd. 4(o) \$250,000 TF  
*Eric Mohring*  
Board of Water and Soil Resources  
155 South Wabasha St.  
St. Paul, MN 55107  
(612)297-7360

This project provided funding, as well as engineering and technical support, to seven soil and water conservation districts (SWCDs) in southeastern Minnesota to help them carry out conservation projects in the catchment areas of sinkholes. Funded projects included two large-scale diversion projects in Fillmore county and 25 smaller-scale projects in Fillmore, Mower, Olmsted, Houston, Dodge, Winona, and Goodhue counties.

Activities included surface water diversions and controls, watershed conservation practices, and a variety of sinkhole treatments designed to reduce the contamination of ground water. The emphasis was on sites where innovative practices could be used with a high information and educational potential.

Several of the projects will be utilized as demonstration sites and a guidance document will be available for use by SWCDs, local government, and landowners.

**Well-Sealing Cost Share Grants**  
W.L. 1991, Ch. 254, Sec. 14, Subd. 4(p) \$750,000 TF  
*Eric Mohring*  
Board of Water and Soil Resources  
155 South Wabasha St.  
St. Paul, MN 55107  
(612)297-7360

This project provided grants to counties for sharing the cost of sealing high-priority abandoned wells. A total of 39 counties received cost-share grants, ranging in size from \$2,000 to \$55,000. As of June 1993, 1270 abandoned wells have been sealed and approximately 2,000 more are projected to be sealed.

These local cost-share programs served to raise public awareness about the contamination threat of abandoned wells. Consequently, more wells have been slated to be sealed voluntarily and local education efforts have been initiated.

This program enabled the Board of Water and Soil Resources and other agencies to expand their training and technical support to local units of government, and local government staff members have learned and benefitted from each others' administrative and technical experience.

## **EDUCATION**

**State Environmental Education Program**  
**M.L. 1991, Ch. 254, Sec. 14, Subd. 5(a) \$790,000 TF**  
*Pam Landers*  
*MN Dept. of Education*  
*550 Cedar Street*  
*St. Paul, MN 55101*  
*(612)296-8132*

This appropriation was used to fund several different initiatives aimed at strengthening environmental education across Minnesota. "A GreenPrint for Minnesota: The State Plan for Environmental Education" was created which outlines recommended actions, priority audiences, and longterm goals for environmental education in Minnesota.

Another project initiative resulted in the development of several model environmental education curriculums that utilize innovative approaches and also stress the dissemination of information across districts.

In addition to GreenPrint and model curriculum development, an assessment of Minnesota's environmental learning centers was completed which identifies strategies to help improve coordination and communication between learning centers and other institutions involved in environmental education.

A related initiative sought to incorporate environmental education into the state's system of Community Education by improving communication and offering several environmental training programs (workshops, inservice, and conferences) to community education personnel.

**Teacher Training for Environmental Education**  
**M.L. 1991, Ch.254, Sec. 14, Subd. 5(b) \$5,000 MFRF**  
*Marion Brooks Wallace*  
*St. Paul Chapter of National Audubon Society*  
*2603 Cohansey St.*  
*St, Paul, MN 55113*  
*(612)484-7062*

This program provided scholarships to 3rd-5th grade teachers for training workshops held at Audubon's Northwoods Center which taught teachers how to integrate environmentally sound concepts into their classes. Two 4-day workshops were conducted in the summers of 1992 and 1993, where a total of 27 teachers were trained and received 40 recertification credits. 19 teachers registered at Hamline University for three graduate credits.

The hands-on workshop included a variety of field instruction, simulation games, and curriculum planning. This program is potentially adaptable to other nature centers in the state which would make training accessible to more teachers on an in-service basis.

**Video Education Research and Demonstration Project**  
**W.L. 1991, Ch. 254, Sec. 14, Subd. 5(c) \$100,000 TF**  
*James E. Carufel*  
*Twin Cities Public Television*  
*172 E.4th St.*  
*St. Paul, MN 55101*  
*(612)229-1453*

This project developed a video education demonstration project and created a model for statewide video environmental education and communication networks. Initial background research indicated that there are significant teacher needs that could be met through many avenues, including in-service video training programs, teacher-friendly video curriculums, teacher training via teleconferencing, and a video

resource library of reliable videos. The results of this research were documented on two professionally-prepared videotapes.

A teacher training model was developed in collaboration with master teachers from North Dakota and Minnesota and was tested at a two-day workshop with 100 teachers. The training module was shown to be over 90% effective in improving teacher use of video and student learning. In addition, a demonstration project for public awareness was tested when six public TV stations broadcast specially produced "Enviro-Tips" with a 1-800 feedback line 800 times over a six-month period.

**Integrated Resource Management Education & Training Program**

**M.L. 1991, Ch. 254, Sec. 14, Subd. 5(d) \$300,000 TF**

*Ron Nargang*

*MN DNR*

*500 Lafayette Rd.*

*St. Paul, MN 55155*

*(612)296-4810*

This program provided 27 internships and 25 scholarships to attract individuals into natural resource and related careers. More than 25 percent of scholarship recipients were minorities and nearly half were female.

The program also sponsored a graduate level agronomy course for 30 staff members, paid for two state employees to attend a comprehensive emergency response training conference, and partially funded both a major environmental spill exercise and a statewide conference on environmental emergencies. The internship and scholarship program will continue for an additional two years under the Governor's Investment Initiatives.

**Continuing Education in Outdoor Recreation Management for Natural Resource Managers**

**M.L. 1991, Ch.254, Sec.14, Subd. 5(e) \$125,000 MFRF**

*David Lime*

*Forest Resources, U of M*

*1530 N. Cleveland*

*St. Paul, MN 55108*

*(612) 624-2250*

This project developed, implemented, and evaluated a training and education program for DNR employees and other natural resource professionals in order to expose them to new concepts and technologies that have direct application to outdoor recreation management.

Through a partnership between the University of Minnesota, DNR, and other agencies, an interdisciplinary short course was developed and conducted in four two-week training sessions. Over 140 professionals participated from various agencies including DNR, National Park Service, and U.S. Army Corp of Engineers.

Evaluation of the short course, compiled from participant questionnaires and a follow-up workshop, indicates that perceived knowledge increased for most participants and will potentially last for the long run. Some participants, however, had little chance to put their new knowledge to work on the job and cited organizational barriers, lack of clear divisional goals, instability of funding, and resistance to change as the reasons.

**Environmental Exhibits Collaborative**  
**M.L. 1991, Ch. 254, Sec. 14, Subd. 5(f) \$400,000 TF**  
*Louis Casagrande*  
*Science Museum of Minnesota*  
*30 E. 10th Street*  
*St. Paul, MN 55101*  
*(612)221-9432*

This appropriation was used to create a statewide partnership of MN museums, environmental learning centers, governmental agencies, and private organizations for the purpose of sharing environmental exhibits and programs throughout the state. The Science Museum and the Bell Museum each produced an exhibit on a water-related topic, and these exhibits traveled free of charge to Environmental Exhibits Collaborative (EEC) members across Minnesota.

The MN DNR purchased copies of the exhibits for use in the state park system. The Science Museum shared its stormwater exhibit with several EEC members and is exploring ways it might construct additional copies. The Science Museum also gave each residential environmental learning center a Water Trunk for on-site water education.

The Bell and Science museums jointly organized and ran two exhibit-development workshops in order to provide EEC members with the knowledge and confidence to build their own small-scale exhibits through the use of inexpensive and readily available materials.

Both museums intend to continue working closely with EEC partners and the Science Museum is working with Twin Cities Public Television to develop "Science Minnesota," a proposal to the National Science Foundation for increasing public awareness about scientific topics important to this region.

~~– CANCELLED – Required match not met~~

~~**Upper Mississippi River Environmental Education Center**  
**M.L. 1991, Ch. 254, Sec. 14, Subd. 5(g) \$600,000 MFRF**  
*Eric Sorenson*  
*City of Winona*  
*P.O. Box 378*  
*Winona, MN 55987*  
*(507)457-8233*~~

~~The goal of this project was to develop detailed architectural designs necessary to obtain federal construction funding for an Upper Mississippi River Environmental Education Center.~~

**Urban Rangers Program**  
**M.L. 1991, Ch. 254, Sec. 14, Subd.5(h) \$100,000 MFRF**  
*Larry Nelson*  
*Minneapolis Park and Recreation Board*  
*310 4th Ave. South*  
*Minneapolis, MN 55415*  
*(612)348-2226*

This project developed an environmental education program for children in urban areas. After a review of existing urban environmental education programs in the United States and an inventory of Minneapolis resources, Urban P.L.A.C.E. (People Learning About Community and Environment) was chosen as an appropriate model, and pilot programs were conducted at ten recreation centers throughout Minneapolis in the summer of 1992.

Since each site presented significant differences in terms of resources available, demographics, and staff support, each of the ten programs was unique. 395 children participated in the pilot programs free of charge.

After follow-up evaluations and resulting refinements, 32 recreation centers chose Urban P.L.A.C.E. as part of their offerings for summer 1993. As evidence of Urban P.L.A.C.E.'s dissemination in Minneapolis, some public schools are modelling programs after it, and non-profit organizations, schools, and recreation departments from other large cities have requested information about it.

#### **Crosby Farm Park Nature Program**

**M.L. 1991, Ch. 254, Sec. 14, Subd. 5(i) \$85,000 MFRF**

*Ed Olsen*

*Parks and Recreation, City of St. Paul*

*1224 N. Lexington Parkway*

*St. Paul, MN 55103*

*(612)488-7291*

This project instituted a nature study program at Crosby Park and developed an environmental education curriculum for St. Paul elementary schools. A full time naturalist was hired and interpretive displays were developed, as well as weekend, after-school, and vacation programming. Over the two-year project, 742 adults and 2,518 children have participated in programs at the Nature Park.

An environmental education curriculum was also developed for St. Paul schools which utilizes classes both in school and at the Nature Park; over 6,722 school children and their teachers have participated.

To insure access for audiences with special needs, specific efforts are being made to mainstream these students into regular programming offered at the Nature Park.

To disseminate information about the Nature Park programs, brochures have been delivered to over 21,000 residents in St. Paul, and school brochures have been distributed to every elementary school. This project will be expanded during the 1993-1995 biennium through continued LCMR funding (M.L.93, Ch. 172, Sec. 14, Subd. 7(m)).

#### **Youth in Natural Resources**

**M.L. 1991, Ch. 254, Sec. 14, Subd. 5(j) \$250,000 MFRF**

*Larry Fonnest*

*Office of Youth Programs*

*MN DNR*

*500 Lafayette Road*

*St. Paul, MN 55155-4004*

This project developed a career exploration program in the natural resources for minority youth and tested their vocational interests, skills, and aptitudes. Participants in this program spent up to 20 hours per week learning about their cultural ties to the natural world, about the issues and techniques involved in resource management, and about various career options. The balance of the week was devoted to field work experience.

By June 1993, 175 young people, ages 15 to 18, and 39 adult staff of color participated in the program. Due to this success, Youth in Natural Resources has been honored by several public service organizations and has received considerable media attention.

The development of strong working partnerships with six minority community agencies, four Job Training Partnership Act Service Delivery Areas, and four natural resource agencies will serve as the foundation for the program's future.

**Environmental Education for the Handicapped**  
**M.L. 1991, Ch. 254, Sec. 14, Subd. 5(k) \$130,000 MFRF**  
*Marty Cushing*  
*Vinland National Center*  
*Lake Independence, Box 308*  
*Loretto, MN 55357*  
*(612)479-3555*

This project developed an environmental education curriculum for people with disabilities. The model curriculum, entitled "Celebrate the Earth" includes information about integration techniques and guidelines for adapting environmental education activities. Formal and informal evaluations of the model were carried out by both professionals and people with disabilities.

Much of the second year of the project was spent teaching about the importance of environmental education for people with disabilities and how to use the model curriculum. Training was provided for 63 educators, 113 environmental professionals, and 111 rehabilitation professionals. To further disseminate the curriculum beyond these 300 individuals, articles and press releases about the curriculum will be submitted to 20 professional publications.

## **AGRICULTURE**

**Biological Control of Pests**  
**M.L. 1991, Ch. 254, Sec. 14, Subd. 6(a) \$650,000 TF**  
*Dharma Sreenivasam*  
*MN Dept. of Agriculture*  
*90 West Plato Blvd.*  
*St. Paul, MN 55107*  
*(612)296-1350*

Continuing from the 1989-1991 biennium (M.L. 89, Ch.335, Sec.29, Subd.8(b)), the long-term goal of this research program is to develop biological controls for several MN pests including leafy spurge, Canada thistle, European corn borer, corn rootworm, weevils, forest defoliators, filth flies, gypsy moths and grasshoppers. This biennium's research program consisted of eight separate projects carried out by 15 scientists from two colleges and five departments at the University of MN and four scientists from the MN Department of Agriculture.

In the area of weed control, exotic flea beetles were used to successfully control leafy spurge, and a bacterium was isolated and is being patented to be used against Canada thistle.

In the area of microbiological control, cultivation of pathogens which act against corn borers and grasshoppers was improved, and suppressive isolates tested against potato scab yielded up to 80% scab reduction over a four-year field test.

In the area of field and vegetable crop control, three parasitoids and one pathogen of the alfalfa weevil were determined to be widely distributed and to reduce weevil populations by 90% or more. The production and field testing of egg parasite species for corn borers has improved but further study is still needed to uncover the combined impact of egg, larval, and pupal parasites. Several treatments were found to be effective at significantly reducing larval infestations by the imported cabbageworm, diamondback moth, and cabbage looper.

Concerning the area of urban, livestock, and commercial greenhouse pest control, a gypsy moth parasite was reared and released at nine sites, 3.2 million parasites were produced for release against houseflies and stable flies, and predators were evaluated for their potential to combat aphids and thrips in commercial rose production.

To disseminate the results of these research projects, a symposium was held in October 1992 with over 140 scientists from the U.S., Canada, Israel, Korea, Mexico, and Europe. Other dissemination has included the publication of 37 articles in scientific journals and ten presentations at national and international conferences. This research program is continuing through the 1993-1995 biennium (M.L.93, Ch. 172, Sec. 14, Subd.3(a)).

**Review and Evaluation of Degradation and Bioremediation of Elevated Levels of Pesticides at Spill Sites**

**M.L. 1991, Ch. 254, Sec. 14, Subd. 6(b) \$300,000 MFRF**

*Greg Buzicky*

*MN Department of Agriculture*

*90 West Plato Blvd.*

*St. Paul, MN 55107*

*(612)296-5639*

This research project investigated the application of bioremediation technologies to pesticide-contaminated soils and water. The bioremediation literature was first reviewed, and then laboratory and field studies were conducted to explore how concentration levels affect the persistence of two pesticides, atrazine and alachlor, at spill sites. It was found that at the high concentrations characteristic of spill sites, degradation of alachlor is slow whereas the degradation of atrazine can be rapid depending upon soil type.

Innovative bioremediation technologies were then studied using plants and microbes in the laboratory. In experiments using cultivated microbes, high concentrations of atrazine were degraded rapidly into harmless end products.

These bacterial cultures were also added to heavily contaminated soils from a site in MN and significant biodegradation was observed. Although the use of bioremediation technologies on pesticide contaminated media is largely untested at the field scale, results from these laboratory experiments show it to be a promising method.

**Effective Nitrogen and Water Management for Water Quality Sensitive Regions of Minnesota**

**M.L. 1991, Ch. 254, Sec. 14, Subd. 6(c) \$300,000 MFRF**

*Dr. H.H. Cheng*

*Department of Soil Science, U of M*

*St. Paul, MN 55108*

*(612)625-9734*

This research developed and demonstrated ways to reduce nitrogen contamination of groundwater through more effective utilization of nitrogen from manure, legume, and fertilizer sources. An inventory of soil, climate, and management practices of the Central Sands of Minnesota was prepared based on intensive interviews of MN farmers.

The project then evaluated tillage influences on nitrogen available to corn from manure and fertilizer sources as well as nitrate leaching losses. The research also included monitoring soil nitrogen distribution and developed a nitrogen budget for irrigated potatoes. Finally, the experimental models for nitrate leaching were tested and validated.

Early research indicates that over-application of nitrogen on manured fields appears to have the most potential impact on water quality. To minimize nitrogen loss through percolation, different methods were recommended depending upon the season. These recommendations include managing the source and timing of fertilizer application in the spring, managing the amount and timing of irrigation in the summer, and growing a cover crop to tie up the residual nitrogen within the root zone during the fall.

Based on model simulations, a procedure was developed to derive risk indices for nitrate leaching

loss from soils as influenced by changes in nitrogen and irrigation management practices and climatic conditions. This procedure has the potential to be linked to the computerized database of the Soil Survey Information System, so that risk indices for other similar soils could be derived.

Demonstrations were also developed during this biennium to be used in educational efforts. Five on-farm demonstration sites were established to illustrate ways of minimizing nitrate contamination including the use of alternative sources of nitrogen, alternative scheduling of nitrogen applications, legume and manure nitrogen credits, improved tillage practices, over crops, and sap nitrate tests for potatoes.

#### **Conservation Reserve Easements**

**M.L. 1991, Ch. 254, Sec. 14, Subd. 6(d) \$600,000 TF**

David Behm

MN Board of Water and Soil Resources

155 South Wabasha #104

St. Paul, MN 55107

(612)296-0880

The Conservation Reserve Easements project allowed the Board of Water and Soil Resources to accelerate its Reinvest in Minnesota Reserve wetland restoration and easement acquisition activities. This appropriation provided permanent protection to 280.6 acres of restored wetlands and 420.4 acres of adjacent enhanced uplands. This cumulative acreage reflects a net gain in critically important waterfowl production habitat.

Due to these accelerated wetland restoration activities, the Board is pursuing opportunities to leverage further easement acquisition and practice establishment funds within the Minnesota River watershed from the North American Wetland Conservation Act. LCMR funding for continued acquisition activities will continue through the 1993-1995 biennium (M.L. 93, Ch. 172, Sec. 14, Subd. 3(e)).

#### **Native Grass and Wildflower Seed**

**M.L. 1991, Ch. 254, Sec. 14, Subd. 6(e) \$130,000 MFRF**

Charles Dale

MN Department of Agriculture

90 West Plato Blvd.

St. Paul, MN 55107

(612)296-6123

This project developed varietal, cultural, and market information necessary to encourage expanded commercial production of native Minnesota wildflower and grass seed. The project studied the genetic diversity of native species and found that local populations within a region could be intermixed without reducing or altering genetic diversity.

Using these and other findings, solutions to seed production problems were developed that can be used as models for production that are both genetically sound and economically feasible. One example includes subjecting seed to a dormancy-reducing treatment that makes seed more marketable for cultivation.

Germination percentages were also determined for seven species which can be included on seed labels to help increase buyer confidence. Results from this project have been disseminated in a database for the Minnesota Department of Agriculture's Marketing Division that lists all the native seed producers in the state, in a research report entitled "A Market Assessment of Minnesota's Native Wildflower and Grass Seed Industry," and in a fact sheet on native plants that will be distributed through the Minnesota Extension Service.

**Community Gardening Program**

**M.L. 1991, Ch. 254, Sec. 14, Subd. 6(f) \$110,000 MFRF**

*Dorothy Johnson*

*MN State Horticultural Society*

*1979 Folwell Ave. #161*

*St. Paul, MN 55108*

*(612)624-7752*

In cooperation with the MN State Horticultural Society and the Self-Reliance Center, this project provided gardening information and technical assistance in metropolitan and nonmetropolitan areas. Through the Minnesota Green program and the Sustainable Resources Center, this project focused on both small-community land stewardship and urban food gardening. Minnesota Green provided assistance to over 50 communities outside the Twin Cities metro area by linking people to resources and technical support which resulted in greening efforts at parks, schools, food-shelf sites, entryways, public housing developments, and commercial districts.

Within the Twin Cities area, the Sustainable Resources Center helped establish 20 new gardens. As a result, municipal support for community gardens has increased substantially. Both programs produced a newsletter disseminating information about the programs. All community gardening efforts started through the Sustainable Resources Center are expected to function autonomously and are encouraged to expand urban gardening throughout their areas.

**FORESTRY**

**MN Old Growth Forests: Characterization & Identification**

**M.L. 1991, Ch. 254, Sec. 14, Subd. 7(a) \$150,000 MFRF**

*Kurt A. Rusterholz*

*Natural Heritage Program*

*MN DNR*

*500 Lafayette Road*

*St. Paul, MN 55155*

*(612)297-7265*

This project developed quantitative, structural definitions of Minnesota old-growth forest types and examined the importance of old growth as sensitive habitat. In northern Minnesota, 60 stands of old-growth and mature white pine, red pine, and northern hardwood were sampled and examined for their structural characteristics and species characteristics.

The findings from this study were used to augment the guidelines and criteria for evaluating candidate old-growth stands. DNR resource personnel and forest inventory contractors are in the process of sampling several hundred candidate stands using these updated criteria. This project is continuing in the 1993-1995 biennium through additional LCMR funding (M.L. 93, Ch. 172, Sec. 14, Subd. 6(c)).

**Impacts of Intensified Forest Management and Atmospheric Change on Nutrient Cycling and Tree Species Suitability.**

**M.L. 1991, Ch. 254, Sec. 14, Subd. 7(b) \$220,000 MFRF**

*Alan R. Ek*

*Forest Resources, U of MN*

*2004 Folwell Ave.*

*St. Paul, MN 55108*

*(612)624-3400*

This research examined forest nutrient cycling processes and tree requirements in order to address management questions concerning species-site matching, choice of rotation lengths, and appropriate levels of tree and stand utilization. A positive correlation was found between aspen growth and the availability of calcium and nitrogen. It was also concluded that nutrient cycling in young aspens was high with a corresponding increase in available nutrients, and that increased soil moisture favored nutrient cycling.

This research project also explored the rate at which aspen stands store and accumulate nutrients added by atmospheric deposition and soil weathering and how nutrient cycling via litterfall relates to nutrient fluxes into and out of the system. Data collected during this study came from a wide range of aspen sites in Minnesota and are now accessible for modelling forest growth. The ecosystem simulation model LINKAGES was also refined to facilitate long-term analyses.

**State Forest Land Acquisition**

**M.L. 1991, Ch. 254, Sec. 14, Subd. 7(c) \$500,000 MFRF**

*John Hellquist*

*DNR Forestry*

*500 Lafayette Road*

*St. Paul, MN 55155*

*(612)624-9298*

This appropriation was used to acquire lands in high priority areas of the R.J. Dorer Memorial Hardwood State Forest to work toward the acquisition goal of 83,150 acres as identified in the 1979 Plan for Acquisition in the Lewiston Area Forest Resources Plan.

Three properties in Goodhue, Olmsted, and Winona counties were acquired totaling 584 acres. An interpretive trail is being built on the Goodhue county property and all the lands purchased are open to recreational use.

**Regeneration and Management of Minnesota's Oak Forests**

**M.L. 1991, Ch. 254, Sec. 14, Subd. 7(d) \$225,000 MFRF**

*Steven Laursen*

*MN Extension Service, U of MN*

*247 Coffey Hall*

*St. Paul, MN 55108*

*(612)624-9298*

This research project examined the effect of site and stand conditions and forest management systems on oak regeneration. It was found that oak seedling and acorn survival rates were not affected by site preparation with herbicides or bulldozing, or by tree shelters. Tree shelters were found to reduce animal damage and increase the height and diameter growth of seedlings but not acorns.

Researchers also found that survival rates for acorns were significantly lower than survival rates for seedlings, but there was no significant difference in the survival, height, or diameter growth of premium and

nursery-run planted oak seedlings.

A data base containing information from 91 recently harvested oak sites was compiled and summarized, and general inspection of the data suggested that oak constituted over 75 percent of removal on most sites but averaged only 12 percent of the regeneration. Analysis showed that oak regeneration may be affected by harvest technique and by the slope and aspect of sites; but it doesn't appear to be affected by residual stand amount or composition.

To disseminate information about this research and about oak management strategies in general, the research team conducted approximately 133 educational events in southeast MN and reached approximately 600 woodland owners, 2371 youth, 210 youth educators, and 1,670 other adults.

**Private Forest Management for Oak Regeneration**  
M.L. 1991, Ch. 254, Sec. 14, Subd. 7(e) \$200,000 MFRF  
*Steven Laursen*  
*U of MN Extension Service*  
*240 Coffey Hall*  
*St. Paul, MN 55108*  
*(612)624-7281*

This project assessed privately owned oak forests in southern Minnesota for pre- and post-harvest regeneration needs and offered technical and educational assistance to private landowners to help increase oak regeneration.

A total of 1,446 landowners were assisted in some way, and a total of 3,852 acres of woodlands were planned for in detail. 130 acres of timber harvest were planned, over 700 acres of oak were regenerated, and 40 acres of oak were improved.

**Aspen Hybrids and New Tissue Culture Techniques**  
M.L. 1991, Ch. 254, Sec. 14, Subd. 7(f) \$70,000 MFRF  
*Carl A. Mohn*  
*Forest Resources, U of M*  
*St. Paul, MN 55108*  
*(612)624-7281*

This project continued research initiated by the U of MN Departments of Horticultural Science and Forest Resources by working to develop the biological efficiency of two new tissue culture (cloning) techniques, examining clonal fidelity of these two systems, and assessing the commercial production efficiency of the systems. A root culture system and a micro-cross section (MCS) system were refined and compared.

Both systems produced a satisfactory level of microshoot production and clonal fidelity. In terms of production costs and duration, the root culture system was comparable to the traditional system of shoot tip propagation. However, the micro-culture system would cost roughly 39% less than either of the other two systems because of reduced materials, overhead, and administrative cost.

Commercial use of these results will depend upon acceptance by the forestry industry of one of the tissue culture procedures as a method of clonal propagation.

**Aspen Decay Models for Mature Aspen Stands**  
M.L. 1991, Ch. 254, Sec. 14, Subd. 7(g) \$85,000 MFRF  
*Dennis Hummitzsch*  
*Koochiching County Land Department*  
*International Falls, MN 56649*  
*(218)283-6295*

This project developed a model based on easily observable aspen stand characteristics that will enable land managers to minimize aspen loss due to decay. The research indicates that the leading indicators of decay are generally age, size, and site index. Consequently, the researchers developed a model that contains one equation which provides a risk index and one that provides an estimate of the amount of decay likely.

The equations will be used in an ongoing project to develop a package which links a geographic information system (GIS) with forest growth and yield models so that other counties and organizations in northern Minnesota can use the models.

**Generic Environmental Impact Statement on Timber Harvesting**  
M.L. 1991, Ch. 254, Sec. 14, Subd. 7(h) \$400,000 TF  
*Michael Kilgore*  
*Office of Strategic and Long Range Planning*  
*300 Centennial Office Building*  
*St. Paul, MN 55155*  
*(612)297-2607*

This appropriation was used to develop a generic environmental impact statement (GEIS) on timber harvesting in Minnesota. The resulting GEIS identifies and quantifies long-term sustainable timber removal levels, and the environmental, economic, and social impacts that will likely occur over the next 50 years under three different levels of timber harvesting.

In response to the significant impacts identified, the GEIS recommends Minnesota establish several levels of forest programs to deal with issues at the site level, landscape level, and research level. The GEIS process itself provided insights regarding how other large-scale resource assessments might be conducted and how this project's methodology can be applied to other resource studies.

It is expected that the study's findings and recommendations will have a significant impact on the future policies and programs that influence how Minnesota's forest resources are used, managed, and protected.

The draft GEIS has been distributed to policymakers, resource managers, interest groups, and citizens throughout Minnesota, the United States, and Canada. The resulting technical and background papers continue to be used as technical reference guides.

## **FISHERIES**

### **Pilot Fish Pond Complex for Fisheries Development and Education M.L. 1991, Ch. 254, Sec.14, Subd. 8(a) \$250,000 MFRF**

*John P. Ringle*  
*Leech Lake Reservation*  
*Box 100*  
*Cass Lake, MN 56633*  
*(218)335-8240*

This appropriation contributed to the design and ongoing construction of a multi-species fish production complex on the Leech Lake Chippewa Reservation. To contain costs and minimize environmental impacts, an agreement was negotiated with DNR to renovate an abandoned DNR fish pond facility below the Lake Winnibigoshish Dam. Construction is progressing with over 50% completion to date.

Additional funds for this project were obtained from the Bureau of Indian Affairs and the Administration for Native Americans, and some materials were donated by the Forest Service and Great Lakes Gas Transmission Ltd.

### **Aquaculture Facility Purchase and Development and Transgenic Gamefish Growth Studies M.L. 1991, Ch. 254, Sec. 14, Subd. 8(b) \$1,200,000 MFRF**

*Ira Adelman*  
*U of MN, Dept. of Fisheries and Wildlife*  
*St. Paul, MN 55108*  
*(612) 624-3600*

*Perry Hackett*  
*U of MN, Dept. of Genetics and Cell Biology*  
*1445 Gortner Ave.*  
*St. Paul, MN 55108*  
*(612) 624-6736*

This appropriation was used to construct an aquaculture/ fisheries research and demonstration facility on the U of MN St. Paul campus and to continue research on the growth, performance, molecular structure, and breeding of transgenic fish. The aquaculture facility is scheduled to be completed December 1993.

The research facet of the project inserted genes for growth enhancement into transgenic fish and analyzed their level of expression, growth effects, and stable transmission to succeeding generations. Of 10,000 transgenic northern pike, walleye, rainbow trout, and Atlantic salmon that were produced between 1988-1990, 200 founders remain. These low numbers can be attributed to the continued stress, including fluctuation in temperature and chlorine levels, that occurred when fish were moved around the state to different facilities. From the founders that remain, researchers do have second generation northern pike, rainbow trout, and Atlantic salmon.

Because an evaluation is needed of the potential environmental impact of these fish and their exploitation by MN aquaculturists, this project is being continued into the 1993-1995 biennium (M.L.93, Ch. 172, Sec. 14, Subd. 12(o)). The 1991-1993 project results have been disseminated through several research papers published in peer-reviewed scientific journals.

**Urban Aquatic Education Program**

**M.L. 1991, Ch. 254, Sec. 14, Subd. 8(c) \$340,000 MFRF**

*Linda Erickson-Eastwood*

*MN DNR - Fisheries*

*500 Lafayette Rd.*

*St. Paul, MN 55155*

*(612)297-4919*

This project expanded urban fishing opportunities and awareness, especially among inner-city minority youth, single parent families, women, people with disabilities, and low-income families. Approximately 57,000 Minnesotans have experienced the MinnAqua Program through its series of 312 special events, 131 clinics, and 94 nibbles.

Networks were developed with about 102 different groups who contributed either technical expertise, donations, or equipment. Program volunteers have donated over 2,000 hours per year to help implement the program. MinnAqua continues to spread and has been recognized as a model program for others to follow.

**Catch & Release Program**

**M.L. 1991, Ch. 254, Sec. 14, Subd. 8(d) \$35,000 MFRF**

*Henry G. Drewes*

*MN DNR - Fisheries*

*500 Lafayette Road*

*St. Paul, MN 55155*

*(612)297-3287*

This program promoted statewide awareness of the benefits of catch and release as a method for enhancing fishing quality. Administered through the Cooperative Opportunities for Resource Enhancement(CORE) program, 12 groups participated and completed projects.

These efforts increased angler awareness of the benefits of catch and release, provided information on proper methods for handling and releasing fish to insure good survival, and promoted cooperation with sports clubs to expand the use of catch and release as a viable management tool.

Materials produced from this project, including a video entitled "Fish for Tomorrow," have been distributed to thousands of anglers throughout Minnesota.

**Metropolitan Lakes Fishing Opportunities Study**

**M.L. 1991, Ch. 254, Sec. 14, Subd. 8(e) \$75,000 MFRF**

*Duane Shodeen*

*MN DNR*

*1200 Warner Road*

*St. Paul, MN 55106*

*(612)772-7950*

This project developed a profile of metro angler needs and barriers to angling based on a telephone survey of 1000 anglers. The data is available on computer disk which will make its utilization for management needs easier. Presently, errors in the data base are being corrected before an assessment of metro lakes management for angling can be completed and evaluated.

### **Lake Minnetonka Bass Tracking**

**M.L. 1991, Ch. 254, Sec. 14, Subd. 8(f) \$85,000 MFRF**

*Tim Goerman*

*Fisheries Research*

*MN DNR*

*Brainard, MN 56401*

*(218)828-2246*

This research project explored the biological and behavioral impacts of fishing tournaments on largemouth bass. Researchers found that tournaments did affect bass biology and behavior depending mostly upon the season tournaments were held, the fish-holding techniques employed, and the quality of livewell water. Fish mortality associated with tournaments is most likely due to the cumulative effects of sublethal stressors of poor water quality and handling, as well as physical injuries related to angling.

From these results the researchers made five recommendations: 1) continue point incentives for live-release tournaments, 2) continue minimum-impact weigh-in procedures, 3) change or dilute livewell water frequently during tournaments, 4) rotate use of weigh-in sites on lakes for multiple tournaments within a season, and 5) avoid traditional tournaments during the spawning season.

### **Stocking Survey**

**M.L. 1991, Ch. 254, Sec. 14, Subd. 8(g) \$35,000 MFRF**

*Roy Johannes*

*MN DNR Fisheries*

*Box 12, 500 Lafayette Road*

*St. Paul, MN 55155*

*(612)296-2308*

Because state stocking production may not always be able to meet demand, this project was organized to identify and survey organizations statewide to determine their willingness and ability to participate in a cost-sharing stocking program.

Surveys were mailed to 1,800 organizations and 135 responded. 53% of respondents were willing to donate time and/or money to potential DNR fish-stocking projects, while some respondents were already working cooperatively with the DNR. The remainder of the organizations wanted more specific information before considering donating any time or money, or they were not interested in participating.

The final report of this project was presented to the president of the MN Sportfishing Congress.

## **WILDLIFE**

### **Insecticide Impact on Wetland and Upland Wildlife**

**M.L. 1991, Ch. 254, Sec. 14, Subd. 9(a) \$650,000 TF**

*Alfred Berner*

*Farmland Wildlife Populations Research, DNR*

*Rt. 1, Box 181*

*Madelia, MN 56062*

*(507)642-8478*

This project researched the magnitude of impacts on growth, behavior, and survival of young upland and wetland birds caused by insecticides used to control agricultural pests.

In the wetland research, although application of insecticide showed no significant effect on duckling mass 15 days after treatment, the mean survival for broods reared on treated sites was significantly lower than for broods reared on untreated sites, suggesting that subtle effects of insecticide application on food

availability may result in decreased survival and recruitment of ducklings.

In all upland experiments, invertebrate abundance and biomass were reduced following application of insecticide, but there was no effect on daily mass change in pheasant chicks.

The results of this research project can be used to guide the application of insecticides as part of routine agricultural practices, and to more fully understand the potential direct and indirect effects of insecticide on non-target organisms.

#### **Biological Control of Ecologically Harmful Exotic Species: Eurasian Watermilfoil**

**M.L. 1991, Ch. 254, Sec. 14, Subd. 9(b) \$160,000 MFRF**

*Luke Skinner*

*DNR Box 25*

*500 Lafayette Road*

*St. Paul, MN 55155*

*(612)297-3763*

The long-term goal of this project is to utilize native insects and fungal pathogens to develop long-term biological control techniques for controlling Eurasian Watermilfoil. To this end, the current project focused on identifying naturally occurring control organisms and selecting those which inflict the most damage for additional research.

Three native insects – a weevil, a caterpillar, and a caddisfly – are known to feed on Eurasian watermilfoil. The weevil was shown to hold the most promise of the three insects for controlling Eurasian watermilfoil because it seems to strongly prefer the plant during multiple choice experiments.

In addition to insects that prey on watermilfoil, native fungi were also examined for their control potential. The three isolates that were found to display the greatest virulence will be mass cultured and then tested in field plots for effectiveness.

This insect and fungal research will continue through 1995 and results will be shared with peer-reviewed journals and other researchers as they become available. This project is continuing through the 1993-1995 biennium (M.L.93, Ch. 172, Sec. 14, Subd. 12(l)).

#### **Microbial/Genetic Strategies for Mosquito Control**

**M.L. 1991, Ch. 254, Sec. 14, Subd. 9(c) \$150,000 MFRF**

*Ann Fallon and T.J. Kurtti*

*Department of Entomology, U of MN*

*St. Paul, MN 55108*

*(612)625-3728*

*(612)624-4740*

This project researched microbial/genetic strategies for controlling mosquitoes by utilizing microbial agents, especially pathogenic microsporidia, that are environmentally safe and specific for mosquitoes.

Three strains of microsporidia were evaluated as control agents; one was not infective to mosquitoes, one was difficult to propagate in the laboratory and therefore requires additional research, and one (*Nosema algerae*) was found to be infectious in mosquitoes and able to be propagated in caterpillar larvae. The researchers also characterized physiological processes that limit microsporidian infection in mosquitoes.

Further research in this area has potential implications for therapeutic control of mosquito-borne disease, including LaCrosse encephalitis. Researchers also documented the existence of defense reactions to microsporidia in mosquitoes, which must be factored into the current research efforts. Results from this research have been disseminated through posters at scientific meetings and in a pending manuscript.

**MN County Biological Survey**  
**M.L. 1991, Ch. 254, Sec. 14, Subd. 9(d) \$1,000,000 TF**  
*Carmen Converse*  
*Natural Heritage Program, DNR*  
*500 Lafayette Road*  
*St. Paul, MN 55155*  
*(612)296-9782*

Continuing from the 1989-1991 biennium (M.L.89, Ch. 335, Art. 1, Sec. 29, Subd. 3(t)), the MN County Biological Survey is a county-by-county inventory of rare animals, rare plants, and significant natural vegetation communities. All data are entered into the Natural Heritage Information System and are used for environmental review, forest and wildlife planning, urban and recreational development planning, nature preserve acquisition, additional research, and public education on the state's endangered species.

During this biennium, the survey was completed in eight counties (Goodhue, Kittson, Rice, Roseau, Morrison, Red Lake, Pennington, Marshall) and continues in five (Polk, Winona, Cass, Dakota, Houston), bringing the total to 20 counties since 1987.

Three sites recommended by MCBS have become Scientific and Natural Areas. One of the most significant protection efforts has been the 6900 acre addition of aspen parkland to Beaches Lake Wildlife Management Area, which the MCBS identified as a natural ecosystem restricted to NW Minnesota and adjacent Canada. The MN Biological Survey is continuing through the 1993-1995 biennium (M.L. 93, Ch. 172, Sec.14, Subd.6(a)).

**Data Base for Plants of Minnesota**  
**M.L. 1991, Ch. 254, Sec. 14, Subd. 9(e) \$130,000 TF**  
*Anita F. Cholewa*  
*Herbarium, Dept. of Plant Biology*  
*U of M*  
*St. Paul, MN 55108*  
*(612)625-3702*

This project computerized information about the 2000 species of plants that grow in Minnesota. The resulting database was created to supply easier access to biological data, where searches can be conducted by species' name, locality, preserve or state park name, nearby town, township and range, latitude and longitude, habitat, collector, and collection date.

The data base has also been linked to a mapping program so that current statewide distribution maps can be created. Network connection allows remote access by users. Two predicted users are the DNR personnel working on the County Biological Survey and the MN Department of Transportation personnel concerned with roadside plantings of native plants.

Notification of the data base will also be made available to other potential users including the public.

**Aquatic Invertebrate Assessment Archive**  
**M.L. 1991, Ch. 254, Sec. 14, Subd. 9(f) \$130,000 TF**  
*Judy Helgen*  
*Water Quality Division, MN PCA*  
*520 Lafayette*  
*St. Paul, MN 55155*  
*(612)296-7240*

This appropriation was used to continue work from the 1989-1991 biennium (M.L. 89, Ch. 335, Sec.29, Subd. 10(c)) on a database of aquatic invertebrates and to analyze unimpaired wetland sites for invertebrate and other biological communities in order to develop biological assessment methods and biological criteria of pollution.

35 wetlands in the Central Hardwood Forest ecoregion in 17 counties of Minnesota were analyzed for several invertebrate groups, amphibian densities, and 11 water and six sedimentary chemistry parameters. The reference sites show a broad representation of invertebrate groups and vegetation and have indications of high water quality.

This project has formed the basis for funding requests to U.S. E.P.A which cover a full analysis of the large data set for aerial photography of the sites, landscape analysis, descriptive data analysis, and work on developing appropriate protocols and metrics of biological condition for wetlands.

~~– CANCELLED – Required match not met~~

~~**Wetlands Forum**  
**M.L. 1991, Ch. 254, Sec. 14, Subd. 9(g) \$40,000 TF**  
*John Stine*  
*DNR*  
*1200 Wamer Road*  
*St. Paul, MN 55106*  
*(612)772-7910*~~

~~The purpose of this project was to collect, analyze, and disseminate information on the wise use and conservation of wetlands in the metropolitan area.~~

**Easement Acquisition on Restored Wetlands**  
**M.L. 1991, Ch. 254, Sec. 14, Subd. 9(h) \$400,000 TF**  
*David H. Behm*  
*MN Board of Water and Soil Resources*  
*155 South Wabasha, #104*  
*St. Paul, MN 55107*  
*(612)297-8341*

This pilot program acquired permanent easements on private lands containing federally restored wetlands or enhanced wetlands and adjacent lands. In cooperation with the U.S. Fish and Wildlife Service and the Izaak Walton League, the BWSR encouraged landowners with restorations on Conservation Reserve Program (CRP) contract lands or restorations associated with F&W Service wildlife development agreements to enroll the desired parcels under perpetual easements in the Reinvest in Minnesota (RIM) Reserve.

20 perpetual conservation easements were enrolled in the RIM Reserve Program, providing permanent protection to 279.1 acres of restored wetlands and 424.6 acres of adjacent uplands.

The enrolled acreage represents 34 restored wetland basins, mostly within the prairie pothole

region of MN; and eight of the 20 easement areas include multiple wetland basins or complexes.

As a result of this program, the Agricultural Stabilization and Conservation Service (ASCS) approved a statewide policy allowing CRP contract holders to modify or cancel their CRP contracts without repayment or penalties as long as the lands are enrolled under perpetual conservation easements into the RIM Reserve Program.

**Swan and Heron Lake Area Projects**

**M.L. 1991, Ch. 254, Sec. 14, Subd. 9(i) \$1,000,000 MFRF**

*Larry R. Nelson*

*DNR/ Fish and Wildlife*

*Box 756*

*New Ulm, MN 56073*

*(507)359-6030*

Continuing from the 1989-1991 biennium (M.L. 1989, Ch. 335, Sec. 29, Subd. 3(s)), the Swan and Heron Lake projects have leveraged \$5,169,430 in matching funds from a broad spectrum of partners including conservation organizations, private donors, and various state and federal entities to be used to acquire critical wetland habitat. To date, over 3,971 acres have been purchased, including 951 acres of protected or restored wetlands.

All lands have been included in the Minnesota outdoor recreation system and are open for appropriate public use. Color brochures and short videos have been produced about the Swan and Heron Lake projects, and numerous tours and presentations have been given to local, national, and international interest groups.

**Wildlife Oriented Recreation Facilities – Sandstone Unit**

**M.L. 1991, Ch. 254, Sec. 14, Subd. 9(j) \$9,000 MFRF**

*John Lindell*

*US Fish & Wildlife Service*

*Rt.2, Box 67*

*McGregor, MN 55760*

*(218) 768-2402*

This appropriation was used to construct basic recreational facilities at the 2,000 acre Sandstone Unit of Rice Lake National Wildlife Refuge. The completed facilities include a visitor parking area and an information kiosk that houses leaflets describing the Sandstone Unit to visitors and will also eventually include interpretive panels describing the biological significance of the Refuge Unit.

Project managers anticipate 2000 visitors to the Sandstone unit annually.

**Scientific and Natural Areas Acquisition and Betterment**

**M.L. 1991, Ch. 254, Sec. 14, Subd. 9(k) \$300,000 MFRF**

*Bob Djupstrom*

*MN DNR - Box 7*

*St. Paul, MN 55155*

*(612)624-2357*

This appropriation was used to protect Minnesota's natural diversity through public land acquisition and development of dedicated scientific and natural areas (SNA). Lands at three sites were protected for sand prairie, sand dunes, mesic prairie, and habitat for five-lined skink.

Other project activities included carrying out prescribed burning, reducing woody encroachments

on prairies, eliminating exotic species, and working on restoration projects. Scientific and Natural Areas are used by the public for observing rare plants and animals, outdoor education, and scientific research.

**Black Bear Research in East Central MN**

**M.L. 1991, Ch. 254, Sec. 14, Subd. 9(l) \$100,000 MFRF**

*Elmer C. Birney*

*Bell Museum of Natural History*

*100 Ecology Building, U of MN*

*St. Paul, MN 55108*

*(612)624-6293*

This program studied black-bear population size and structure, individual movements, and habitat-use patterns in order to better understand the problem of bear damage to crops in east-central MN.

From collected data, several conclusions about black bears and crop damage were drawn: 1) Bear densities are relatively high in the study area. 2) Given the large number of resident bears involved in crop damage and the dispersed nature of crops, techniques aimed at individual problem bears are not feasible. 3) During years of widespread failure of the berry and mast crops, higher levels of crop damage are predicted. 4) The physical characteristics of the landscape surrounding agricultural fields does not seem to correlate strongly with the probability of damage by bears. And 5) most landowners in the study area appear to expect and tolerate the levels of crop damage by black bears experienced during the study. Except in years of low natural food availability, additional mitigation will not be necessary.

**Partnership for Accelerated Wild Turkey Management**

**M.L. 1991, Ch. 254, Sec. 14, Subd. 9(m) \$50,000 MFRF**

*John R. Beard*

*701 E. Lake Street*

*Wayzata, MN 55391*

*(612)475-4127*

This appropriation was used to accelerate and complete the MN DNR Wild Turkey Reintroduction Program. The LCMR appropriation generated a match of \$50,000 from the National Wild Turkey Federation.

The project group trapped 931 wild turkeys in southeast Minnesota, and 882 of these were released into 43 new sites in Minnesota's identified turkey range. Also, 88 additional wild turkeys were obtained through wildlife exchanges with other states for release into unoccupied turkey habitat.

This project also expanded the wild turkey survey to include all current and potential range and developed an innovative GIS which will model and monitor our expanding turkey population.

**Restore Thomas Sadler Roberts Bird Sanctuary**

**M.L. 1991, Ch. 254, Sec. 14, Subd. 9(n) \$50,000 TF**

*Jeffrey T. Lee*

*Minneapolis Parks and Recreation Board*

*3800 Bryant Ave. South*

*Minneapolis, MN 55409*

*(612)348-4448*

In conjunction with neighborhood residents and the Minneapolis chapter of the Audubon Society and utilizing a local match of \$50,000, the Thomas Sadler Roberts Bird Sanctuary project designed and constructed a trail system that has increased public access to the sanctuary wetlands with a minimum of

impact on the flora and fauna.

In addition, various interpretive materials have been developed including topographic/habitat maps and a detailed guidebook, which will help orient visitors to the sanctuary's wildlife and help them identify these same plants and animals throughout the city and state.

**Effects of Change in the Forest Ecosystem on the Biodiversity of Minnesota's Northern Forest Birds**

**M.L. 1991, Ch. 254, Sec. 14, Subd. 9(o) \$300,000 TF**

*Lee Pfannmuller*

*Nongame Wildlife Program*

*DNR - 500 Lafayette Road*

*St. Paul, MN 55155*

*(612)297-2276*

In order to help facilitate the development of an integrated resource management policy that would provide a sustainable resource base and preserve biodiversity, this research program assessed historical forest bird population trends, developed a research and monitoring program to predict future trends, digitized regional forest cover and land use data, and began an analysis of the relationship between regional bird populations and land use patterns.

The resulting data files have wide applications to other resource management issues in the northern forest. To disseminate important results, this work group developed a slide show on biodiversity and forest songbirds, an information guide outline, and a management leaflet on forest fragmentation. This project has been featured in several newspaper, magazine, TV, and radio pieces and continues into the 1993-1995 biennium (M.L. 93, Ch. 172, Sec. 14, Subd. 6(b)).

**Establish Northern Raptor Rehabilitation and Education Facility**

**M.L. 1991, Ch. 254, Sec. 14, Subd. 9(p) \$75,000 MFRF**

*Ron Osterbauer*

*The Raptor Center, U of MN*

*St. Paul, MN 55108*

*(612)624-4745*

This appropriation was used to establish a raptor rehabilitation and release facility at the Audubon Center of the Northwoods. The facility includes educational and veterinary care areas, rehabilitation and release facilities, and a landscaped area.

A staff person was hired to coordinate educational programs and on-site visits. Volunteers have been recruited and trained, and birds are now being admitted to the facility. An educational curriculum and video have been completed for 4th-6th grade teachers to teach about the natural history of raptors and the environmental pressures they face. This curriculum should be distributed in January 1994.

**Effect of Avian Flu Virus on Growth and Production Parameters in Mallard Ducks**

**M.L. 1991, Ch. 254, Sec. 14, Subd. 9(q) \$16,000 MFRF**

*David Halvorson*

*Dept. of Veterinary Science, U of MN*

*St. Paul, MN 55108*

*(612)625-5292*

This appropriation was used to research the pathogenicity of avian influenza virus on mallard ducks and its affect on rate of growth and reproduction. Results suggest that influenza viruses are capable of having negative effects on the immune system of ducks, but do not appear to cause significant lesions in

other tissues. The viruses did not appear to affect rate of growth in ducklings.

Concerning the viruses' effect on reproductive health, there was a significant decrease in egg production following inoculation with the virus, but it returned to normal levels by the second week. No effect was seen on egg shape, weight, or fertility.

It was concluded that other influenza viruses probably exist in nature which may be even more pathogenic in waterfowl than the non-pathogenic isolate examined in this study. The results of this study were accepted into two journals for publication and shared at annual veterinary meetings in 1992 and 1993.

## LAND

### **Base Maps for the 1990's**

**M.L. 1991, Ch. 254, Sec. 14, Subd. 10(a) 1,900,000 TF**

*Don Yaeger*

*Land Management Information Center*

*330 Centennial Building*

*St. Paul, MN 55155*

*(612)297-2490*

This appropriation provided the state match for a federal program to complete a major portion of the statewide air photo and base map coverage. Two sets of state-wide aerial photography were purchased.

A pilot digital orthophotography project was completed in Olmsted County, and a contract was then written for \$1,520,000 to start the two-year orthophotography production process for the southeastern half of the state. Products are scheduled to be delivered in the second half of 1994.

The final objective of this project was completed with a \$200,000 contract to print revised USGS topographic quad maps for the state's seven largest urban areas (Twin Cities, Duluth, Rochester, St. Cloud, Winona, Mankato, and Moorhead). Final printed maps will be delivered in late 1993.

The sets of photography generated from this project have been used by both the general public and public agencies at all levels. Data from the Olmsted County pilot has been distributed to GIS researchers at the federal, state, and local levels. Published quad maps of the urban areas are for sale to the public and will be distributed free to major state agencies and all major public map libraries. This project is continuing through the 1993-1995 biennium (M.L. 93, Ch. 172, Sec. 14, Subd. 8(a)).

### **Accelerated Soil Survey**

**M.L. 1991, Ch. 254, Sec. 14, Subd. 10(b) \$1,270,000 MFRF**

*James Anderson*

*Dept. of Soil Science, U of MN*

*St. Paul, MN 55108*

*(612)625-8209*

This project completed field soil surveys in eight counties (Aitken, Becker, Clearwater, Lac Qui Parle, Mahnomon, Marshall, McLeod, and Meeker) and continued surveys in six counties (Hubbard, Ottertail, Polk, Renville, Roseau, and St. Louis). The data gathered about particle size, organic matter content, pH, water retention values, and bulk density can be used to determine the leeching potential of agrichemicals and the soil-specific management needs for crop production.

Since the start of the accelerated soil survey, 36 soil survey reports have been published and 14 are pending publication. These reports are useful for interpretation of a variety of land uses including agricultural, silvacultural, residential, and recreational. A digitized information system, Soil Survey Information System (SSIS) was developed which allows the spatial display of soils and selected properties

for any given section of land. This information can then be incorporated into the multi-layer analysis of landscapes and watersheds.

**Statewide National Wetlands Inventory, Protected Water Inventory, and Watershed Map Digitization  
M.L. 1991 Ch. 254, Sec. 14, Subd. 10(c) \$750,000 TF**

*John Stine, Administrator  
DNR Division of Waters  
500 Lafayette Road  
St. Paul, MN 55155  
(612)296-0440*

This project completed the digitization of the National Wetland Inventory, the protected waters inventory, and the watershed boundaries. All three data sets make up the Wetlands GIS. Because there are many potential users of this information, a significant effort was made to develop GIS applications which are easy to use, affordable, and accessible.

The GIS layers will be used in the management of wetlands and especially in the implementation of the Wetlands Conservation Act of 1991. The Land Management Information Center (LMIC) has filled over 30 National Wetlands Inventory data requests for use by local communities, private consultants, and members of the public. As the Wetlands Conservation Act of 1991 continues to be implemented, demand for wetlands GIS data will most likely increase.

**Statewide Land Use Update of MN  
M.L. 1991, Ch. 254, Sec. 14, Subd. 10(d) \$338,000 MFRF**

*Karla Parkinson  
International Coalition for Land and Water  
PO Box 127  
Moorhead, MN 56560  
(218)233-0292*

This appropriation was used to update the statewide land use maps of all land and water resources outside the Twin City metropolitan area. The project interpreted a total of 1017 full or partial quadrangle maps out of a total of 1733 maps statewide. In addition, 166 quadrangle map equivalents have been similarly typed from other sources. This leaves 550 maps from the transition and forested zones of the state to complete.

A detailed manual describing project techniques was also developed to facilitate the use and update of data. The project data resides at Land Management Information Center (LMIC) in a compatible form with other state data. The data will be supplied to other users through the Board of Water and Soil Resources Water Interface program.

**Local Geographic Information System Project  
M.L. 1991, Ch. 254, Sec. 14, Subd. 10(e) \$143,000 MFRF**

*Karla Parkinson  
International Coalition for Land and Water  
PO Box 127  
Moorhead, MN 56560  
(218)133-0292*

This appropriation was used to expand the applicability and use of geographic information systems (GIS) by developing programs and providing training at the local level. A GIS Users Group of resource managers in the Red River Basin was formed to monitor and facilitate the project, and a cooperative effort

to tie the local GIS project with the Red River Watershed Management Board GIS management needs was undertaken.

A four-part Geographic Information System Users Foundation program effort was developed to define problems collaboratively, to provide the information needed to address these problems, to provide computer and GIS training, and to develop a help line to help managers with future problems. The program is designed to relate surface water data, ground water data, and land-use relationships.

#### **GIS Control Point Inventory**

**M.L. 1991, Ch. 254, Sec. 14, Subd. 10(f) \$175,000 MFRF**

*Don Yaeger*

*Land Management Information Center*

*330 Centennial Building*

*St. Paul, MN 55155*

*(612)296-1209*

This appropriation was used to produce digital files of the Public Land Survey (PLS) as represented on the most commonly used maps in the state and to establish a central PLS information file and a plan for long-range maintenance and retrieval of the information.

A review of and update of PLS data for input to all future Inventory data sets was completed. And a digital section corner file from USGS quad maps was completed for statewide regional and statewide mapping.

While searching for a better system to track and organize precise PLS data as collected by field surveyors, it was decided that an existing DNR pilot project in Houston County could meet these needs with some modification and enhancement. Therefore, a contract was written between Land Management Information Center and DNR Engineering to refine and test the pilot inventory in five additional counties. After the pilot, a system for state-wide use was completed and is now available.

To disseminate the project results, both of the PLS digital data bases are available for clients of Land Management Information Center and are sold at nominal costs to other users. The system developed by DNR Engineering is being given free to every county, the MN Department of Transportation, two national forests, and any other public agency in the state who conducts land surveys.

#### **Land Use and Design Strategies to Enhance Environmental Quality**

**M.L. 1991, Ch. 254, Sec. 14, Subd. 10(g) \$100,000 MFRF**

*Harrison Fraker*

*College of Architecture and Landscape Architecture, U of MN*

*Minneapolis, MN 55455*

*(612)626-1000*

This appropriation was used to develop land use and urban guidelines for typical station stops on light rail transit (LRT) and busway systems that would create pedestrian oriented neighborhoods with improved environmental quality. In conjunction with the Metropolitan Council, five case study sites were chosen, and urban design prototypes were developed with the local communities.

From this process, several core principles emerged encompassing the notion that station stops should integrate a mixed-use commercial core, a better density and diversity of housing, and a public open space system of streets, sidewalks, parks, and squares that encourages pedestrian and bike use.

This work has influenced both the new Metropolitan Development and Investment Framework (MDIF) and the Regional Transit Facilities Plan. One city, Robbinsdale has also developed its own specific Downtown Redevelopment Plan using the guidelines from this research project.

A sixth case study in the Phalen neighborhood of St. Paul led to the development of a design

framework in cooperation with the Phalen Small Area Plan Task Force that includes recreating a wetlands park as the neighborhood's signature and reintroducing distinct neighborhood streets as a way to rehabilitate existing deteriorating housing blocks and developing new diverse housing types.

The results of this total research effort have been disseminated in presentations to local community and planning groups, professional meetings, and committees of the state legislature.

#### **Model Residential Land Use Guidelines**

**M.L. 1991, Ch. 254, Sec. 14, Subd. 10(h) \$150,000 MFRF**

*Michael Robinson*

*Dept. of Landscape Architecture, U of MN*

*St. Paul, MN 55108*

*(612)625-6860*

This research project surveyed the typical residential subdivision design regulations for Minnesota and examined their cumulative environmental, social, and economic effects in order to explore alternative designs that may be more beneficial and environmentally sound.

After examining subdivision design regulations, Planned Unit Development regulations, overlay zoning restrictions, and engineering standards in 17 developing communities, it was concluded that the regulations were nearly identical for all 17, regardless of environmental context or community needs. The regulations were strictly utilitarian in nature and fostered decisions based on functional "sizing" instead of decisions based on creating, protecting, and conserving the environmental, social, and cultural resources of a particular community.

From a historical search of planned communities in the United States from 1850 to 1930, several components of successful development were identified and used to create a new set of design principles that call for shifting development decisions from ones based on functional "sizing" to ones based on environmental and social connectedness, security, and sustainability.

The results of this project have been presented at several professional conferences and in meetings with city planners, engineers, fire chiefs, watershed managers, landscape architects, and area development firms.

### **MINERALS**

#### **Subsurface Greenstone Belts in Southwestern MN**

**M.L. 1991, Ch. 254, Sec. 14, Subd. 11(a) \$120,000 MFRF**

*David L. Southwick*

*MN Geological Survey*

*St. Paul, MN 55114-1047*

*(612)627-4780*

This research project explored the geological attributes of rocks that cause greenstone-like aeromagnetic anomalies in southwestern Minnesota because greenstone sequences are known to be potential habitat for deposits of gold, copper, lead, zinc and other metals. Through geophysical analysis and test drilling, researchers confirmed the presence of greenstone-belt rock assemblages in SW Minnesota. This confirmation provides a rationale for eventual mineral exploration in the area.

In addition to the discovery of mineral favorability, this research also uncovered from its test holes the presence of deep, well-protected sand and gravel aquifers within the glacial section. Although pumping tests and water quality analyses are required to assess them as sustained sources of water, these water-bearing deep sands and gravels may offer a local alternative to the use of environmentally vulnerable near-surface aquifers.

The full technical results of this project were published by the MN Geological Survey as Information Circular 39 in late summer 1993.

## **WASTE**

### **Remediation of Soils Contaminated with Semi-Volatiles by Composting with Leaves**

**M.L. 1991, Ch. 254, Sec. 14, Subd. 12(a) \$110,000 MFRF**

*Larry Heinz*

*Minneapolis Community Development Agency*

*331 Second Avenue South*

*Minneapolis, MN 55401*

*(612)342-1381*

This appropriation was used to assess the feasibility of remediating soils contaminated with polynuclear aromatic hydrocarbon (PAH) and other semi-volatile compounds by composting with yard waste. Soil contaminated with low levels of PAHs mixed with yard wastes in small static piles experienced approximately a 100% reduction in the total concentration of PAH compounds within approximately 21 weeks under the conditions of the study. About 90% of this decrease occurred during the first nine weeks of the study period.

However, this PAH reduction appeared to be caused by volatilization not biodegradation because the compost piles did not exhibit the optimal temperature, moisture, or nutrients necessary for microbial degradation to occur. A literature review suggested that the PAHs might have biodegraded if optimal compost conditions had been maintained throughout the study.

Findings from this research were presented at two professional seminars and are intended to be published in a journal covering bioremediation topics.

### **Land Spreading of Yard Waste**

**M.L. 1991, Ch. 254, Sec. 14, Subd. 12(b) \$100,000 MFRF**

*Thomas Halbach*

*Soil Sciences Department, U of MN*

*439 Borlaug Hall*

*St. Paul, MN 55108*

*(612)625-3135*

This appropriation was used to determine the maximum and optimum rates that yard wastes can be applied to Minnesota soils without reducing crop yields or endangering the environment. The research evaluated different application rates of yard waste and identified the amounts of nitrogen required to accelerate the decay process.

It was found that yard waste application rate had no effect on overall plant population. Application of nitrogen two weeks after emergence tended to minimize the negative effect of yard waste application on initial corn growth, but fall application did not significantly affect final yields.

On the basis of a single year's crop of corn at Becker, MN it appears that direct soil incorporation of fall tree leaves can produce a similar yield following current U of MN soil test recommendations as long as application rates are held to 40 dry tons or less to the acre. Other crops and other soils may exhibit different results. This study was published in the Field Research in Soil Science 1993 Miscellaneous Publication 79-1993, MN Agricultural Experiment Station.

## OIL OVERCHARGE

### **Traffic Signal Timing and Optimization Program**

**M.L. 1991, Ch. 254, Sec. 14, Subd. 13(a) \$1,175,000 OOC**

*Marvin Sohlo*

*MN Dept. of Transportation*

*St. Paul, MN 55155*

*(612)297-3441*

This program addressed the problem of out-of-date traffic signal timing by providing training to traffic engineering personnel in the state-of-the-art computerized signal timing techniques and also by implementing a grant program which provided funding for the retiming and optimization of many signal systems throughout the state.

59 county, city, and state traffic engineering staff were trained, and each agency was provided with the software necessary for monitoring their signal system's efficiency in the future. Manuals of MN Department of Transportation standards, policies, and guidelines were also distributed to promote standardization of signal design statewide.

\$1,051,011 was used to re-time 637 signals in 48 re-timing projects. As an evaluation measure, 262 re-timed signals were calculated to provide a reduction of 3,742,000 gallons of fuel, 168,372,000 vehicle stops, and 2,836,000 vehicle delays.

Results of the total program will be reported to all participating agencies and at the annual meeting of MN Urban Traffic Engineers Council (MUTEC).

### **Waste Crumb Rubber in Roadways**

**M.L. 1991, Ch. 254, Sec. 14, Subd. 13(b) 100,000 OOC**

*Roger Olsen*

*MN Dept. of Transportation*

*1400 Gervais Avenue*

*Maplewood, MN 55109*

*(612)779-5517*

This appropriation was used to explore the use of pretreated ground waste tire rubber in hot mix asphalt concrete paving mixtures. This possibility of using crumb rubber without having to first blend and react it with the asphalt cement can save contractors expensive plant modifications and can provide a market for Minnesota-produced waste crumb rubber. Based on the characteristics desired for the final asphalt-rubber mixture, two crumb rubber pretreatments were selected for laboratory and field evaluations.

Laboratory results indicated that the first pretreatment, tall-oil pitch, reduced the interaction between the asphalt and crumb rubber so that the crumb rubber could be considered a separate phase in the mixture rather than an asphalt cement modifier. There was some indication that the ability of the mixture to resist thermal cracking was enhanced with the use of tall oil pretreated crumb rubber. However, tall oil pretreated rubber appeared to increase the moisture sensitivity of the mixture which led to premature failure of the test sections in Hennepin County.

The second crumb rubber pretreatment, Hydrolene 90, was selected to help the crumb rubber particles partially modify the asphalt cement rather than just act as an inert elastic inclusion. Initial laboratory results indicated that this pretreated crumb rubber would produce a modified mixture with acceptable temperature and moisture sensitivity properties while showing a potential for improved resistance to thermal cracking at cold temperatures and rutting at warm temperatures. In fall 1993, this pretreated mixture was placed in test sections in Babbitt, MN for field testing.

The results of this research have been presented at professional meetings and will be published in the near future.

**Synthesis of Biodegradable Plastics in Microbial and Crop Plant Systems**

**M.L. 1991, Ch. 254, Sec. 14, Subd. 13(c) \$150,000 OOC**

*Freidrich Srienc*

*Dept. of Chemical Engineering, U of MN*

*St. Paul, MN 55108*

*(612)624-9776*

This appropriation was used to genetically engineer yeast and crop plants to produce low-cost polyhydroxybuteric (PHB) acid, a biodegradable plastic with the potential to substitute for petroleum-based products.

A set of yeast plasmids was constructed containing the bacterial gene cluster responsible for PHB synthesis and introduced into both the yeast *Saccharomyces cerevisiae* and Black Mexican Sweet Corn (BMS). Through various analytical methods, the yeast and sweet corn were examined for the expression of PHB synthesis enzymes. The transformed yeast cells proved to be able to synthesize high levels of a key enzyme for PHB synthesis, and seven out of 50 transformed corn cell lines were able to synthesize small but significant amounts of PHB.

Outside funds are being sought to continue this research and eventually it may contribute to the development of yeast and plant systems that will produce inexpensive PHB using resources available in MN.

**Agricultural Energy Savings Information**

**M.L. 1991, Ch. 254, Sec. 14, Subd. 13(d) \$150,000 OOC**

*Patricia Hung*

*Agricultural Utilization Research Institute (AURI)*

*23 Emoire Drive*

*St. Paul, MN 55103*

*(612)223-8205*

This appropriation was used to disseminate the results of state-funded research about energy-reducing technologies and sustainable development in order to accelerate the adoption of low-input agricultural practices. A comprehensive database was created which includes addresses, Agricultural Energy Savings project titles, contacts, summaries, and project results. The creation of a resource manual has been delayed due to numerous project extensions, but eventually, a comprehensive communications package will be produced that will contain stand-alone sections tailored to particular audiences' needs.

During this biennium, two series of conferences (spring 1992 and 1993) were held to showcase energy saving methods in agriculture. The Agricultural Utilization Resources Institute (AURI) and the MN Department of Agriculture worked together to produce a 32-page insert for Farmer Magazine which highlighted agency-sponsored projects; 66,000 copies were distributed.

**Residential Urban Environmental Resource Audit**

**M.L. 1991, Ch. 254, Sec. 14, Subd. 13(e) \$150,000 OOC**

*Anne Hunt*

*St. Paul Neighborhood Energy Consortium*

*2429 University Ave.*

*St. Paul, MN 55114*

*(612)644-5436*

This project conducted whole-house resource audits called Green House Evaluations and held workshops to educate residents about environmentally-friendly household practices.

489 people attended the workshops focused on waste reduction, yard care, household hazardous waste, transportation, and water conservation, and resource conservation audits were performed on 315 homes in a St. Paul neighborhood. 80% of the households made changes in their homes due to the evaluations.

Materials developed for this program include a video, slide presentation, several booklets, and an assembled information packet; all will be shared with the libraries of the MN Pollution Control Agency and the MN Office of Waste Management Clearinghouse.

#### **Means for Producing Lignin-Based Plastic**

**M.L. 1991, Ch. 254, Sec. 14, Subd. 13(f) \$100,000 OOC**

*Simo Sarkanen*

*Dept. of Forest Products, U of MN*

*St. Paul, MN 55108*

*(612) 624-6227*

This research developed new kinds of biodegradable plastics using surplus industrial byproduct lignins derived from renewable wood resources from Minnesota's paper industry. Parent kraft lignins were isolated by acidifying pulp mill "black liquors" and then purified using ultrafiltration, which can be employed on the industrial scale. For maximum strength, the experimental lignins (85%) were blended with a commercially available polymer emulsion (15%). These experimental biodegradable plastics are as strong as the plastics that contain only 30 - 40% lignin.

The potential for patenting these plastics and transferring them to industry is now being explored.

#### **Cellulose Rayons for Packaging**

**M.L. 1991, Ch. 254, Sec. 14, Subd. 13(g) \$150,000 OOC**

*Fu-Hsian Chang*

*Center for Environmental Studies*

*Bemidji State University*

*Bemidji, MN 56601-2699*

*(218)755-4104*

This appropriation was used to develop biodegradable and recyclable cellulose-based polymers from Minnesota resources that would be attractive to large manufacturers as viable alternatives to petrochemical-based plastics. Using aspen hardwood sawdust, ground hybrid poplar, and waste paper towel, cellulose-based plastics were synthesized using the processes of esterification, etherification, and xanthation.

The resulting plastics were assessed based upon water absorption capacity, water vapor transmission rate, water retention capacity, permeability to gases, clarity, heat stability, tensile strength, tearing strength, and elongation. The tearing strength and elongation of the experimental plastics were similar to those of commercial cellophane. The plastic derived from poplar wood had the highest water vapor transmission rate and water absorption capacity. There was little difference between the biodegradability rates of films made from sawdust, poplar wood, or waste paper towels.

To further the research and development of cellulose-based plastics, the researchers recommended the following priorities: utilizing other waste sources rich in cellulose; choosing pretreatment pathways and conditions that will increase reactivity and yields; improving synthesis techniques; studying different proportions in each formula that are suitable for various uses of packaging products; studying the forming, dyeing, and packing of final products; and conducting a detailed cost/benefit analysis in order to reduce the cost of goods and maximize yield efficiency.

The results of this research were presented at the 1993 American Chemical Society Annual Meeting and will be submitted to a peer-reviewed journal for publication.

**Tree and Shrub Planting for Energy**

**M.L. 1991, Ch. 254, Sec. 14, Subd. 13(h) \$1,250,000 OOC**

*Jonathan Stiegler*

*Division of Forestry, MN DNR*

*500 Lafayette Road*

*St. Paul, MN 55155*

*(612)297-3507*

This project evaluated the potential for energy conservation through tree and shrub planting, developed research-based guidelines for efficient tree and shrub configurations, and implemented a cost-share, community-based planting program.

A computer model was developed to simulate the shading impacts of different combinations of evergreen and deciduous trees on various building types, and field observations suggested that green ash and Ohio buckeye are most solar friendly, followed closely by black walnut and Kentucky coffeetree. The DOE2.1D computer program was used to simulate energy savings, and the greatest energy savings benefit from trees was found when trees are used collectively to shield homes from wind.

Specific guidelines to maximize benefits from planting suggested: 1) shade west and east windows, 2) avoid trees south of windows, 3) create windbreaks, and 4) increase tree canopy cover.

Using the recommendations developed from the research described above, 125 cost-share tree and shrub planting projects were implemented statewide. Projects included community-wide home planting, community shelterbelt planting, community reforestation, subdivision planting, school demonstrations, commercial and public building plantings, and parking and paved area plantings.

Project results and guidelines have been disseminated in two publications: "Energy Savings Landscapes: The Minnesota Homeowner's Guide" and "Energy Conservation Through Community Forestry." Both publications are available from the information centers at the Department of Natural Resources and the Department of Public Service.

**Oil Overcharge Program Administration**

**M.L. 1991, Ch. 254, Sec. 14, Subd. 13(i) \$200,000**

*Karen Carpenter*

*Dept. of Administration*

*50 Sherburne Ave.*

*St. Paul, MN 55155*

*(612)296-5857*

This appropriation was to the commissioner of administration for processing and oversight of grants and allocations in the Oil Overcharge program.

**Evaluating Performance-Based Standards for Energy-Efficient New Homes**

**M.L. 1991, Ch. 254, Sec. 14, Subd. 13(j) \$75,000 OOC**

*Patrick Huelman*

*MN Building Research, U of MN*

*St. Paul, MN 55108*

*(612)624-8219*

This appropriation was used to evaluate the impact of performance-based standards on the building industry and to develop a pilot program to train builders about key energy performance issues.

A homeowner survey and field monitoring program were performed on a sample of houses built in 1990 in order to gather data about house construction and energy consumption. Several prototype houses

were developed based on a builder survey and were used in building energy computer modelling programs to evaluate insulation and ventilation impacts.

A comprehensive energy monitoring effort was completed on 7 houses that included a detailed analysis of house dimensions, thermal properties, airtight characteristics, ventilation capacity, delivered air flow, house depressurization, and mechanical system performance.

Using the results from these monitoring efforts, a series of training components were implemented including several pilot builder workshops and a regular feature article in the "Minnesota Builder" magazine. This project was a partnership of the home building industry, utility industry, state government and university researchers.



Laws 1993, Chapter 172, Section 14  
MN Future Resources Fund (MFRF)  
Oil Overcharge Fund (OOC)  
Environment and Natural Resources Trust Fund (TF)  
(July 1, 1993 through June 30, 1995)

## LEGISLATIVE COMMISSION ON MINNESOTA RESOURCES (LCMR)

1993 Projects: July 1, 1993 - June 30, 1995

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Relay: (612)297-5353 or 1-800-627-3529 (for hearing impaired)

This document can be made available in alternate formats, such as large print or cassette tape, upon request.

April 6, 1994

Section F

**MN Laws 1993, Chapter 172, Section 14**  
**MN FUTURE RESOURCES FUND (MFRF)**  
**OIL OVERCHARGE FUND (OOC)**  
**ENVIRONMENT AND NATURAL RESOURCES TRUST FUND (TF)**  
(July 1, 1993 through June 30, 1995)

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## AGRICULTURE

### **BIOLOGICAL CONTROL OF PLANT AND ANIMAL PESTS - CONTINUATION 3(a) \$880,000 OOC**

*Dharma Sreenivasam  
MN Dept. of Agriculture  
Plant Protection Division  
90 West Plato Boulevard  
St. Paul, MN 55107-2094  
(612)296-1350*

The overall goal of biological control of plant and animal pests is to identify, develop, test, and implement biological control agents in Minnesota. This program focuses on effective integrated pest control with a reduction in chemical use and energy costs.

With the cooperation of four scientists from the Department of Agriculture, 21 scientists from the University of Minnesota, and one from Mankato State University, 17 research projects are underway within the following four areas.

1) The importation and establishment of natural enemies will be extended to musk thistle, cereal leaf beetle, gypsy moth, filth flies, and cabbage and broccoli pests.

2) Environmental manipulation will be used for Brassica smother plants, cocklebur, scab and verticillium wilt of potato, sugarbeet root rot, alfalfa pests, corn rootworm, and arthropods in commercial greenhouse production.

3) Periodic releases of natural enemies will be used against the European corn borer and insect pests of small grains and forage crops.

4) Preservation of existing natural enemy fauna will encompass all of the individual research components.

*This project is a continuation from the 1991-1993 biennium: M.L. 1991, Ch. 254, Sec. 14, Subd. 6(a).*

### **COVER CROPS IN A CORN AND SOYBEAN ROTATION 3(b) \$150,000 MFRF**

*Dennis D. Warnes  
West Experiment Station  
University of MN  
Highway 329  
Morris, MN 56267  
(612)589-1711*

The ultimate goal of this project is to develop management strategies for using cover crops in a corn and soybean rotation. Wisely used cover crops reduce wind and water erosion of soil, improve water quality, and reduce the use of persistent synthetic herbicides.

The development of economic management strategies will 1) scavenge residual soil nitrogen to reduce potential nitrate leaching, 2) reduce the use of persistent herbicides by taking advantage of cover crop competition, allelopathy, and use of postemergence herbicides which have little soil residue, and 3) reduce wind and water erosion of soil.

Once the effective management strategies are developed from field experiments, the data will be summarized for presentation to farmers explaining how to utilize cover crops to reduce environmental and economic risk.

### **INCREASING UTILIZATION OF FEDERAL COST SHARE FEEDLOT FUNDS 3(c) \$480,000 MFRF**

*Gerald Heil  
MN Dept. of Agriculture  
90 W. Plato Boulevard  
St. Paul, MN 55107  
(612)296-1486*

This project will provide technical assistance to develop animal waste control facility (AWCF) designs to rehabilitate approximately 110 feedlots with water quality concerns. The designs will meet USDA-SCS standards required to qualify for federal cost-share funds. Assistance will be targeted to multi-county geographic areas chosen on the basis of concentrations of feedlots,

livestock enterprises and potential pollution problems.

Educational opportunities and focus group meetings within the targeted areas will be part of this project.

**DEMONSTRATION OF PRODUCTION SCALE WASTE COLLECTION IN AQUACULTURE**  
**3(d) \$100,000 MFRF**

*Dwight Wilcox*  
*Minnesota Aquafarms, Inc.*  
*25 Industrial Park Drive*  
*PO Box 592*  
*Chisholm, MN 55719*  
*(218)254-5736 or*  
*(218)254-5733*

This project will determine the operational efficiencies of a production-scale *in-situ* fish waste collection system and evaluate the system's ability to meet state water quality requirements. The Minnesota Aquafarms facility will be utilized as the test facility.

**REINVEST IN MINNESOTA CONSERVATION RESERVE EASEMENTS**  
**3(e) \$823,000**  
**(500,000) TF**  
**(323,000) MFRF**

*David H. Behm and*  
*Marybeth Block*  
*Board of Water and Soil Resources*  
*155 S. Wabasha Street*  
*Suite 104*  
*St. Paul, MN 55107*  
*(612)296-0880*  
*(612)297-7965*

This project will acquire perpetual conservation easements on certain marginal lands to protect and improve water quality, control erosion and sedimentation, and enhance fish and wildlife habitat. This appropriation may result in the enrollment of approximately 960 acres (based on assumption of \$858/acre as an average cost for easement acquisition) of marginal agricultural lands, excluding drained restorable wetlands.

**ALTERNATIVE AQUACULTURE METHODS**  
**3(f) \$230,000 MFRF**

*Ying Q. Ji*  
*MN Dept. of Agriculture*  
*90 W. Plato Blvd.*  
*St. Paul, MN 55107*  
*(612)296-5081*

This project will develop and evaluate alternative methods of raising fish that utilize recirculating aquaculture technology. The development of recirculating aquaculture technology will conserve water needed to raise large quantities of fish and reduce the amount of fish waste discharged into the environment through waste collection and removal.

The key to a successful recirculating aquaculture system is a functional biofilter; thus, the goal of this study is to assess the technical viability and economic feasibility of several different biofilters. Three recirculating systems utilizing different biofilters will be designed, constructed, and analyzed, and the results will be demonstrated to the aquaculture industry.

**MINNESOTA AQUACULTURE DEVELOPMENT PROGRAM**  
**3(g) \$230,000 MFRF**

*Ying Q. Ji*  
*MN Dept. of Agriculture*  
*90 W. Plato Blvd.*  
*St. Paul, MN 55107*  
*(612)296-5081*

This project is a grant program that will encourage the evaluation and development of environmentally sound aquaculture production systems.

Administration of the grant making process will be accomplished through consultation with Minnesota Aquaculture Commission, peer review recommendation, and other administrative procedures, to ensure the quality of proposals funded. One-to-one matching will be required on research grants. All projects funded under this program will be demonstrated to their fullest extent to their end users and beneficiaries.

**MANAGING AGRICULTURAL ENVIRONMENTS  
OF NORTH-CENTRAL MINNESOTA SANDY  
SOILS - CONTINUATION  
3(h) \$480,000 MFRF**

*H.H. Cheng, Head  
Soil Science Department  
University of MN  
St. Paul MN 55108  
(612)625-9734*

This project will address water quality concerns arising from corn and potato production on sandy soils in north-central Minnesota by developing improved management strategies for water, nitrogen, and herbicide use. These improved management options will allow farmers to maintain profitability but reduce the potential for contamination of groundwater from agricultural sources.

Project objectives include evaluating current agricultural practices in north-central Minnesota, refining diagnostic criteria, improving best management practices (BMPs), evaluating herbicide losses to groundwater, developing computer models for the movement of nitrogen in water, and disseminating information.

*This project is a continuation from the 1991-1993 biennium: M.L. 1991, Ch. 254, Sec. 14, Subd. 6(c).*

**NUTRIENT AVAILABILITY FROM LAND-  
APPLIED MANURE  
3(i) \$280,000 MFRF**

*Gyles W. Randall  
University of MN  
Southern Experiment Station  
Waseca, MN 56093-1926  
(507)835-3620*

The overall goal of this project is to develop analytical tools to both measure and predict the availability of nutrients, primarily nitrogen (N), from animal manures applied to soils.

Precision rates of dairy and hog manure will be applied in replicated field experiments over a wide array of soil, crop, and hydrogeologic conditions in Southern Minnesota. Nitrogen availability from the manure/soil systems will be assessed using a variety of tests and sampling schemes. Soil water from porous cup samplers and tile water from drainage plots of Waseca will also be obtained to measure potential nitrate movement to ground and surface waters.

Hog producers from south-central Minnesota will be surveyed to determine current and

anticipated future manure handling systems and manure utilization and nutrient management practices. The knowledge gathered in these investigations will provide Best Management Practices (BMP's) to guide manure management decisions for thousands of farmers while reducing the environmental impacts of livestock manure on Minnesota's water resources.

**EFFECTIVE MANURE MANAGEMENT IN  
CONSERVATION TILLAGE SYSTEMS FOR  
KARST AREAS  
3(j) \$500,000 MFRF**

*John F. Moncrief  
Soil Science Department  
U of MN  
St. Paul, MN 55108  
(612)625-2771*

This project will investigate factors that influence the losses of contaminants to surface and groundwater in southeastern Minnesota where karst and sinkholes are numerous. The project will explore both controllable factors (such as tillage system and erosion control measures; manure and fertilizer source, application timing, and rates) and uncontrollable factors (such as soil type and climate).

The project will also evaluate the potential land application of poultry compost as a cost-effective disposal method for the southeastern poultry industry. The emphasis of this project will be on water, manure, and poultry mortality compost utilization in the soils, landscapes, and cropping systems in southeastern Minnesota.

**NUTRIENT RECYCLING THROUGH PLANTS  
AND ANIMALS  
3(k) \$260,000 MFRF**

*Samuel D. Evans  
West Central Experiment Station, U of MN  
Morris, MN 56267  
(612)589-1711*

The ultimate goal of this project is to develop improved methods of manure use in West Central Minnesota so that efficiency is increased and the probability of nitrogen and phosphorous losses to the environment is reduced. This will be done by improving techniques to predict plant available nitrogen from applied manure, assessing the nitrogen carryover from previously applied manure, and measuring tillage effects on nitrogen and phosphorous losses from manured sloping land during the growing season and

snowmelt periods. Soil and climatic parameters will be measured to characterize their effect on soil nitrogen changes.

Plant available nitrogen will be calculated and ultimately integrated into existing computer models. An estimate of changes in income due to manure management changes will help in developing a risk assessment model. A farmer inventory will be conducted to assess manure sources, handling methods, and fertilization practices. An on-farm demonstration effort will be developed to show good manure management techniques and will include results from this project as they become available. Finally, information from all phases of this project will be disseminated at field days, workshops, and through publications.

**DEVELOPING SOIL SPECIFIC NITROGEN MANAGEMENT AS A BEST MANAGEMENT PRACTICE (BMP)**  
**3(l) \$294,000 OOC**

*Bruce R. Montgomery*  
*MN Dept. of Agriculture*  
*90 W. Plato Boulevard*  
*St. Paul, MN 55107*  
*(612)297-7178*

The goal of this project is to develop new soil specific, variable rate nitrogen applications that will increase operating efficiency and reduce applied nitrogen without reducing agricultural yield. Variable rate technology (VRT) can potentially result in immediate energy, fertilizer, and economic savings as well as reduced environmental risk.

The project will develop technology for creating a soil condition map which will be used to determine the appropriate nitrogen rate and other best managements practices (BMPs) for soil-specific applications. The economic and environmental impact of existing variable rate technology will also be evaluated. Finally, demonstrations will be conducted and results will be integrated into a user friendly decision aid and educational tool to promote best management practices.

**ENERGY**

**REDUCING ENERGY AND CO2**  
**4(a) \$230,000 OOC**

*Sheldon Strom*  
*Center for Energy and the Urban Environment*  
*100 North Sixth Street*  
*Suite 412A*  
*Minneapolis, MN 55403*  
*(612)348-4669*

The goal of this project is to develop and implement cost-effective strategies which reduce energy use in the transportation, commercial-industrial-institutional (CII), and residential sectors, thereby reducing emissions of carbon dioxide (CO<sub>2</sub>) and other air emissions, dependence on oil imports, and the cost of energy.

The project will develop a database of current and projected Minnesota energy use and associated air emissions and then develop cost-effective strategies that focus on energy end-use efficiency and the efficiency of energy conversion processes, since these are the most effective measures in reducing not only energy use and local air emission, but CO<sub>2</sub> emissions as well.

**PHOTOVOLTAIC DEMONSTRATION PROJECT**  
**4(b) \$230,000 MFRF**

*Patrick F. Quinn*  
*ISD No. 625*  
*Saint Paul Public Schools*  
*360 Colborne Street ,*  
*St. Paul, MN 55102*  
*(612)293-5140*

This project will provide a solar energy demonstration system at Battle Creek Environmental Magnet School that will supplement the existing public utility by converting sunlight directly into electricity using photovoltaic technology. This is a demonstration project that will augment the environmental magnet studies at Battle Creek Elementary school. This project will also be funded with an additional \$120,000 match.

**OPERATIONAL IMPLICATIONS OF  
ALTERNATE TRANSIT BUS FUELS  
4(c) \$78,000 OOC**

*Aaron Isaacs  
Metropolitan Transit Commission  
560 Fifth Avenue N.  
Minneapolis, MN 55411  
(612)349-7690*

This project will test alternate bus fuels to evaluate their potential for reduced fuel consumption and increased operational efficiency. The project's goal is to compare the emissions, fuel economy, operational advantages and disadvantages, environmental concerns, safety, reliability and operating costs of different fuel technologies, including conventional diesel, conventional diesel with particle trap filters, blended ethanol, straight ethanol and liquid natural gas (LNG).

**THE BUS, BIKE OR CARPOOL (B-BOP)  
CHALLENGE  
4(d) \$150,000 OOC**

*Richard Arey  
Center for Energy and Environment  
100 N Sixth Street, Suite 412A  
Minneapolis, MN 55403  
(612)348-2090*

The goal of this project is to design and test various employer-based transportation demand management (TDM) programs that cost-effectively reduce the use of single-occupant vehicles by employees. Fifteen employers (with about 6,000 total employees) will be selected. Employer locations will be in concentrated employment nodes within the seven-county metropolitan area where traffic congestion is most severe.

Current commuting behavior of employees will be documented, and alternative transportation promotion incentive packages will be developed with employers, employee representatives, and cooperating agencies. The new commuting behavior will then be monitored, and the cost/effectiveness of incentive packages and promotion/education devices will be evaluated. The program models and evaluation will guide cooperating agencies and private employers' future efforts to promote commuting alternatives.

**TREE AND GRASS PRODUCTION FOR  
ETHANOL  
4(e) \$380,000 OOC**

*Edward G. Wene  
Agricultural Utilization Research Institute  
PO Box 599  
Crookston, MN 56716  
(218)281-7600*

This program will supply biomass feedstock derived from trees and grass for converting to ethanol and/or thermochemical fuels. This appropriation is contingent on an agreement with Minnesota Power Company to purchase the biomass.

Project objectives include recruiting growers and suitable sites for tree and grass production; training growers and consultants in best management practices; developing low-input techniques and analyzing their productivity; and implementing a tree establishment plan.

**FORESTRY**

**DEVELOPMENT OF TREE SEED ORCHARD  
COMPLEX  
5(a) \$80,000 MFRF**

*Lawrence K. Miller  
DNR Forestry  
General Andrews Nursery  
P.O. Box 95  
Willow River, MN 55795  
(218)372-3183*

In 1991 the DNR acquired a farm by fee title transfer for the purpose of developing a seed orchard complex. New seed orchards will be established on this site and managed intensively to produce genetically improved seed for the state forest tree nursery program. Planting genetically improved tree seedlings can significantly increase the productivity of Minnesota's forests. Improved seed increases forest growth and resistance to insects and disease.

**COMO PARK REPLANTING PROGRAM**  
**5(b) \$93,000 MFRF**

*John Wirka*  
*City of Saint Paul*  
*25 W. Fourth St., Rom 300*  
*St. Paul, MN 55102*  
*(612)292-7400*

The purpose of this project is to implement a plan for replanting areas in Como park which have lost trees due to disease, age, or other causes. The addition of approximately 400 trees will strengthen the native plant communities in the park and improve visitors' recreation experience.

**REFORESTATION IN RAMSEY COUNTY PARKS AND OPEN SPACE**  
**5(c) \$50,000 MFRF**

*Larry E. Holmberg*  
*Ramsey County Parks and Recreation Dept.*  
*2015 N. Van Dyke St.*  
*Maplewood, MN 55109*  
*(612)777-0393*

This project will provide for an accelerated reforestation program in Ramsey County regional and county parks to replace trees lost to storm damage, drought, and disease, and begin establishment of new planned plantings.

**DEVELOPING QUALITY HARDWOOD FORESTS**  
**5(d) \$210,000 MFRF**

*Melvin J. Baughman*  
*U of MN*  
*Dept. of Forest Resources*  
*1530 N. Cleveland Ave.*  
*St. Paul, MN 55108*  
*(612)624-0734*

This project involves research to learn more about how to stimulate natural oak regeneration from acorns and stump sprouts. The project will inventory multi-age class hardwood stands, perform oak isozyme analysis, conduct field trials of different regeneration methods, and develop an educational program to communicate hardwood regeneration techniques.

**GENERAL**

**MINNESOTA COUNTY BIOLOGICAL SURVEY - CONTINUATION**  
**6(a) \$900,000 TF**

*Carmen Converse*  
*Natural Heritage Program*  
*Dept. of Natural Resources*  
*500 Lafayette Road, Box 7*  
*St. Paul, MN 55155*  
*(612)296-9782*

The Minnesota County Biological Survey (MCBS) was initiated in 1987 in response to the need to determine the status of biological diversity in Minnesota. MCBS continues to collect biological information on the distribution and status of rare plants, rare animals, and natural communities. During FY 1994-95 surveys will be completed in five counties (Winona, Houston, Polk, Cass, and Dakota) and will begin in several new counties (including Pine, Mahnomon, and Wabasha).

Ecological data collected by MCBS is entered into the Natural Heritage Information System, Minnesota's most comprehensive repository of rare natural features information. Minnesota County Biological Survey results are used for environmental review, forest and wildlife planning, urban and recreational development planning, nature preserve acquisition, and public education.

*This project is a continuation from the 1991-1993 biennium; M.L. 1991, Ch. 254, Sec. 14, Subd. 9(d).*

**MINNESOTA'S FOREST-BIRD DIVERSITY INITIATIVE - CONTINUATION**  
**6(b) \$500,000 TF**

*Lee Pfannmuller*  
*MN Dept. of Natural Resources, Division of Fish and Wildlife*  
*500 Lafayette Road, Box 25*  
*St. Paul, MN 55155*  
*(612)296-0783*

The overall goal of Minnesota's Forest Bird Diversity Initiative is to develop landscape management tools to maintain Minnesota's diversity of forest birds. Forest birds are good indicators of diversity since they comprise 70% of all forest vertebrates. This initiative is the first comprehensive U.S. effort designed to relate habitat patterns and change to regional bird

diversity using a long-term monitoring program.

The program, begun in July 1991, is designed as a 10-15 year monitoring effort. It collects data on the presence and abundance of forest birds through a network of over 1,200 sampling points distributed across the northern forest region. Geographic Information System (GIS) techniques will then be used to correlate bird population data with regional forest cover and land use information and to develop predictive models that assess the impact of future forest change. The knowledge gathered will be applied to the development of forest management tools that integrate the diverse habitat needs of forest birds.

*This project is a continuation from the 1991-1993 biennium; M.L. 1991, Ch. 254, Sec. 14, Subd. 9(o).*

**DESCRIPTION AND EVALUATION OF  
MINNESOTA OLD-GROWTH FORESTS -  
CONTINUATION  
6(c) \$250,000 MFRF**

*Kurt A. Rusterholz  
Natural Heritage Program  
DNR, Box 7  
500 Lafayette Road  
St. Paul, MN 55155  
(612)297-7265*

This project combines inventory necessary for implementation of the DNR's Old-Growth Guidelines with research on the species composition and structure of old-growth forests. The inventory portion of this project is an accelerated field evaluation of forest stands designated as old-growth candidates under the DNR's Old-Growth Guidelines.

Field evaluation will be used to determine which stands will be protected as old-growth forest sites and which stands will be released for other forest management.

*This project is a continuation from the 1991-1993 biennium; M.L. 1991, Ch. 254, Sec. 14, Subd. 7(a).*

**MISSISSIPPI HEADWATERS RIVER INQUIRY  
AND EDUCATION PROJECT  
6(d) \$75,000 MFRF**

*Molly MacGregor  
DNR  
Mississippi Headwaters Board  
Cass County Courthouse  
Walker, Mn 56484  
(218)547-3300, Ext. 263*

This project hypothesizes that values related to the Mississippi River in North Central Minnesota can be used to develop long-term protection strategies that define human use of the river and its shorelands within the capabilities of the ecosystem.

This project provides two levels of activity: the first is a critical inquiry into specific values — natural, cultural, scenic, scientific, and recreational — that the Mississippi Headwaters Board is mandated to protect; and the second activity is the development of guidelines and prescriptions that translate river values into tools for protecting the river itself.

**ANADROMOUS FISH MONITORING  
6(e) \$137,000 MFRF**

*Mark Ebbers  
DNR, Section of Fisheries  
Box 12, 500 Lafayette Road  
St. Paul, MN 55155  
(612)297-2804*

Anadromous fish comprise an important component of the Lake Superior fishery. Steelhead trout have declined over the past decade; however, little is known about the factors that limit their production. This project will provide biologic monitoring to improve the management of the steelhead trout population on the north shore of Lake Superior and will also provide a means to obtain eggs from wild Lake Superior steelhead and allow the stocking of selected tributary streams.

**LAND & WATER CONSERVATION FUND  
ADMINISTRATION - CONTINUATION  
6(f) \$80,000 MFRF**

*William H. Becker  
DNR  
500 Lafayette Road  
St. Paul, MN 55155-4010  
(612)296-3093*

This appropriation is used to administer the federal Land and Water Conservation Fund grant program to maximize federal receipts and ensure Minnesota's continuing eligibility to participate. This program also administers other grant activities assigned to the commissioner by contracting with organizations outside the department to conduct the various projects as described in the LCMR workprogram.

*This project is a continuation from the 1991-1993 biennium; M.L. 1991, Ch. 254, Sec. 14, Subd. 3(i).*

**INFORMATION/EDUCATION**

**QUANTIFY PESTICIDE AND FERTILIZER  
RUNOFF FROM GOLF COURSES  
7(a) \$49,000 MFRF  
\$49,000 NONSTATE MATCH**

*John M. Barten  
Suburban Hennepin Regional Park District  
3800 County Road 24  
Maple Plain, MN 55359  
(612)476-4663*

The primary goals of this study are to monitor surface runoff from representative golf courses and to assess the impact of contaminants on adjacent waterbodies. Runoff from representative areas of three courses in the Twin Cities Metropolitan Area will be collected with automatic samplers during rainstorm events. Rainfall will be measured with tipping bucket rain gauges at each sample site. The total quantity of runoff water and associated pollutants will be calculated from the monitoring data. The potential impact of the nutrients on downstream waterbodies will be estimated using computer models.

This appropriation must be matched by \$49,000 of non-state funds.

**DEVELOPING MULTI-USE URBAN GREEN  
SPACE  
7(b) \$220,000 MFRF**

*Alan Singer  
Minneapolis Park and Recreation Board  
310 Fourth Avenue S.  
Minneapolis, MN 55415  
(612)348-2222*

Tax forfeited property located within the City of Minneapolis will be identified, inventoried, and evaluated as potential sites for one or more of the following uses: neighborhood gardens, orchards, alternative lawncare and landscape demonstration areas/ and or nurseries. Based upon developed guidelines which include both physical site factors and relevant social concerns, suitable sites will be selected throughout the city.

Neighborhood and community residents will be recruited, organized and maintained for involvement in site design, development, and maintenance. Information and programs on organic and intensive gardening, low-input and alternative landscaping techniques (including native plant use), ecologically-sound lawncare, food preservation and, yard-waste composting will be an integral portion of this project.

**K-12 PRAIRIE WETLAND FIELD STUDY  
PROGRAM - ECOLOGY BUS  
7(c) \$270,000 MFRF**

*Larry Granger  
Heron Lake Environmental Learning Center  
PO Box 429  
Lakefield, MN 56150-0429  
(507)662-5064*

The K-12 Prairie Wetland Field Study Ecology Bus project will equip a retrofitted transit bus as a mobile teaching station and science lab to provide an interdisciplinary environmental education program (science, social studies, visual and communication art) for twelve counties in Southwest Minnesota. This appropriation is contingent upon the Heron Lake Learning Center employing a specialist to guide student and teacher participation.

**THE ON-LINE MUSEUM: COMPUTER AND INTERACTIVE VIDEO**  
7(d) \$260,000 TF

*Orrin C. Shane, III*  
*Science Museum of MN*  
*30 E. Tenth Street*  
*St. Paul, MN 55101*  
*(612)221-9436*

This project creates a touch-screen interactive video database for selected Minnesota cultural and natural history collections as a prototype for environmental education for museum visitors and school children.

~~– CANCELLED – Required match not met~~  
**ENVIRONMENTAL EDUCATION OUTREACH PROGRAM**  
7(e) \$215,000 MFRF  
~~\$215,000 NONSTATE MATCH~~

*Pauline Langsdorf*  
*Metropolitan Waste Control Commission*  
*230 E. Fifth Street*  
*St. Paul, MN 55101*  
*(612)229-2100*

~~This project will develop a multidisciplinary environmental science and math curriculum for grades K-12 and team taught by private sector volunteers, teachers, and Metropolitan Waste Control Commission volunteer staff.~~

~~This project requires a non-state match of \$215,000.~~

**SUMMER YOUTH HISTORY PROGRAM**  
7(f) \$100,000 MFRF

*Ian Stewart*  
*Minnesota Historical Society*  
*345 W. Kellogg Boulevard*  
*St. Paul, MN 55102-1906*  
*(612)297-5513*

The Minnesota Historical Society is seeking to expand institutional awareness and educational programming to high school student statewide, with a special emphasis on minority and disadvantaged students. This project will provide summer employment and educational enrichment for 50 students over two summers at historic sites and the Minnesota History Center.

**THE ECOLOGY OF MINNESOTA BOOK**  
7(g) \$51,000 MFRF

*Barbara Coffin*  
*U of MN*  
*University of Minnesota Press*  
*2037 University Ave SE*  
*Minneapolis, MN 55414*  
*(612)624-7368*

The *Ecology of Minnesota* project will provide in book format a comprehensive overview of Minnesota's natural environment. Information will be presented in full-color graphics at a level appropriate to the high school and college student and the general public.

**GREEN STREET: AN URBAN ENVIRONMENTAL AWARENESS PROJECT**  
7(h) \$550,000 TF

*Patrick L. Hamilton*  
*Geography Department*  
*Science Museum of MN*  
*30 E. Tenth St.*  
*St. Paul, MN 55101*  
*(612)221-9432*

The Science Museum is developing a comprehensive urban environmental education project, which will be a core Science Museum of Minnesota exhibit and outreach program focused on revealing the links between modern American lifestyles and major environmental issues.

Project objectives include development of exhibits, special programs, and student/teacher support services.

**MINNEHAHA PARK ENVIRONMENTAL INTERPRETIVE CENTER**

7(i) \$300,000 TF  
\$37,000 NONSTATE MATCH

*Sandra S. Welsh*  
*Minneapolis Park and Recreation Board*  
*200 Grain Exchange*  
*400 South Fourth St.*  
*Minneapolis, MN 55415-1400*  
*(612)661-4821*

The purpose of this project is to adaptively reuse the Longfellow House in Minnehaha Park as an urban interpretive center to provide cultural, historical, and environmental interpretation programs for Minneapolis residents and visitors.

By being permanently relocated to Minnehaha Park, the Longfellow House will supplement other interpretive stations being

developed along the Mississippi River, will help realize the recommendations of the Minnehaha Park Renovation Plan, and will reduce the overuse of other areas in Minnehaha Park.

**NICOLLET CONSERVATION CLUB SWAN LAKE INTERPRETIVE ROOM**  
7(j) \$18,000 MFRF  
\$18,000 NONSTATE MATCH

*Fred L. Froehlich  
Nicollet Conservation Club  
PO Box 187  
Nicollet, MN 56074  
(507)225-3843*

This project will equip a Swan Lake interpretive center at the Nicollet Conservation Club. Facilities will be open for use by local school groups and state agencies for interpretive programs and meetings at no charge.

**PROJECT CITY CAMP: EXPERIENTIAL URBAN ENVIRONMENTAL EDUCATION**  
7(k) \$130,000 MFRF

*Steven M. Gustafson  
Pillsbury Neighborhood Services, Inc.  
1701 Oak Park Avenue N.  
Minneapolis, MN 55411  
(612)377-7000*

Project City Camp is a focused experience designed to help inner-city poor and minority youth and adults understand the urban environment and its impact on human development by exploring the interrelationships and interdependencies of human and natural systems.

This project will implement an intensive environmental education program for 84 urban teens and adults using a "city camp" model, investigate human impacts on environmental quality, explore individual and community solutions, and produce maps and a model to illustrate current environmental quality in local neighborhoods.

**GRANITE QUARRY PARK AND INTERPRETIVE CENTER PLANNING**  
7(l) \$50,000 MFRF  
\$50,000 NONSTATE MATCH

*Charles Wocken  
Stearns County parks  
425 S. 72nd Avenue  
St. Cloud, MN 56301  
(612)255-6172*

This project will assess physical features, provide a recreation program, development plan, and baseline for a multi-use interpretive regional park using abandoned granite quarries in Stearns County. Projects objectives include surveying quarry size, water quality, geology, and biology; mapping wetland area and distribution; and developing a master plan for the regional park.

**EXPANDED CROSBY FARM PARK NATURE PROGRAM - CONTINUATION**  
7(m) \$91,000 MFRF

*Ed Olsen  
Division of Parks and Recreation, City of Saint Paul  
1224 N. Lexington Parkway  
St. Paul, MN 55103  
(612)488-7291*

This nature program will utilize three facilities -- located in the inner city region -- that are all readily accessible by public transportation, to provide inner city residents with learning opportunities regarding Minnesota's natural resources and how to appreciate and protect those resources. This project will also continue to develop an environmental education curriculum for St. Paul schools.

*This project is a continuation from the 1991-1993 biennium; M.L. 1991, Ch. 254, Sec. 14, Subd. 5(i).*

**MULTIPLE-USE FOREST MANAGEMENT LEARNING KIT**  
7(n) \$15,000 MFRF  
\$5,500 NONSTATE MATCH

*Mike J. Naylor  
Deep Portage Conservation Reserve  
Route 1, box 129  
Hackensack, MN 56452  
(218)682-2325*

A hands-on, interactive, outcome-based learning kit will be developed depicting the Deep

Portage multiple-use forest and wildlife management plan. Lessons will be developed and field tested by classroom teachers advised by professional resource managers. The Learning Kit will be used with school children, adults, and participants in youth camps.

Geographic Information System (GIS) data provided by the Cass County Land Department will be used to keep the kit current. The kit will be used on-site and loaned to schools at no charge.

**AN OUTDOOR CLASSROOM TO IMPROVE  
RURAL ENVIRONMENTAL EDUCATION  
7(o) \$60,000 MFRF**

*Wayne Feder  
Faribault County Environmental Learning Center,  
Inc.  
Route 1, Box 41  
Blue Earth, MN 56013  
(507) 526-3049*

This project will provide an environmental education program for rural citizens. Special emphasis will be placed on Faribault County soils and the natural vegetation systems which produced them.

The project will develop an environmental learning site, educational packets for group leaders and teachers, and evaluate changes in environmental awareness.

**LAND**

**BASE MAPS FOR 1990'S - CONTINUATION  
8(a) \$710,000 TF**

*Don Yaeger  
Land Management Information Center  
330 Centennial Building  
St. Paul, MN 55155  
(612)297-2490*

This project will continue state-wide coverage of digital orthophoto maps, continue update mapping for the state's major urban areas, and plan for future cooperative mapping and air photos programs.

This appropriation provides the state share of a 50/50 match program with the United States Geological Survey.

**RURAL COUNTY USE OF NATIONAL AERIAL  
PHOTOGRAPHY PROGRAM FLIGHT  
8(b) \$90,000 MFRF**

*Richard D. Walter  
Houston County Surveyor's Office  
304 S. Marshall Street  
Caledonia, MN 55921  
(507) 724-5814*

Various public agencies will work on a cooperative effort to evaluate the quality and accuracy of producing digital planimetric maps of Houston County. These maps will include physical and cultural features that are visible from the 1991 National Aerial Photo Project (NAPP) flight such as roads, trails, residential and larger buildings, field and vegetation outlines, major utility lines, and shorelines.

These digital maps will be compared against traditional rectified photographs and existing methods of data collection. From this comparison, a report will be generated to assist other rural counties in their pursuit of digital mapping.

**RECREATIONAL RESOURCE PLANNING IN  
THE METRO MISSISSIPPI CORRIDOR  
8(c) \$ 175,000 MFRF  
\$25,000 NONSTATE MATCH**

*William R. Morrish  
Design Center for American Urban Landscape,  
U of MN  
320 Wulling Hall  
86 Pleasant Street SE  
College of Architecture and Landscape  
Architecture  
Minneapolis, MN 55455  
(612)626-0333*

This project will investigate the potential for enhancing and enriching the recreational opportunities between the Mississippi National River and Recreation Area (MNRRA) and the communities adjoining the MNRRA corridor. Building on the existing National Park Service (NPS) MNRRA study, this project will investigate in more detail areas contained in the municipalities and townships abutting the MNRRA corridor.

This project will produce a comprehensive integrated plan for developing environmental and recreational opportunities that can aid cities in capitalizing on their unique position along the MNRRA corridor.

## MINERALS

### **MITIGATING CONCRETE AGGREGATE PROBLEMS IN MINNESOTA 9(a) \$179,000 MFRF**

*David E. Newcomb  
U of MN  
122 Civil and Mineral Engineering Dept.  
500 Pillsbury Drive, SE  
Minneapolis, MN 55455-0220  
(612)626-0331*

A study will be conducted to explore means of mitigating concrete aggregate problems in southern Minnesota. It is believed that certain aggregate sources in southern Minnesota are responsible for the premature failure of large parts of Interstate 90. The freeze-thaw behavior associated with the aggregate has been suspected.

The intent of this proposal is to pinpoint the problem sources and develop methods to mitigate the problem. This will be accomplished by running an intensive test series on concrete specimens typical of the sections experiencing problems. Methods will then be developed to improve the concrete performance using existing aggregate sources.

## RECREATION

### **STATE PARK BETTERMENT 10(a) \$3,000,000 TF**

*John Strohkirch  
DNR  
Division of Parks and Recreation  
500 Lafayette Road  
St. Paul, MN 55155  
(612)296-8289*

This program will develop, improve, and rehabilitate state park facilities to meet growing user demand as well as prevent further deterioration of outstanding historically significant structures.

The goals of this project are to protect natural and cultural resources for future generations while providing for the recreational and educational needs of park visitors.

### **AMERICANS WITH DISABILITIES ACT: RETROFITTING REGIONAL PARKS 10(b) \$220,000 TF**

*Arne Stefferud  
Metropolitan Council  
Mears Park Centre  
230 E. Fifth Street  
St. Paul, MN 55101  
(612)291-6360*

Regional park implementing agencies will use subgrants from the Metropolitan Council to rehabilitate existing regional facilities to increase accessibility and meet new federal standards which will come from the Americans with Disabilities Act.

The Metropolitan Council, advised by Metropolitan Parks and Open Space Commission, will make progress reports on the project to LCMR and to the Minnesota Department of Natural Resources.

### **TRAIL LINKAGES, METROPOLITAN REGIONAL NETWORK 10(c) \$2,327,000 TF**

*Arne Stefferud  
Metropolitan Council  
Mears Park Centre  
230 E. Fifth Street  
St. Paul, MN 55101  
(612)291-6360*

Regional park implementing agencies will use subgrants from the Metropolitan Council to implement regional trail linkage projects selected from the Metropolitan Council's Capital Improvement Program for the regional Recreation System.

The park agencies will acquire and improve regional trail segments which link existing and planned regional, local, and state parks and trails. The Council will make progress reports on the project to the LCMR and to the Minnesota Department of Trade and Economic Development.

**INITIATE GATEWAY SEGMENT OF THE  
WILLARD MUNGER STATE TRAIL INTO  
DOWNTOWN SAINT PAUL  
10(d) \$200,000 TF  
\$ 54,000 MFRF**

*Dan Collins  
Trails and Waterways  
DNR  
500 Lafayette Road  
St. Paul, MN 55155-4052  
(612)296-6048*

This project is a city/state partnership aimed at initiating the acquisition and eventual development of the final three miles of the Gateway Segment of the Willard Munger State Trail into downtown Saint Paul. The trail will be used for commuting and recreation.

**BIRCH LAKE REGIONAL  
BIKEWAY/WALKWAY  
10(e) \$450,000 TF**

*Mark Burch  
City of White Bear Lake  
4701 Highway 61  
White Bear Lake, MN 55110  
(612)429-8563*

This project will develop 2.7 miles of accessible bikeway/walkway linking TH96 regional trail with Tamarack Nature Center and business centers. This project will also develop a trailside interpretive program.

**CEDAR LAKE PARK TRAIL DEVELOPMENT  
10(f) \$610,000 TF**

*Gary Criter  
Minneapolis Park and Recreation Board  
200 Grain Exchange  
400 South Fourth St.  
Minneapolis, MN 55415  
(612)661-4820*

This project will plan and construct a Cedar Lake Park recreational and non-motorized commuter trail from Highway 100 to downtown Minneapolis intersecting with the Chain of Lakes.

**STATE TRAIL DEVELOPMENT  
10(g) \$2,327,000 TF**

*Thomas R. Danger  
Trails and Waterways Unit  
DNR  
500 Lafayette Road  
St. Paul, MN 55155-4052  
(612)296-4782*

The goal of this project is to initiate development of up to 85 miles of the Paul Bunyan State Trail, continue development of the Willard Munger State Trail on an abandoned railroad grade located between Barnum and Carlton, and provide for the acquisition and development of a trail connection from Harmony to the Root River State Trail.

**SHINGLE CREEK TRAIL IMPROVEMENT  
10(h) \$130,000 TF**

*Andrew J. Lesch  
Minneapolis Park and Recreation Board  
200 Grain Exchange  
400 South Fourth St.  
Minneapolis, MN 55415-1400  
(612)661-4823*

This project will develop the Shingle Creek Trail connection between Minneapolis and Hennepin County Regional Trail. This connection will enhance open space and recreational opportunities including connections with local, Hennepin County Regional Trails and National Park Systems

**LILYDALE/HARRIET ISLAND REGIONAL PARK  
TRAIL  
10(i) \$246,000 TF**

*Tim Agness  
City of Saint Paul  
25 W. Fourth St., Room 300  
St. Paul, MN 55102  
(612)292-7400*

This project will plan and construct a pedestrian-bicycle trail in the Lilydale/Harriet Island Regional Park. The trail route selection will be made to take advantage of the park's unique natural resources (bluff, lake, wetlands, Mississippi River) while preserving and protecting the area's natural resources.

**COMO PARK EAST LAKESHORE  
RECLAMATION  
10(j) \$163,000 TF**

*John Wirka  
City of Saint Paul  
25 W. Fourth St., Room 300  
St. Paul, MN 55102  
(612)292-7400*

This project will implement a plan for reclamation and restoration of severely eroded areas on the east shore of Lake Como. Completion of this project will end a long history of erosion in this lakeshore area and help reduce negative impacts on water quality.

Relocation of the parking lot further from the shoreline will allow grading to reduce the slope, thereby slowing runoff and improving conditions for restoration of vegetation.

**ACQUISITION OF PALACE RESTAURANT SITE  
ON MISSISSIPPI RIVER  
10(k) \$325,000 TF**

*Albert D. Wittman  
Minneapolis Park and Recreation Board  
310 Fourth Avenue S.  
Minneapolis, MN 55415  
(612)348-2222*

The goal of this project is to acquire the Palace Restaurant property located on the east bank of the Mississippi. It will provide future open space and recreational opportunities including connections with local, regional, and national park systems.

**ACCESS TO LAKES AND RIVERS -  
CONTINUATION  
10(l) \$1,000,000 TF**

*Michael T. Markell  
DNR  
Trails and Waterways Unit  
500 Lafayette Road  
St. Paul, MN 55155-4052  
(612)296-6413*

This project will provide the public with access to lakes and rivers statewide. Access includes fishing piers and boat and shoreline access, and will provide fishing opportunities with or without a boat.

A 1988 statewide survey of registered boat owners conducted by the University of Minnesota and the Department of Natural Resources

showed that three-fourths of the state's boat owners launch a boat at a free public access site at least once a year. Demand for access continues to increase. Boat registrations for 1992 are over 727,000 (third in the nation) and are increasing at a rate of about 1.5% a year.

*This project is a continuation from the 1991-1993 biennium; M.L. 1991, Ch. 254, Sec. 14, Subd. 3(d).*

**SAINT LOUIS RIVER LAND ACQUISITION  
10(m) \$1,000,000 TF**

*Michael T. Markell  
DNR  
Trails and Waterways Unit  
500 Lafayette Road  
St. Paul, MN 55155-4052  
(612)296-6413*

This project will fund the first phase of the acquisition of privately held, undeveloped lands located along the Saint Louis, Cloquet, and Whiteface rivers. These lands offer very high quality resource, scenic, recreation, historic, and archaeological values. Up to \$50,000 of this appropriation may be used by the St. Louis River Board for the implementation of the Saint Louis river management plan.

**LAKE MINNETONKA WATER ACCESS  
ACQUISITION  
10(n) \$944,000 MFRF**

*Michael T. Markell  
DNR  
Trails and Waterways Unit  
500 Lafayette Road  
St. Paul, MN 55155-4052  
(612)296-6413*

This project will fund land acquisition on Maxwell and Crystal bays to begin meeting the water access goals identified in the Lake Minnetonka Management Plan in cooperation with the City of Orono and the Lake Minnetonka Conservation District.

**LAKE SUPERIOR SAFE HARBORS  
10(o) \$1,000,000 MFRF**

*Michael T. Markell  
DNR  
Trails and Waterways Unit  
500 Lafayette Road  
St. Paul, MN 55155-4052  
(612)296-6413*

This project will provide funds to acquire and construct a Lake Superior safe harbor at Silver Bay in cooperation with the North Shore Management Board. It will provide recreational boating access to Lake Superior including safe ingress and egress. Anglers, sailors, and general boaters will have the opportunity to use western Lake Superior and have a safe harbor in case of sudden storms. Non-boater recreational opportunities will also be provided.

**COOPERATIVE TRAILS GRANT PROGRAM  
10(p) \$800,000 MFRF**

*Dan Collins  
DNR  
Trails and Waterways Unit  
500 Lafayette Road  
St. Paul, MN 55155-4052  
(612)296-6048*

This project will accelerate local trail connections to planned and existing state trails and other public recreation facilities by awarding matching (50/50) grants to local units of government. Grants will be used for the acquisition and development of connecting trails and for removal of barriers that might impede full access to these facilities.

**AGASSIZ RECREATIONAL TRAILS (A.R.T.)  
10(q) \$650,000 MFRF**

*Curtis Borchert  
Norman County Soil and Water Conservation  
District  
Box 60  
Twin Valley, MN 56584  
(218)584-5169*

The purpose of this project is to plan, purchase, and develop Agassiz recreational trails and improve up to five local parks. The trail will link the diverse educational and recreational opportunities along the main trail located in Clay, Norman, Polk and Red Lake counties of Northwest Minnesota.

**MESABI TRAIL ACQUISITION, PLANNING, AND  
DEVELOPMENT**

**10(r) \$700,000 MFRF  
\$350,000 NONSTATE MATCH**

*Tom Peterson  
St. Louis and Lake Counties Regional Rail  
Authority  
Route 1, Box 287B  
Two Harbors, MN 55616  
(218)834-3787*

The purpose of the Mesabi Trail Project is to provide the necessary funding for acquisition, planning, and initial development of a 132-mile multi-purpose trail linking over 20 Mesabi Iron Range communities between Grand Rapids and Ely.

**RECREATIONAL PROGRAMMING:  
INCLUSIVENESS FOR PERSONS WITH  
DISABILITIES  
10(s) \$160,000 MFRF**

*Susan Rivard  
Vinland Center  
P.O. Box 308  
Loretto, MN 55357  
(612)479-4523*

This project will enable persons with disabilities to access and participate in all activities and programs offered at selected community-based recreational organizations in the metro area. This will be accomplished by training staff at the selected organizations to feel comfortable about and prepared to include persons with disabilities in their programs and by providing consultation to staff about adaptations needed to accommodate persons with disabilities.

The selected organizations will be helped to develop an outreach plan designed to encourage persons with disabilities to participate in their programs. In turn, informational workshops will be offered to encourage persons with disabilities to participate in programs and activities offered at the selected organizations.

**ENHANCED RECREATIONAL  
OPPORTUNITIES FOR SOUTHEAST ASIAN  
ETHNIC COMMUNITIES  
10(t) \$300,000 MFRF**

*Josee' Cung*  
DNR  
500 Lafayette Road  
St. Paul, MN 55155  
(612)297-4745

This project will address the cultural and language problems experienced by Southeast Asian Communities in their use of natural resources. DNR will work with community leaders to provide community education, develop bilingual communications exchanges, and hold cultural and sensitivity training for DNR and other natural resources professionals.

**URBAN COMMUNITY GARDENING PROGRAM  
- CONTINUATION  
10(u) \$110,000 MFRF**

*Sue Gunderson*  
Sustainable Resources Center  
1916 Second Avenue S.  
Minneapolis, MN 55403  
(612)872-3283

The Sustainable Resources Center (SRC) will encourage productive use and rehabilitation of urban open space by promoting community gardening. SRC will provide technical assistance, information, and support to neighborhood based groups, special populations, and municipalities. The community gardens established will offer recreational, educational, visual, and tangible (food) benefits to urban gardeners and communities.

*This project is a continuation from the 1991-1993 biennium; M.L. 1991, Ch. 254, Sec. 14, Subd. 6(f).*

**NATIONAL REGISTER GRANTS PROGRAM  
10(v) \$165,000 MFRF**

*Britta Bloomberg*  
Minnesota Historical Society  
345 W. Kellogg Boulevard  
St. Paul, MN 55102-1906  
(612)296-5471

This project provides funds to assist in completing the preservation of historical properties such as the Pickwick Mill (1854-58), Sibley County Courthouse (1879), Wendelin

Grimm Farmstead (1876), and the Tugboat Edna G (1896), and other emergency needs of historically significant properties.

**HISTORICAL RESEARCH AND PLANNING  
FOR TRAVERSE DES SIOUX  
10(w) \$68,000 MFRF**

*Robert A. Clouse*  
Minnesota Historical Society  
345 W. Kellogg Boulevard  
St. Paul, MN 55102-1907  
(612)297-4701

The Traverse des Sioux Historic Site is the locus of the signing of the 1851 Treaties of Traverse des Sioux by which the Dakota Indians ceded 24 million acres. This property also contains the remains of numerous other cultural resources relating to Native Americans and early Euroamerican settlement.

This project will undertake historical and archaeological research and create a master plan for the site.

**PENINSULA POINT TWO RIVERS HISTORICAL  
PARK  
10(x) \$435,000 MFRF  
\$191,000 NONSTATE MATCH**

*Butch Brandenburg*  
City of Anoka  
2015 First Avenue N.  
Anoka, MN 55303  
(612)421-6630, Ext. 480

The City of Anoka will construct and develop Peninsula Point Two Rivers Historical Park. The park will include a picnic pavilion, an historical interpretive center, restrooms, plaza, trails, parking lots, an interpretive play structure, lights, historical displays, and historical markers.

## WATER

### **MINNESOTA RIVER IMPLEMENTATION - CONTINUATION**

**11(a) \$1,100,000 TF**

*Wayne P. Anderson*  
MN PCA  
520 Lafayette Road  
St. Paul, MN 55155  
(612)296-7323

This project will accelerate the adoption of best management practices (BMPs) and related state and local implementation activities for the Minnesota River Basin, including demonstration watersheds, education, BMP development, and ongoing monitoring.

Two demonstration watersheds will showcase best management practices in small geographic areas and demonstrate the process involved in achieving total watershed BMP treatment. Accelerating the implementation of existing state programs in the Minnesota River Basin will demonstrate the effectiveness and efficiency of adequately funded and integrated programs for implementation of water quality BMPs. Education efforts will include a manure-nutrient management program for farmers and a program to incorporate the Midwestern Rivers Curriculum into schools.

### **LOCAL RIVER PLANNING - CONTINUATION** **11(b) \$480,000 MFRF**

*Daniel G. Retka*  
DNR  
Division of Waters  
1201 E. Highway 2  
Grand Rapids, MN 55744  
(218)327-4416

The purpose of this project is to continue to assist local units of government to plan for the wise management of rivers within their jurisdictions. Many rivers need land-use management programs which go beyond the state's shoreland and floodplain management standards to ensure their protection and to guide development. This locally controlled planning effort will integrate local, state, and federal management capabilities.

*This project is a continuation from the 1991-1993 biennium; M.L. 1991, Ch. 254, Sec. 14, Subd. 3(c).*

### **MERCURY REDUCTION IN FISH - CONTINUATION** **11(c) \$200,000 TF**

*George R. Rapp Jr. and Gary E. Glass*  
U of MN, Duluth  
Archaeometry Laboratory  
214 Research Laboratory Building  
10 University Drive  
Duluth, MN 55812-2496  
(219)726-7957

The goal of this project is to investigate mechanisms of mercury bioavailability and develop mitigative methods for reducing fish mercury contamination in lakes and rivers. These mitigation methods will be used to evaluate the mercury activity or chemical potential hypothesis (Bjornberg et al, 1988) and serve to enhance the quality of Minnesota's fish resources in high-use and high-value water bodies while long-term reductions of mercury usage and emissions are being accomplished.

Relevant information will be summarized addressing mercury-related problems to assist state agencies in determining research priorities.

*This project is a continuation from the 1991-1993 biennium; M.L. 1991, Ch. 254, Sec. 14, Subd. 4(j).*

### **STREAM FLOW PROTECTION** **11(d) \$280,000 MFRF**

*Ian Chisholm*  
DNR  
Division of Fish and Wildlife  
Ecological Services Section  
Box 25, 500 Lafayette Road  
St. Paul, MN 55155-4025  
(612)296-0781

This project will collect stream habitat data (width, depth, velocity, substrate, water elevation) in up to 39 watersheds to develop community-based flows that protect stream resources. Eventually, these habitat-based protected flows will be established for all watersheds and monitored statewide.

**THE SOUTH CENTRAL MINNESOTA  
GROUNDWATER CONTAMINATION  
SUSCEPTIBILITY PROJECT - CONTINUATION  
11(e) \$290,000 MFRF**

*Henry W. Quade  
Mankato State University  
Water Resources Center  
Box 70  
M.S.U. Box 8400  
Mankato, MN 56002-8400  
(507)389-5492*

The overall goal of this project is to develop a Geographic Information System (GIS) based on South Central Minnesota's subsurface geologic patterns, surface drainage, and water quality. The resulting GIS will be used to assess present environmental conditions, establish benchmarks, and help counties set reasonable goals and regional priorities for natural resources management in South Central Minnesota.

*This project is a continuation from the 1991-1993 biennium; M.L. 1991, Ch. 254, Sec. 14, Subd. 4(b).*

**LAKE/GROUND WATER INTERACTION  
STUDY AT WHITE BEAR LAKE  
11(f) \$175,000 MFRF**

*John Linc Stine  
DNR Division of Waters  
500 Lafayette Road  
St. Paul, MN 55155  
(612)296-0440*

This project will enhance the technical analysis of the influence of ground water on Minnesota lakes in order to improve decision-making when changes to lake levels or ground water levels are considered.

This project will expand on an existing computer model (WATB-D) by adding a dynamic component for seepage and calibrating the model using ground water level data gathered from observation wells at White Bear Lake.

The revised model will provide improved predictive analysis of potential impacts to lake and ground water levels as hydrologic factors change, that will be directly transferrable to 50 ground water sustained lakes.

**COUNTY GEOLOGIC ATLASES AND  
REGIONAL HYDROGEOLOGIC  
ASSESSMENTS - CONTINUATION  
11(g) \$850,000 TF**

*David Southwick  
U of MN  
MN Geological Survey  
2642 University Avenue  
St. Paul, MN 55114  
(612)627-4780*

*Sarah Tufford  
DNR  
Groundwater, Climatology & Water Information  
Systems Section  
500 Lafayette Road  
St. Paul, MN 55155  
(612)297-2431*

This continuation project expands production of county geologic atlases and regional hydrogeologic assessments. Regional hydrogeologic assessments will be completed for the Red River and Southwest regions. County geologic atlases will be completed for Rice and Fillmore counties and initiated to 50% completion for Stearns county.

The purpose of this project is to respond to state, regional, and local needs for geologic and hydrologic data and interpretations essential to protection of Minnesota's groundwater, pursuant to the Groundwater Protection Act of 1989 and recommendations of the Environmental Quality Board Water Resources Committee.

*This project is a continuation from the 1991-1993 biennium; M.L. 1991, Ch. 254, Sec. 14, Subd. 4(f).*

**SEPTIC SYSTEM REPLACEMENT FOR  
WATER RELATED TOURISM BUSINESSES  
11(h) \$500,000 MFRF**

*Paul Moe  
Dept. of Trade and Economic Development  
500 Metro Square  
121 Seventh Place East  
St. Paul, MN 55101-2146  
(612)297-1391*

This program will provide matching grants of up to \$10,000 to resorts and related tourism businesses located on lakes and rivers for replacement of failing or nonconforming septic systems. Rules and criteria will be developed to determine spending priorities and procedures.

**OPTICAL BRIGHTENERS: INDICATORS OF SEWAGE CONTAMINATION OF GROUNDWATERS**  
11(i) \$157,000 MFRF

*Ronald C. Spong  
Dakota County Environmental Management  
Department  
Suite 310  
14955 Galaxie Avenue West  
Apple Valley, MN 55124  
(612)891-7542*

Optical brighteners are organic blue dyes added to detergents to enhance the apparent cleanliness of clothing and are consequently a component of domestic sewage. This project's overall objective is to determine if optical brighteners can be correlated with other wastewater contaminants in groundwater, such as nitrates.

It is hypothesized that optical brightener levels may cost-effectively predict the on-site sewage system contribution to the deterioration of drinking water quality as compared with the agricultural contribution. Testing will be carried out on wells in shallow and intermediate depth aquifers throughout a nine-county area to evaluate this hypothesis.

**WILDLIFE, FISHERIES, PLANTS**

**REINVEST IN MINNESOTA - CRITICAL HABITAT MATCH, SCIENTIFIC AND NATURAL AREAS, WILDLIFE, AND PRAIRIE ACQUISITION**  
12(a) \$4,000,000 TF

*Jay Rendall  
DNR  
Division of Fish and Wildlife  
500 Lafayette Road  
St. Paul, MN 55155  
(612)297-1464*

This appropriation will advance the Reinvest in Minnesota (RIM) initiative by funding the following components:

1) \$2,600,000 will be used to protect and improve critical fish, wildlife, and native plant habitat through critical habitat matches. State funds in the Minnesota Critical Habitat Private Sector Matching account (CHM) are matched dollar-for-dollar by restricted and unrestricted contributions of land, easements, or cash to the

program.

2) \$1,000,000 will be used to acquire land for Scientific and Natural Areas, which serve to preserve and perpetuate the ecological diversity of Minnesota's natural heritage for scientific study, education, and nature observation.

3) \$300,000 will be used for the North American Waterfowl Management Plan (NAWMP) which is an intensive 15-year project to restore breeding waterfowl populations to their 1970s levels. NAWMP goals will be attained by acquiring and protecting existing wetlands, restoring drained wetlands, managing wetlands for wildlife production, and planting uplands with prairie and other grasses. This project includes work in the Swan and Heron Lake areas.

4) \$100,000 will be used for the Native Prairie Bank program to acquire prairie bank easements to protect native prairie on private lands.

**REINVEST IN MINNESOTA - WILDLIFE HABITAT STEWARDSHIP AND PROPERTY DEVELOPMENT**  
12(b) \$900,000 TF

*Jay Rendall  
DNR  
Division of Fish and Wildlife  
500 Lafayette Road  
St. Paul, MN 55155  
(612)297-1464*

This project will provide stewardship and development of state lands, ranging from Scientific and Natural Areas (SNAs) which protect rare and endangered species, to Wildlife Management Areas (WMAs) which protect wildlife habitat and provide wildlife compatible recreation.

The restoration of prairies, brushland, forest sites, nongame habitat, and the planting and management of native grasses will be the primary areas of emphasis. WMAs and SNAs provide for dispersed recreational uses such as hunting, nature observation, and educational/research opportunities.

**REINVEST IN MINNESOTA - STATEWIDE  
FISHERIES HABITAT DEVELOPMENT  
12(c) \$687,000 TF**

*Dirk Peterson  
DNR Section of Fisheries  
500 Lafayette Road  
St. Paul, MN 55155  
(612)296-0789*

This project's purpose is the restoration, improvement, and development of fisheries habitat to provide additional angling opportunities. Trout, walleye, and smallmouth bass stream habitat will be developed, the Flandrau Dam on the Cottonwood River will be removed to allow migration of five sport fish species, and aeration systems will be installed on winterkill-prone lakes.

**ESTABLISHMENT OF CRITICAL WINTER  
HABITAT AREAS ON INTENSIVELY FARMED  
LAND**

**12(d) \$100,000 MFRF  
\$ 60,000 NONSTATE MATCH**

*David Nomsen  
Pheasants Forever Inc.  
2101 Ridgewood Drive NW  
Alexandria, MN 56308  
(612)763-6103*

This project will acquire and establish areas of critical winter habitat for wildlife on farmland in Scott County. Four twenty-acre habitat areas will be established in quarter township areas devoid of winter cover.

**WILD TURKEY HUNTING  
SAFETY/EDUCATION  
12(e) \$39,000 MFRF**

*Len Holtegaard  
National Wild Turkey Federation  
1590 Whitewater Avenue  
St. Charles, MN 55972  
(507)932-4866*

This project will promote safety in the sport of wild turkey hunting to minimize accidents and maximize the best in hunter/landowner relationships. The project will develop public service announcements, safety videos, and workshops.

**NIEMACKL WATERSHED RESTORATION  
12(f) \$500,000 MFRF  
\$300,000 NONSTATE MATCH**

*Jim Breyen  
DNR  
2115 Birchmont Beach Rd NE  
Bemidji, MN 56601  
(218)755-3958*

This project will consist of land-use modifications on uplands for soil and water conservation, restoration of drained wetland basins, intensive management of fish and wildlife resources, and construction of water control structures for the purpose of metering runoff, controlling roughfish, and restoring and managing aquatic ecosystems.

\$200,000 is available to begin the project and the remaining \$300,000 is contingent on a match of \$300,000 of nonstate funds.

**DEER CRITICAL HABITAT SURVEY -  
KOOCHICHING COUNTY**

**12(g) \$75,000 MFRF  
\$5,000 NONSTATE MATCH**

*Dennis Hummitzsch  
Koochiching County  
County Courthouse  
International Falls, MN 56649  
(218)281-6295*

*Frank Swendsen  
DNR  
Wildlife Section  
Route 8, Box 8  
International Falls, MN 56649  
(218)286-5434*

The overall goals of the deer critical habitat survey in Koochiching County are to identify which of the many coniferous stands are actually being used by deer for winter cover, map them, and write management plans for each one.

Through identification and management, adequate wintering areas can be guaranteed for many years. This project can also serve as a pilot for other similar projects across northern Minnesota.

**REINVEST IN MINNESOTA - FISHERIES  
ACQUISITION FOR ANGLER ACCESS AND  
HABITAT DEVELOPMENT  
12(h) \$300,000 TF**

*Dirk Peterson  
DNR  
Section of Fisheries, Box 12  
500 Lafayette Road  
St. Paul, MN 55155  
(612)296-0789*

This project will provide increased angler access and fisheries habitat development for accelerating easement and fee title acquisition of land adjacent to streams and lakes.

Emphasis will be placed on trout stream easement acquisition, warmwater stream easement acquisition, and aquatic management areas acquisition.

**~~– CANCELLED – Required match not met  
ESTABLISHING GOOSE NESTING SITES IN  
NORTHERN MINNESOTA AND RELOCATION  
OF GIANT CANADA GOSSLINGS  
12(i) \$21,000 MFRF  
–\$31,890 NONSTATE MATCH~~**

*Robert D. Nylon  
Goose International, Inc.  
P.O. Box 225  
Duluth, MN 55801-0225  
(218)723-8064*

~~This project will manufacture and place 160 permanent goose nesting sites in the Squaw Lake and Baudette areas and purchase a four-wheel drive vehicle capable of towing a trailer for 400 geese.~~

~~This appropriation requires a match of \$31,890 from Goose International, Inc.~~

**PRAIRIE ECOSYSTEM RESTORATION IN THE  
MINNEAPOLIS PARK SYSTEM  
12(j) \$60,000 MFRF  
\$60,000 NONSTATE MATCH**

*Jeffrey T. Lee  
Minneapolis Park and Recreation Board  
3800 Bryant Avenue S.  
Minneapolis, MN 55409  
(612)348-4448*

This project will restore remnant and secondary prairie plant communities in the Minneapolis park system through soil amendment, reintroduction of indigenous plants,

and subsequent long term management. Trail systems and overlooks will also be designed and installed to allow for visitor access.

Urban populations will then be able to utilize these locations for recreational and educational purposes.

**THEODORE WIRTH PARK TAMARACK BOG  
PRESERVATION PROJECT  
12(k) \$40,000 MFRF**

*Lara Keeley  
People for Parks  
400 South Fourth St.  
Suite 200  
Minneapolis, MN 55414  
(612)661-4778*

This project will restore the Theodore Wirth park tamarack bog, improve the access trail, construct a boardwalk, and develop and install self-guided interpretive signage.

**BIOLOGICAL CONTROL OF EURASIAN  
WATERMILFOIL AND PURPLE LOOSESTRIFE  
- CONTINUATION  
12(l) \$400,000 TF  
\$200,000 NONSTATE MATCH**

*Luke Skinner  
DNR  
Division of Fish and Wildlife  
Ecological Services Section  
Box 25, 500 Lafayette Road  
St. Paul, MN 55155-4025  
(612)297-3763*

The overall goal of this project is to provide long-term control of Purple loosestrife and Eurasian watermilfoil utilizing biological control methods. Purple loosestrife and Eurasian watermilfoil (EWM) are exotic (non-native) plants that have caused negative impacts to Minnesota's natural ecosystems.

Currently, the best available method for controlling these two exotic plants is the use of herbicides; but unless loosestrife or EWM infestations are small, chemical control methods are limited and typically short term in nature. Consequently, more effective control methods are needed. This project will research the effectiveness of insects, mycoherbicides, and fungi for biological control of these exotic species.

The \$250,000 portion for EWM control will be matched by \$200,000 of nonstate funds.

**REPLACEMENT OF EURASIAN  
WATERMILFOIL WITH NATIVE MINNESOTA  
PLANTS**

**12(m) \$40,000 MFRF**

*Edward F. Miller  
White Bear Lake Conservation District  
28745 Belle Creek Way  
Welch, MN 55089-4459  
(612)258-4023*

The purpose of this project is to aid in the promotion of biological controls over Eurasian watermilfoil (EWM) through the enhanced use of native aquatic plants of Minnesota. The costs and usefulness of replanting areas treated for EWM with native plants will be assessed using literature searches and field tests.

The knowledge gathered from this work will be summarized in the production of a videotape, copies of which will be made available to help local lake management associations or state agencies in their immediate efforts against EWM.

**INTEGRATED CONTROL OF PURPLE  
LOOSESTRIFE**

**12(n) \$90,000 MFRF**

*Dharma Sreenivasam  
MN Dept. of Agriculture  
Plant Protection Division  
90 W. Plato Boulevard  
St. Paul, MN 55107  
(612)296-1350*

This project will accelerate the evaluation of integrated biological control agents for Purple loosestrife infestations in Houston, Hennepin, Wabasha, and Goodhue counties. Based on considerable background work already done in Europe, this project proposes four study sites of varying landscapes and levels of infestation in Minnesota to investigate the impact of integrating combinations of natural control agents.

Three species of insects will be evaluated on the basis of single/multiple species introductions; introduced fungal pathogens will be evaluated as single/multiple applications; and finally combinations of insects and fungal pathogens will be evaluated.

Geographic separation of study sites will provide useful information in determining the best combination of ecological factors for successful introduction and establishment of biological control agents against Purple loosestrife.

This project is a cooperative effort involving County Agriculture personnel, USDA researchers, U of M researchers, DNR and MDA.

**ECOLOGICAL IMPACTS OF RELEASING  
GENETICALLY ENGINEERED FISHES  
12(o) \$175,000 TF**

*Anne R. Kapuscinski  
U of MN  
Dept. of Fisheries & Wildlife  
200 Hodson Hall  
St. Paul, MN 55108  
(612)624-3019*

The overall goal of this program is to advance ecological safety of genetically engineered fishes (GEFs) via two activities. The first focuses on one type of GEF, and the other takes a generalist approach to safety in aquaculture.

Laboratory experiments will be conducted to measure ecologically important bioenergetic and behavioral traits of existing growth-enhanced GEFs and related non-genetically engineered fishes (non-GEFs, i.e. controls). Findings will be incorporated into existing bioenergetic models to predict risks of GEF releases on Minnesota's gamefish and aquatic ecosystems and recommended ways to reduce risks.

An invitational workshop will convene aquatic biologists, aquaculture engineers, industry representatives, ethicists, and regulators to produce two reports which will foster safe uses of GEFs in Minnesota and nationally.

Performance standards will be submitted to the U.S. Department of Agriculture (USDA) for adoption by the federal government. They will assist Minnesota regulators having regulatory oversight of ongoing research on GEFs.

This project will use additional funds from USDA and Sea Grant to expand the workshop scope, invite additional participants, and begin workshop planning.

# Legislative Commission on Minnesota Resources

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JOHN R. VELIN  
Director

August 25, 1994

Mr. Pat Flahaven, Secretary of the Senate, and  
Mr. Ed Burdick, Chief Clerk House of Representatives

Dear Colleagues:

RE: LCMR Recommendations to the 1995 Legislature

***M.S. 116P.09 subd 7 (4) requires the LCMR to make: "...(4) recommendations to implement successful projects and programs into a state agency's standard operations; ..."***

Because budget development begins in early fall 1994, the LCMR decided to submit these recommendations now, in order to be as helpful as possible to the budget development process. For each program or project recommended there is a very brief description and a short finding statement that should help explain the rationale for inclusion in regular operations. One broad, major recommendation is that each agency should establish as part of its regular budget, a research and development component and perhaps come to LCMR with some novel ideas to accelerate or initiate where their regular research budget could not accommodate the effort.

Other themes of the recommendations include: (1) The dollar amount of the appropriation is not part of the recommendations. Amounts should be subject to perceived current needs and increased or decreased appropriately. (2) The specific program structure may change based on agency reallocation and/or reorganization decisions. (3) This does not necessarily mean the project should be a line item request. (4) This does not recommend an increase in permanent agency staff. (6) The project, as experienced and reviewed by LCMR is well conceived and the results to date appear very useful.

The focus of these recommendations is the outcomes from the projects, not the specific means. The projects, in many cases could be accommodated in either regular budget or bonding appropriations, sometimes with increases, sometimes with

Mr. Pat Flahaven, Secretary of the Senate, and  
Mr. Ed Burdick, Chief Clerk House of Representatives  
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August 25, 1994

decreases and often by agency reallocation. The attached list constitutes the LCMR recommendations pursuant to M.S. 116P.09 Subd. 7 (4). Please call on me or the staff to provide you or the various committees with more information.

Sincerely,



Representative Phyllis Kahn, Chair

- c: Senate Finance Committee
- Senate Environment and Natural Resources Committee
- Ways and Means Committee
- House Environment and Natural Resources Committee
- House Environment and Natural Resources Finance Committee
- Senate Majority Leader Roger Moe
- Senate Minority Leader Dean Johnson
- President of the Senate
- Speaker of the House Irv Anderson
- House Majority Leader Phil Carruthers
- House Minority Leader Steve Sviggum
- Legislative branch liaison staff
- Governor Arne Carlson
- Finance Commissioner Gunyou
- Executive branch agencies - Liaison officers
- Individual program manager

These projects are recommended for inclusion in agency operations.

Included in this report on the following projects is the original appropriation citation as a reference point, the biennial funding years and the receiving agency.

*PART ONE: 1993 projects: from Laws 1993, Chapter 172 Sec. 14 Including Projects From:  
MN FUTURE RESOURCES FUND (MFRF) - OIL OVERCHARGE FUND (OOC)  
ENVIRONMENT AND NATURAL RESOURCES TRUST FUND (TF)  
July 1, 1993 through June 30, 1995*

**MINNESOTA ENVIRONMENTAL INDICATORS INITIATIVE (MEII) \$350,000**

This project creates the framework for an integrated, statewide network for selecting and monitoring environmental indicators to assess and communicate Minnesota's environmental health status and trends. DNR new initiative

**MINNESOTA'S FOREST BIRD DIVERSITY INITIATIVE (CONTINUATION of 1991 project) \$400,000**

This project provides a comprehensive monitoring and research program that: 1) develops management tools to maintain Minnesota's rich diversity of forest birds; and 2) establishes benchmarks for using birds as ecological indicators of forest health. If the department had a research contingent, this is an example of a project with interdisciplinary impact across a range of resources. It will take an additional 10 years or more depending on funding levels before the results are conclusive, even though some management implications will be known by 1997. DNR 1991, '93

**BIOLOGICAL CONTROL OF PLANT AND ANIMAL PESTS - CONTINUATION**

**3(a) \$880,000 OOC** The overall goal of biological control of plant and animal pests is to identify, develop, test, and implement biological control agents in Minnesota. This program focuses on effective integrated pest control with a reduction in chemical use and energy costs. Dept of Ag should also work closely with the DNR to implement **INTEGRATED CONTROL OF PURPLE LOOSESTRIFE as started with the 1993 project in 12(n) for \$90,000** that evaluated integrated biological control agents for Purple loosestrife infestations in several counties. Fees on chemicals might help the transition to biological control. AGRICULTURE '89,91,93

**LAND & WATER CONSERVATION FUND ADMINISTRATION**

**6(f) \$80,000 MFRF** This appropriation is used to administer the federal Land and Water Conservation Fund grant program to maximize federal receipts and ensure Minnesota's continuing eligibility to participate. The nature of the work under this program is within the routine duties of the department. The department should explore methods to use federal money to support the activity to the extent eligible. DNR '87,89, 91,93

**AMERICANS WITH DISABILITIES ACT: RETROFIT REGIONAL PARKS**

**10(b) \$220,000 TF** Regional park implementing agencies use subgrants from the Metropolitan Council to rehabilitate existing regional facilities to increase accessibility and meet new federal standards which will come from the Americans with Disabilities Act. The accommodation of people with disabilities needs to be part of the mainstream of efforts in local, regional and state agencies. METRO COUNCIL

**ENHANCED RECREATIONAL OPPORTUNITIES FOR SOUTHEAST ASIAN ETHNIC COMMUNITIES 10(t) \$300,000 MFRF**

This project addressed the cultural and language problems experienced by Southeast Asian Communities in their use of natural resources. DNR works with community leaders to provide community education, develop bilingual communications exchanges, and hold cultural and sensitivity training for DNR and other natural resources professionals. The agency should broaden the scope of this kind of effort, to include, for example, immigrants from all over the globe who arrive here with little understanding of the fish, wildlife and general recreation mores of Minnesotans. DNR '91,93

**COUNTY GEOLOGIC ATLASES AND REGIONAL HYDROGEOLOGIC**

**ASSESSMENTS - 11(g) \$850,000 TF** The purpose of this project is to respond to state, regional, and local needs for geologic and hydrologic data and interpretations essential to protection of Minnesota's groundwater, pursuant to the Groundwater Protection Act of 1989, which provided a base budget level of effort. The results have been highly useful and more and higher levels of effort are necessary to aid in water resource decision making. DNR '91,93

**MINNESOTA RIVER IMPLEMENTATION - 11(a) \$1,100,000 TF** This project will accelerate the adoption of best management practices (BMPs) and related state and local implementation activities including demonstration watersheds, education, BMP development, and ongoing monitoring. After four years of LCMR initiative to support the assessment of the problems and two more years of initial implementation, the Executive branch has responded with major initiatives, including internal agency priorities and the arrangement for \$34 million in State wide Revolving Fund efforts. The implementation effort is now in the mainstream of state government and the LCMR role is substantially diminished. There should be increased emphasis on local cooperation, matching funding sources, and consideration of fee based funding. This successful project presents a model for use in other major river systems. PCA '89, 91, 93

**BIOLOGICAL CONTROL OF EURASIAN WATERMILFOIL AND PURPLE**

**LOOSESTRIFE - 12(I) \$400,000 TF** The overall goal of this project is to provide long-term control of Purple loosestrife and Eurasian WATERMILFOIL utilizing biological control methods. Currently, the best available method for controlling these two exotic

plants is the use of herbicides; but unless loosestrife or EWM infestations are small, chemical control methods are limited and typically short term in nature. This project will research the effectiveness of insects, mycoherbicides, and fungi. Results to date are promising and major national cooperation is taking shape with the Corps of Engineers. The DNR should reallocate as needed to meet this challenge and consider the various water related fees as a potential source of support. Perhaps include in the overall exotic control program. DNR '89,91,93

**STREAM FLOW PROTECTION - 11(d) \$280,000 MFRF** This project will collect stream habitat data (width, depth, velocity, substrate, water elevation) in all 39 watersheds to develop community-based flows that protect stream resources. This effort will require many years to complete, even for the priority streams. The department has a basic responsibility to acquire and evaluate this information and should reallocate efforts accordingly. DNR '93

**LOCAL RIVER PLANNING- 11(b) \$480,000 MFRF** The purpose of this project is to assist local units of government to plan for the wise management of rivers within their jurisdictions. Many rivers need land-use management programs which go beyond the state's shoreland and floodplain management standards to ensure their protection and to guide development. This locally controlled planning effort will integrate local, state, and federal management capabilities. While highly successful and well-received at the local level, there are many rivers still in need of this attention. The department should broaden the scope of this effort to more than just the northern counties and integrate the work into shoreland and floodplain management activities. In addition, DNR should re think the way wild scenic and recreational rivers are managed and consider changing from the current top down, command and control methods, to a management system more in line with the process and results of local river planning. DNR '91, '93

**PART TWO: 1991 recommended projects from Laws 1991, Chapter 254, Sec.14**

**EROSION CONTROL COST-SHARE GRANTS - 4(o) \$250,000 TF** This project provided funding, as well as engineering and technical support, to soil and water conservation districts (SWCDs) to help them carry out conservation projects in the catchment areas of sinkholes. Activities included surface water diversions and controls, watershed conservation practices, and a variety of sinkhole treatments designed to reduce the contamination of ground water. The emphasis was on sites where innovative practices could be used with a high information and educational potential. The BWSR should expand the erosion control program with the results of this experiment. BWSR '93

**WELL-SEALING COST SHARE GRANTS - 4(p) \$750,000 TF** This project provided grants to counties for sharing the cost of sealing high-priority abandoned wells. A total of 39 counties received cost-share grants, ranging in size from \$2,000 to \$55,000. As of June 1993, 1270 abandoned wells have been sealed and approximately 2,000 more are projected to be sealed. These local cost-share programs served to raise public awareness about the contamination threat of abandoned wells. Consequently, more wells have been slated to be sealed voluntarily and local education efforts have been initiated.

This program enabled the Board of Water and Soil Resources and other agencies to expand their training and technical support to local units of government, and local government staff members have learned and benefitted from each others' administrative and technical experience. BWSR '91

**PRIVATE FOREST MANAGEMENT - 7(e) \$200,000 MFRF.** The DNR should not erode the base for private forest management ( pfm). A significant amount of timber harvest occurs from private lands. Many of the landowners have little or no knowledge and experience in raising trees and in fact have different ownership objectives. The pfm assistance can help them get more benefit from their lands as well as assist the state in producing tree fiber. In the '91 biennium relating to Oak species primarily, a total of 1,446 landowners were assisted in some way, and a total of 3,852 acres of woodlands were planned for in detail. 130 acres of timber harvest were planned, over 700 acres of oak were regenerated, and 40 acres of oak were improved. DNR '91

Information on 1995 LCMR Recommended  
Allocation Language is included in  
Senate File 102

For a copy of Senate File 102, please contact the Senate  
Information Office at (612)296-0504

<b>ACTUAL AND ESTIMATES OF REVENUE AVAILABLE TO LCMR FOR FUNDING RECOMMENDATIONS</b>
--

Appropriation Year		Environment and Natural Resources Trust Fund	Future Resources Fund	Oil Overcharge	Great Lakes Protection Account	TOTAL
1991	Actual	14,960,000	16,534,000	3,500,000	0	34,994,000
1993 & 94	Actual	25,946,000	15,777,000	2,012,000	0	43,735,000
1995	Estimate	15,544,000 *	15,640,000	2,055,000	130,000	33,369,000

Revenue estimates for 1995 are from Department of Finance

\* assumes law change to MS 116P.11 (b) (4) increasing from 10% to 25% the amount of receipts available for expenditure in FY 96 \$3,144,000

For the Year Ended  
June 30, 1994

# Comprehensive Annual Financial Report

State of Minnesota

## STATE OF MINNESOTA

### NATURAL RESOURCES FUNDS COMBINING BALANCE SHEET JUNE 30, 1994 (IN THOUSANDS)

	MINNESOTA RESOURCES
ASSETS	
Cash and Cash Equivalents.....	\$ 6,221
Accounts Receivable.....	1,266
Interfund Receivables.....	-
Federal Aid Receivable.....	-
<b>Total Assets.....</b>	<b><u>\$ 7,487</u></b>
LIABILITIES AND FUND BALANCES	
Liabilities:	
Accounts Payable.....	\$ 1,591
<b>Total Liabilities.....</b>	<b><u>\$ 1,591</u></b>
Fund Balances:	
Reserved Fund Balances:	
Reserved for Encumbrances.....	\$ 4,316
<b>Total Reserved Fund Balances.....</b>	<b><u>\$ 4,316</u></b>
Unreserved Fund Balances:	
Designated for Appropriation Carryover.....	\$ 1,580
Undesignated.....	-
<b>Total Unreserved Fund Balances.....</b>	<b><u>\$ 1,580</u></b>
<b>Total Fund Balances.....</b>	<b><u>\$ 5,896</u></b>
<b>Total Liabilities and Fund Balances.....</b>	<b><u>\$ 7,487</u></b>

STATE OF MINNESOTA

EXPENDABLE TRUST FUNDS  
COMBINING BALANCE SHEET  
JUNE 30, 1994  
(IN THOUSANDS)

ASSETS	ENVIRONMENT AND NATURAL RESOURCES TRUST
Cash and Cash Equivalents.....	\$ 9,126
Investments.....	-
Accounts Receivable.....	-
Interfund Receivables.....	4,579
Accrued Investment/Interest Income.....	-
Federal Aid Receivable.....	-
Inventories.....	-
Loans and Notes Receivable.....	-
<b>Total Assets.....</b>	<b><u>\$ 13,705</u></b>
<b>LIABILITIES AND FUND BALANCES</b>	
<b>Liabilities:</b>	
Accounts Payable.....	\$ 1,829
Advances from Other Funds.....	-
Deferred Revenue.....	-
Compensated Absences Payable.....	86
Funds Held in Trust.....	-
<b>Total Liabilities.....</b>	<b><u>\$ 1,915</u></b>
<b>Fund Balances:</b>	
<b>Reserved Retained Earnings:</b>	
Reserved for Encumbrances.....	\$ -
Reserved for Inventory.....	-
Reserved for Long-Term Receivables.....	-
Reserved for Local Governments.....	-
Reserved for Other.....	-
<b>Total Reserved Fund Balances.....</b>	<b><u>\$ -</u></b>
<b>Unreserved Fund Balances:</b>	
Designated for Fund Purposes.....	11,790
<b>Total Fund Balances.....</b>	<b><u>\$ 11,790</u></b>
<b>Total Liabilities and Fund Balances.....</b>	<b><u>\$ 13,705</u></b>

STATE OF MINNESOTA

NONEXPENDABLE TRUST FUNDS  
COMBINING BALANCE SHEET  
JUNE 30, 1994  
(IN THOUSANDS)

ASSETS	ENVIRONMENT AND NATURAL RESOURCES TRUST
Cash and Cash Equivalents.....	\$ 6,324
Investments.....	74,318
Accounts Receivable.....	-
Interfund Receivables.....	1,394
Accrued Investment Income.....	554
Fixed Assets (Net).....	-
<b>Total Assets.....</b>	<b><u>\$ 82,590</u></b>
<b>LIABILITIES AND FUND BALANCES</b>	
<b>Liabilities:</b>	
Accounts Payable.....	\$ 2
Interfund Payables.....	4,579
<b>Total Liabilities.....</b>	<b><u>\$ 4,581</u></b>
<b>Fund Balances:</b>	
Reserved for Trust Principal.....	\$ 78,009
<b>Total Fund Balance.....</b>	<b><u>\$ 78,009</u></b>
<b>Total Liabilities and Fund Balances.....</b>	<b><u>\$ 82,590</u></b>

# DRAFT

# Working Paper Budget 2001

Government Spending Government Spending

## Environment

**Deborah Pile, 297-2375**  
**FAX: 296-3698**

Working papers on eight topical areas are part of the Budget 2001 project being conducted at Minnesota Planning. The project will focus its attention on how important trends and current decisions will affect Minnesota's ability to pay for needed public services in the next five to ten years. Budget 2001 will make strategic recommendations for protecting Minnesota's fiscal and economic health in the first decade of the next century. A final report will be released in December, 1994.

This working paper is a first draft prepared for discussion purposes and is distributed to advisors and experts in the field. A final working paper will be prepared by the end of October. This draft represents our initial assessment of financial data, trends and demographics. Policy recommendations and options may be significantly changed as the project progresses. We are interested in your feedback and thoughts.

The author can be reached at the above telephone number. The project director can be reached at: Judith Johnson 296-2981.

MN Planning  
300 Centennial Building  
658 Cedar Street  
St. Paul, MN 55155

Draft 1

September 16, 1994



**DRAFT**

# Working Paper Budget 2001

Government Spending Government Spending

## Environment

Draft 1  
September 16, 1994



# ENVIRONMENT AND NATURAL RESOURCES SUMMARY

## **Total Spending Increases**

Total state government spending for environment and natural resources increased more than 120 percent from 1980 to 1993, after adjusting for inflation. Local and special purpose district spending also increased, but about half as fast.

## **Funding Sources Change**

Revenue sources changed over the period, with state general funds and federal funds diminishing in importance. State spending from these sources dropped from three-quarters of total state spending in 1980 to slightly more than half in 1993. Fees and revenues from special funds made up the difference. Bonding supplied a significant portion of funding throughout the period.

## **Pollution Issues Dominate Increases**

Spending shifted from traditional parks and natural resource areas to pollution control and environmental cleanup. Inflation-adjusted spending for the Department of Natural Resources increased less than 85 percent, while that for the Pollution Control Agency grew by more than 460 percent. County government spending on sanitation consumed more than 36 percent of total environment and natural resource spending in 1992, up from 5 percent in 1980.

## **Facts and Perceptions Are Drivers**

Increases were scientifically and politically driven. Knowledge of effects of pollutants on health and ecosystems increased and became more widely accepted. New instruments and procedures allowed detection of ever smaller amounts of substances. At the same time, public attitudes toward pollution were changing based on perceptions of risks. These forces promoted actions by federal and state law-makers to address existing pollution problems, mandating actions by state and local governments and industry.

## **New Approaches Evolving**

Increased understanding and new environmental concerns continue to spawn new programs and requirements. Emphasis is shifting from remediating to preventing, from regulating a handful of polluters to influencing individual actions and from managing discrete programs to managing resources and ecosystems. These shifts call for new approaches and new roles for governments. They will emphasize technical assistance, problem assessment and guidance. However, the need for cleanup and remediation will continue for many years to come.

### **Funding Structures Hamper Change**

Current funding structures can hamper change. Fees and dedicated accounts have provided stable funding for some programs; however they can limit flexibility. The ability to raise fees influences program priorities. Rate payers become the clients instead of the general public and dictate program activities. Managers are limited in their ability to allocate resources to respond to new issues and workload changes. Overall resource and ecosystem management within and among agencies is made difficult as spending is confined to narrowly defined program areas.

### **Future Demands and Prospects**

Past increases in environment and natural resource spending were commensurate with increases in personal income. Future needs, revenues and demands of health care and other issues will lead to hard choices. Yet investments in the state's environment and natural resources will continue to be important to the economy and quality of life. Better efforts will be needed to identify needs versus wants and establish priorities.

## **BUDGET 2001 — ENVIRONMENT AND NATURAL RESOURCES**

Governments traditionally have been in the business of providing environment and natural resource services — from the Roman aqueducts to the late 19th century beginnings of the U.S. national park system to the current wellhead protection program. The nature of the services, however, has changed. It once was deemed adequate to transport sewage out of town or raise smokestacks to disperse air pollutants. Now the health of our parks, wildlife and people is seen as interrelated.

The national environmental movement and highly visible and publicized pollution problems of the 1970s helped accelerate this change. Government actions are reflecting our increased knowledge and understanding of the interaction of environmental systems and the effects of pollution on human and environmental health.

### **HISTORICAL SPENDING TRENDS**

Environment and natural resource spending in Minnesota increased significantly over the past 15 years, both at the state and local levels. Sources of funding changed, with federal and state general funding becoming less significant and fees and special funds becoming more significant. Emphasis shifted from parks and natural resource issues to environment and health protection.

**State Trends** — At the state level, numerous agencies are involved in environment and natural resource issues. These include the Departments of Natural Resources, Health and Agriculture, Pollution Control Agency and Board of Water and Soil Resources.

**Spending increased more than 120 percent** — Collectively, state agency spending increased 120.5 percent from 1980 to 1993 in 1993 dollars (figure 1).

**General and federal fund dollars became less significant** — As a percentage of total spending, general fund dollars decreased from 59.8 percent in 1980 to 42 percent in 1993, while federal dollars decreased from 14.4 percent to 9.8 percent.

**Fees became a more significant source of funding** — In 1992-93, fees provided nearly 50 percent of state environment and natural resource funding. They accounted for more than 65 percent of PCA funding; air quality activities are totally fee supported (figure 2).

**Pollution control spending dominated spending increases** — PCA spending increased 468 percent from 1980 to 1990 in 1993 dollars. Increases for the DNR were 84 percent, in line with the 86 percent total spending increase for the period (figure 3).

**Natural resource spending remained most significant** — In 1990, DNR spending accounted for more than three-quarters of all environment and natural resource spending. But it fell from 77.6 percent in 1980 to 76.7 percent in 1990.

**Spending grew faster than population** — Per capita environment and natural resource spending increases were similar to overall increases. Adjusted per capita spending increased 73 percent from 1980 to 1990, from \$36.97 to \$63.97. Pollution related spending grew the fastest. With a nearly 430 percent increase, PCA per capita spending grew from \$3.84 in 1980 to more than \$20 in 1990 (figure 4).

**Spending takes a smaller share of personal income** — Adjusted environment and natural resource spending per \$1,000 of personal income decreased by 7.8 percent from 1980 to 1990. DNR led the decline with a 9 percent decrease. However, pollution spending increased, with a PCA increase of 184 percent.

**Bonding increased spending by more than 20 percent** — Bonding supplies significant additional resources. From 1981 to 1994, nearly \$500 million in bond funds were appropriated for environment and natural resource efforts. This includes more than \$200 million for water pollution control, more than \$80 million for the Reinvest in Minnesota program and more than \$130 million for other natural resource efforts (figure 5).

**Local Government Trends** — Local units of government also are playing a significant and, for some units, changing role in environment and natural resource issues. Cities traditionally handle sewer, water and refuse collection services. These are generally enterprises, with fees covering the costs of service. The township role in sewer and water varies considerably from year to year, reflecting specific local projects.

**County spending increased nearly 70 percent** — Adjusted county spending on sanitation, recreation and natural resources increased nearly 85 percent from 1970 to 1980 and an additional 69.8 percent from 1980 to 1992 (figure 6).

**Sanitation takes a larger share of county spending** — Sanitation expenditures increased 1125 percent from 1980 to 1992, rising from 5 percent to 36.8 percent of spending. Natural resource spending increased slightly more than 26 percent, while recreation spending showed no increase.

**Water planning commitment rises** — State initial planning grants and implementation grants for local water planning reaped increased commitment of local funds. County funds increased 43.8 percent from 1991 to 1993 and now stand at more than \$4 million.

**Soil and Water Conservation District revenues increase** — Revenues increased nearly 60 percent from 1984 to 1993 (figure 7).

**Local/county share of district revenues increased** — Revenues from local/county sources increased nearly 100 percent from 1984 to 1993, rising from 37 percent to 46.6 percent of the total. At 42 percent in 1993, state funds continue to provide significant revenues.

**Federal Trends** — Overall, federal funds are decreasing as a portion of total environment and natural resource spending. New programs or initiatives generally command new dollars, but the general expectation is for state and local governments to draw on other sources of revenue.

**Negative funding** — Threat of removal of highway funding has been used several times to encourage state compliance with federal mandates, including those for wastewater treatment and clean air.

**Decreased federal agency funding** — In adjusted dollars, EPA's operating budget was the same in 1991 as it was in 1979, despite growth in program responsibilities. USDA has cut both staff and programs, decreasing its ability to offer technical assistance. Continued cuts are imminent.

**Decreased commitment to parks and recreation** — Land and water conservation fund grants to Minnesota for state and local parks fell in the 1980s to the initial 1965 level. This resulted from actual fund reductions and increases in the portion of the fund retained to cover federal agency operations (figure 8).

**Move from grants to loans for mandate compliance** — A cornerstone of the federal Clean Water Act was the municipal grant program, designed to defray most of the costs of compliance with the act's wastewater treatment requirements. In the late 1980s, these grants were phased out. Federal funds are now supplied to help capitalize revolving loan funds for treatment plant construction. This approach has been extended to nonpoint source pollution control corrections and likely will be used to help communities meet Safe Drinking Water Act requirements.

**Minnesota Compared** — Minnesota state and local governments spend more than most states on environment and natural resources. Comprised of spending in natural resources, parks/recreation, sewerage and other sanitation (predominately solid waste), Minnesota's per capita spending increased by more than 22 percent from 1980 to 1990 (in 1993 dollars). In both years, spending was similar to Wisconsin's (figure 9).

In general, comparisons are difficult. The services offered and challenged faced by states vary greatly. For example, Alaska spends 163 percent more per capita than the next highest state due to its low population relative to natural resources. Per capita, in 1990 Minnesota ranked:

**7th in parks and recreation spending** — Minnesota spent 76 percent more than the median and 34 percent less than the highest ranking state, Alaska. Minnesota spent nearly \$98 per

capita.

**8th in sewerage spending** — At slightly more than \$96 per capita, Minnesota spent 39 percent more than the median and 32 percent less than Delaware, the highest spending state.

**18th in natural resource spending** — Minnesota spent 84 percent less per capita than Alaska, the highest spending state and 21 percent more than the median. Our spending in 1990 was \$67 per capita.

**19th in other sanitation** — At \$42 per capita, Minnesota spent 22 percent more than the median and nearly 60 percent less than the highest ranking state, Hawaii.

### ENVIRONMENT/NATURAL RESOURCE PAYOFFS

#### Overall

- ranked 5th in protecting the environment in an analysis of how well the 50 states take care of their air, water and land (1992)

#### Natural Resources

- 66 state parks (1990); only three states had more park land (1993)
- Ranked 8th in state parkland per 100 citizens (4.59 acres) (1990)
- Park attendance increased 48% from 1985 to 1989, to nearly 8 million (1990)
- Nation's largest system of Scientific and Natural Areas (1991)
- Largest state trail system in country (1992)
- 2nd highest amount of public land open to hunting (1993)

#### Tourism

- Ranked 18th in business receipts from tourism, and 18th in per capita business receipts from tourism (1990)
- Sold more fishing licenses per person than any other state (1993)
- Has second highest rate of participation in outdoor wildlife-related recreation in the nation (1993)
- Ranks first in number of snowmobiles and recreational watercraft per capita (1993)

#### Pollution Control

- Reduced air quality violations from 597 in 1971 to nine in 1991
- Went from 1,500 open dumps in 1967 to 49 permit-control landfills in 1992
- Adopted state hazardous waste cradle-to-grave regulatory system in 1979, ahead of the national program
- Eliminated tire dumps; received national innovation award for waste tire program

## **SHIFTING APPROACHES AND EMPHASIS**

Environment and natural resources — clean air, abundant high-quality lakes and streams, forests, productive farmlands, wildlife — always have been an important part of Minnesota's sense of place, quality of life and economy. Our approaches to managing and protecting them have changed over time, but the commitment remains.

In general, Minnesota has increased its efforts in all areas of environmental protection and resource management over the past 15 to 20 years. Some efforts address new threats, some the demands of an increasing and changing population. Others recognize that new approaches can yield better results.

Emphasis shifted from traditional areas of resource management to pollution control and waste management. While the state's commitment to resource management remains high, funding has flattened. DNR inflation-adjusted funding increased 1 percent from FY90 to FY91, 1.5 percent from FY91 to FY92 and decreased 1.8 percent from FY 92 to FY93. Concentration on highly visible problems — belching smokestacks, raw sewage discharges — is giving way to concern with the unseen — toxic pollutants in the air, carcinogens in groundwater. Finally, efforts are shifting from controlling the actions of a few people to influencing the behavior of everyone.

**Cleanup to prevention** — Major investments have been made in cleaning up past problems. Problems from inadequate sewage treatment plants, leaking landfills, growing tire piles — problems resulting from our past practices — demanded attention. At the same time, requirements to prevent these and other problems from reoccurring were being developed. The hazardous waste tracking system, pesticide container "rinse and win" program, household hazardous waste pickups, stringent permits for industries and wastewater treatment plants, local water planning, well-construction requirements and wellhead protection are but a few of Minnesota's efforts to prevent future problems.

While prevention is viewed as the key, the environmental deficit still remains high. Many miles of streams remain unsuitable for swimming and fishing; many waste sites await remediation. Cleanup will be a major part of costs for many years to come.

**Point to nonpoint source** — Pollution control efforts in the 1970s and early 1980s centered on controlling pollution from industrial and municipal dischargers, pollution that came from a specific point. Through the 1980s, many new efforts were added dealing with more dispersed sites of pollution — hazardous waste disposal sites, underground storage tanks, landfills. More recently, efforts have expanded to cover problems caused by the "normal" activities of many or most people — what the homeowner throws in the trash, what the farmer puts on the land, how the developer clears the land.

**Program management to resource management** — Programs had been managed in isolation, leading to unplanned-for consequences. Pollution was switched from water to air and back again. Pollutants were removed from water creating a waste disposal problem. Wastes were incinerated, creating an air quality problem. Air contaminants were removed, creating a waste disposal

problem. In other areas, fisheries managers focused on lakes and streams, only to find that pollutants from the air and in runoff thwarted their efforts.

Now efforts such as the Clean Water Partnership projects and DNR ecoregion approaches attempt to pull agencies and levels of government together to integrate programs and manage resources.

**Regulation to education, assistance and incentives** — Along with the change to nonpoint sources came the recognition that the old approach of issuing permits and enforcing rules was not well-suited to influencing behavior. Both prevention and nonpoint source control required governments to change from regulators to partners.

More demands are placed on the state to manage issues and provide an overall perspective. The state is becoming more involved in assessments, financing, coordinating, providing information and offering incentives to do the right thing. DNR's mission now includes providing technical assistance and helping local governments. Minnesota Department of Health issues more advisories on fish consumption and other issues to educate the public on how to reduce risks.

Government is changing the way it regulates as well. It is moving from "command and control" to defining outcomes, providing incentives, and exercising less direct implementation of controls. It also is working to stabilize cost for business by streamlining permitting.

**Grants to loans** — From 1967 through the early 1990's more than \$1.2 billion in state and federal funds were granted to Minnesota communities for wastewater treatment projects needed to meet federal and state requirements. These grant funds have been replaced with a revolving loan fund, placing greater financial burdens on communities. This approach was extended in 1994 to cover nonpoint source issues, including feedlot systems, sealing abandoned wells, upgrading septic systems and controlling storm water. Loans for compliance with Safe Drinking Water Act requirements likely will be added to the mix when that federal act is reauthorized.

**State control to local control** — Efforts are continuing to decentralize environmental protection and resource management. Approaches include dispersing state agency staff into regions, delegating authority to local units of government and assisting local units in carrying out their responsibilities. PCA has had a threefold increase in regional staff over the past several years. Numerous counties now regulate feedlots and numerous county Boards of Health manage the food, beverage and lodging program, to name just two delegations.

The state is being drawn into zoning and land use conflicts which local governments are best able to handle. They are often in the best position to influence behavior and deal with nonpoint source problems. The shoreland management and local water planning efforts are good examples of the state guidance and assistance with local government implementation. Local comprehensive land use plans might offer the best tool for preventing problems and minimizing conflicts.

**Federal control to ?** — Shifts in federal programs are mixed. Under Superfund, EPA is

reducing its oversight and granting states more flexibility as to where funds can be used. The next federal reauthorization likely will simplify requirements. However, under the Safe Drinking Water Act, EPA is becoming more directive and prescriptive, to the point of micromanaging the state's efforts.

**Narrow focus to broad focus** — The focus of efforts continues to expand. The 1980s and early 1990s brought new efforts to deal with shoreland management, wetland protection, groundwater protection, nonpoint source pollution and landfills. It also brought an emphasis on problems of individuals. Safe Drinking Water Act amendments redefined public to include a much broader array of facilities and broader public protection. Health risk efforts expanded beyond industrial exposures to include lead, asbestos and radon exposures in schools and homes. Environmental justice and the needs of the poor and disabled are emerging.

**Reductions in monitoring** — Emphasis on monitoring has decreased, with less monitoring and testing. Baseline monitoring is largely gone, as is funding for ambient monitoring. This has reduced our ability to document effectiveness of programs.

## **DRIVERS OF CHANGE**

Changes in environment and natural resource spending resulted from increased information on the effects of pollutants and knowledge of resource management and ecosystem health. However, issues and the rate at which we tackle them are politically as well as scientifically driven and will likely continue to be so.

**Federal actions** — Increased spending and new programs often are responses to federal mandates. Federal laws governing air, water, solid and hazardous waste and pesticides all led to major Minnesota efforts in the 1970s, 1980s and 1990s. Inflexibility and uniform requirements in some cases caused unnecessary spending. In other cases, the availability of federal funds distorted state priorities, leading to funding of lower priority projects and programs.

Laws and regulations change constantly, continually driving spending changes. The Occupational Safety and Health Administration is proposing requirements for indoor air at nonindustrial sites, which would likely take effect in three to five years. Federal construction regulations are under development for lead removal contractors. Safe Drinking Water Act requirements may be expanded to cover standards and regulations for private water systems. These all will likely lead to the need for state licensing requirements and regulatory efforts. Possible ozone standard changes would make the Twin Cities an air quality nonattainment area, requiring a major commitment of staff and resources to address.

**Government's perceived role** — The role government defines for itself reflects changing social and economic situations and drives spending. Current roles include protecting all people, maintaining and enhancing the resources base for economic development, restoring the environment and meeting recreational demands. Principles of environmental justice and equal

access are new driving forces, along with redeveloping and cleaning up older inner city properties.

Some governments are changing their role in environmental management as they become more educated and aware. They are developing their own initiatives and funding requests and hiring their own experts.

**Public demand, desires and expectations** — Heightened awareness, knowledge and interests drive spending. Special and general interest environment and recreation organizations and publications abound. Environment and resource matters are routinely covered in the new media. Many more people are working in environmental areas and are fishing, biking or otherwise using and enjoying Minnesota's resources. They know how to voice their demands.

People's demands have led to new trails for hiking, biking, skiing and snowmobiling, new parks and more developed parks with facilities for recreational vehicles and the disabled. In addition to development costs, many of these new demands require higher maintenance costs.

Expectations also drive costs. Communities and individuals expect to get the same assistance in meeting requirements for wastewater, feedlot and other improvements that their neighbors got. The public expects equitable treatment from government.

**Public perception** — Public misperception of risk causes large commitments of resources to low risk issues. Things that people smell and see — those daily reminders — demand attention. Media-covered incidents drive change. A recent EPA Science Advisory Board study reported by GAO found that EPA's funding priorities are more closely aligned with public opinion about risks than with scientific facts. The same is true at the state level. Hazardous waste sites and underground petroleum storage tanks, for example, receive extensive public attention and government resources, but are considered relatively low risk. However, indoor air pollution, considered to be of greater risk by scientists, receives little.

**Costs** — High costs can lead to changes. Regulatory compliance and other monitoring costs have risen substantially. Recent Safe Drinking Water Act amendments, for example, require monitoring of more than 80 contaminants at public water supplies. Laboratories can measure more parameters to ever smaller amounts. Often monitoring and evaluation requirements are driven by this ability. However, costs will necessitate rethinking of what is actually needed.

Costs have driven and will continue to drive changes in approaches to hazardous waste and other cleanup efforts. Costs of total cleanup — restoring an area to its natural, unpolluted state — are often prohibitive. Containing the contamination may increasingly be the only affordable option. Congress is debating this issue now, as it considers Superfund changes.

**Fees** — The ability to charge fees also drives spending and programs. It can determine and distort priorities. The Petro Fund program, for example, was enacted more due to the fact that fees could be charged to cover program costs than to its priority relative to other environment

or health risks. Willingness to pay will push or kill programs and priorities, regardless of need.

**Land use planning** — The degree to which land management activities and other prevention approaches occur will influence future costs. Land use planning, wellhead protection and other actions by state and local governments to prevent problems save money. Correcting problems is much more costly. Since 1992, for example, 26 communities have spent more than \$44 million to provide safe drinking water following groundwater contamination of their wells.

## **FUNDING ISSUES**

Ideally, funding for environment and natural resource efforts should be adequate to address high priority needs, flexible to account for changing needs and crises and stable. Funding should encourage behavior government wants to encourage and be fairly distributed, not placing burdens on parties with limited ability to pay. It should not rely on money from one group of benefiting parties, when others also benefit. Finally, it should allow for integrated resource management, since environment and natural resource issues can almost never be successfully managed in isolation.

**Needs or wishes** — As funding tightens, more attention must be given to determining what we need versus what we may wish to have — or is easy to get. Specific criteria and procedures to evaluate demands and allocate resources would help policy makers and program managers decide where it is most important to spend resources. Discussion of how to fund efforts should be secondary. Needs testing also can help in fine-tuning programs, such as ensuring that money for well abandonment only goes to high priority wells.

**Funding large projects** — Significant resources will continue to be required to correct past problems and maintain existing infrastructure. Numerous wastewater treatment needs are yet to be met. A Coalition of Greater Minnesota Cities' survey of 44 cities found more than \$116 million for wastewater treatment needs over the next six years. Water supply and stormwater needs increase needs to more than \$270 million. Extrapolation of the survey results to all cities outside the Metro Area with populations of more than 1,000 suggests needs approaching \$550 million. MHD reports that many drinking water systems exceed limits for hard-to-remove constituents, such as arsenic, radon and sulfates.

Most pollution control assistance now comes in the form of loans. Increasing requirements and the rising costs of projects might make loans and loan repayment less feasible for many communities. Operations costs alone might become prohibitive, particularly for communities with large proportions of low and fixed income people. The Coalition of Greater Minnesota Cities estimates near-future per-household water and sewer bills at \$600 to \$700 per year — including \$200 to \$300 per year for operation and maintenance.

Combined sewers also will continue to demand attention. While the Twin Cities CSO problems are nearly solved, problems in other cities still must be addressd. These cities might expect the

same help that the Twin Cities got. In 1994, the legislature committed future bond funds to landfill cleanup, recognizing that existing revenue sources were inadequate to cover needs.

Substantial deferred maintenance on portions of the state's parks and recreation facilities also must be addressed. These and enhancements are needed to meet the public's needs and maintain our position as a desired tourist destination.

**Fees, the mixed blessing** — Fees can provide funding stability, but also can lead to inflexible programs. The PCA has moved to fees with excellent results. The federal Clean Air Act mandated that all program costs be covered by fees, and mandated the structure of the fees. Ambient monitoring and other program activities were viewed as services to the regulated community and covered by the fees. This broad-based approach to fees and funding provides both stability and flexibility. However, this is not the case with all fee-supported efforts.

Some fee structures provide unstable funding. For example, MDH's well program is funded through charges on new well construction. This economy-linked fee can lead to wide swings in program funding, unless reserves can be accumulated in good years.

Many fee-based programs provide managers with limited flexibility and lead to management of programs instead of resources. Permittees become the clients instead of the general public. Managers have limited latitude to respond to requests from local units of government for assistance in local water planning, to investigate a citizen's concern with a possible contaminated well or to mobilize resources to address the next encephalitis outbreak or flood.

In addition, some fees and programs are too narrowly focused, both in terms of who is charged or assessed and how the funds may be used. The tourism industry benefits from snowmobile trails, but pays no part of trail development. Shoreland owners pay no extra fees for water resources management, yet they benefit more than the general population. Fisherman benefit from watershed management efforts that improve water quality and habitat, but resist use of permit fees for broader environmental improvements.

Specific criteria should be developed to determine when it makes sense to base program costs on user fees and when "common good" suggests that broad-based funding is most appropriate. Stability and flexibility must be considered when sources are defined and spending parameters established.

**Funding new efforts** — Finding the resources for emerging needs will become more difficult, particularly in cases where fees are not clearly applicable. Issues with less media coverage tend to be put off. Ones requiring smaller commitment are expected to be absorbed into existing operations. However, this is often at the expense of ongoing efforts.

**Monitoring** — Effectiveness of environmental protection and resource management efforts can best be gaged by measuring changes in environmental conditions — not by measuring levels of program or regulatory activities. Yet funding for monitoring and research to support programs

is difficult to obtain. Baseline monitoring, not easily tied to fees, has been routinely cut. LCMR and other two-year funding cycle approaches do not provide the long-term stability needed to track changing environmental conditions. Environment and natural resource indicators and population-based data should serve as overall measures of change and program effectiveness.

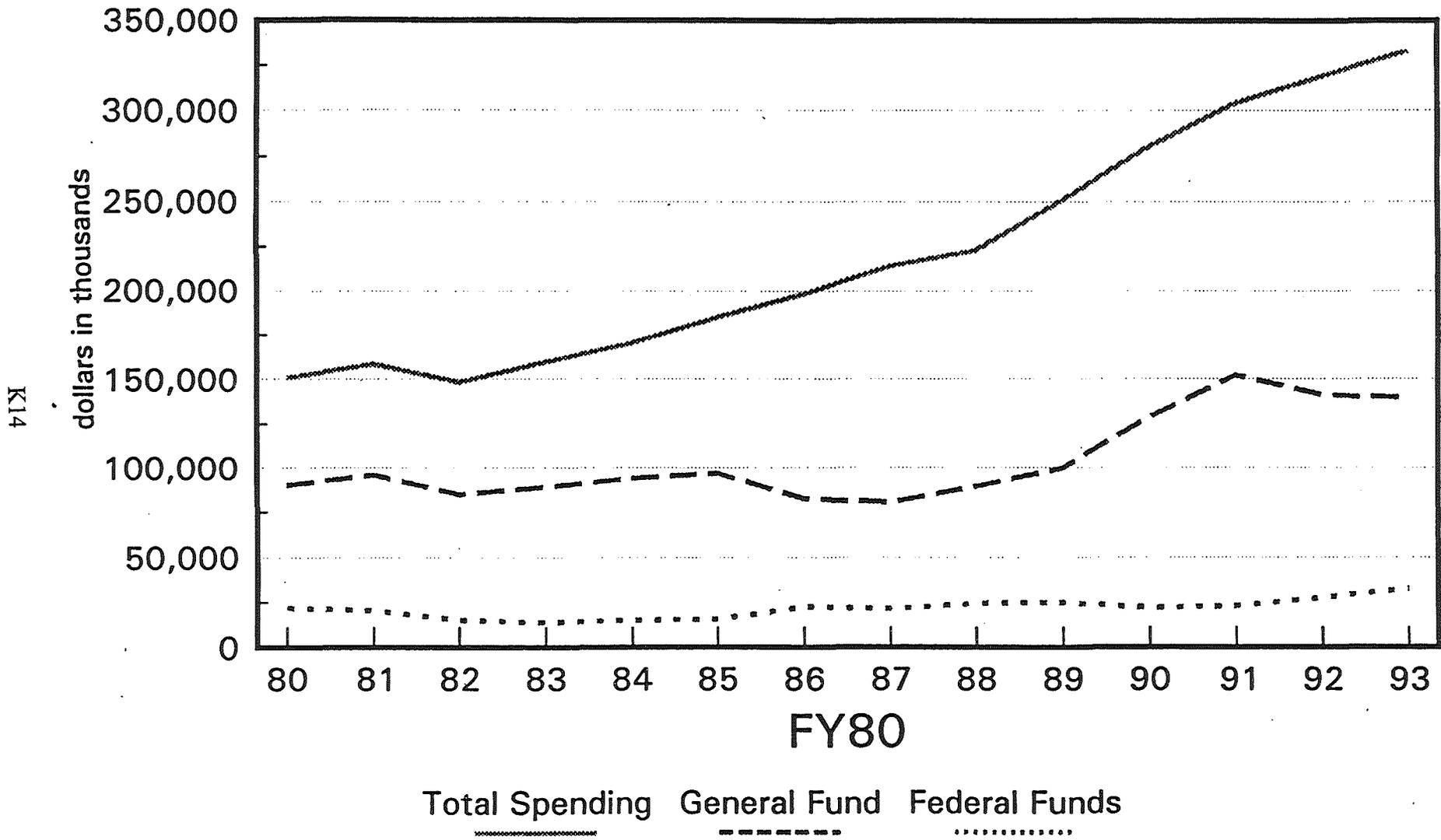
**Integrated resource management** — Many programs have become narrowly focused, with strict requirements for using funds only within the program. This compartmentalized approach to funding, illustrated by the increased number of special funds and dedicated accounts, inhibits flexibility and integrated resource management. Successful resource management must cut across disciplines, integrating wildlife, wetland, pollution and other concerns.

Multiple funds, earmarked for specific uses, can impose micromanagement, leaving program and resource managers with little flexibility to respond to issues or shift resources among programs as workloads change. To gain flexibility, the public must be better informed on the need for integrated management — that using targeted fees for larger resource management will benefit their individual cause.

Figure 1

# State Environment and Natural Resource Spending

FY80 to FY93 in 1993 Dollars



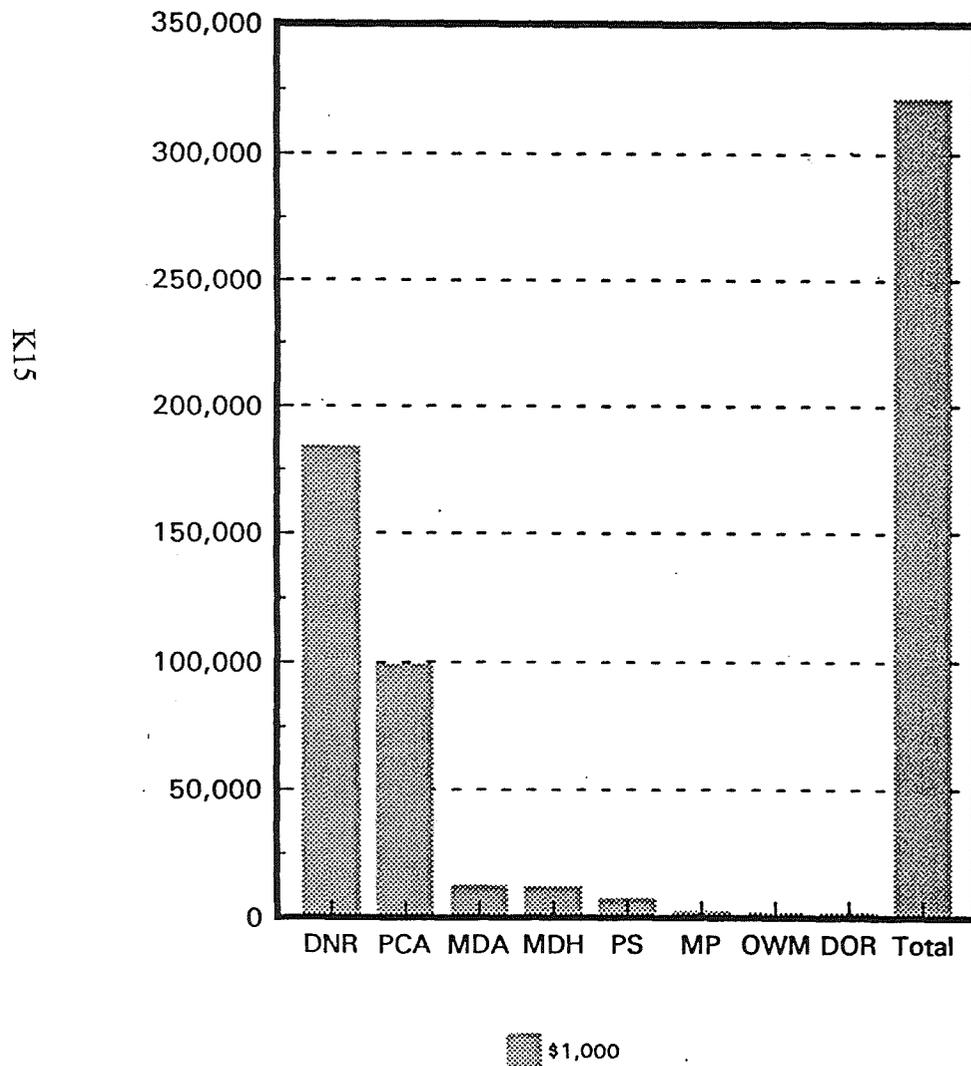
source: Biennial Budget Documents

# State Environment/Natural Resources

## Revenues from Fees

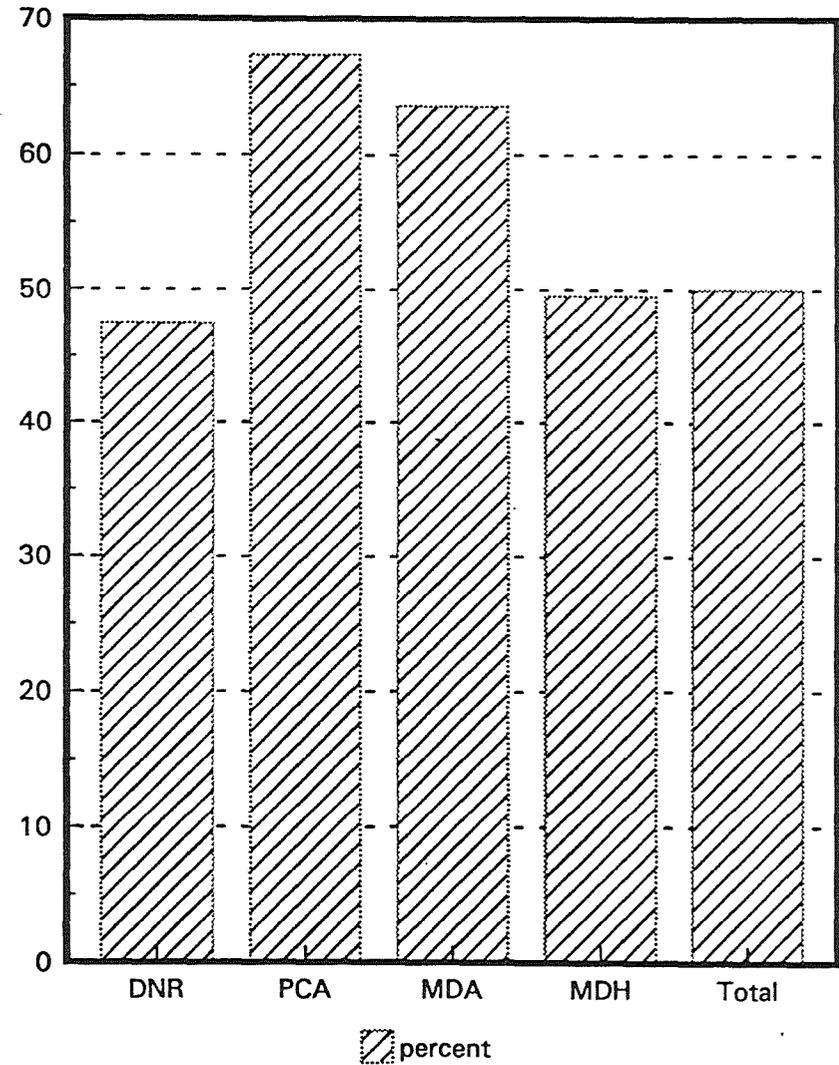
FY92-93

Figure 2



## Percent Revenues From Fees

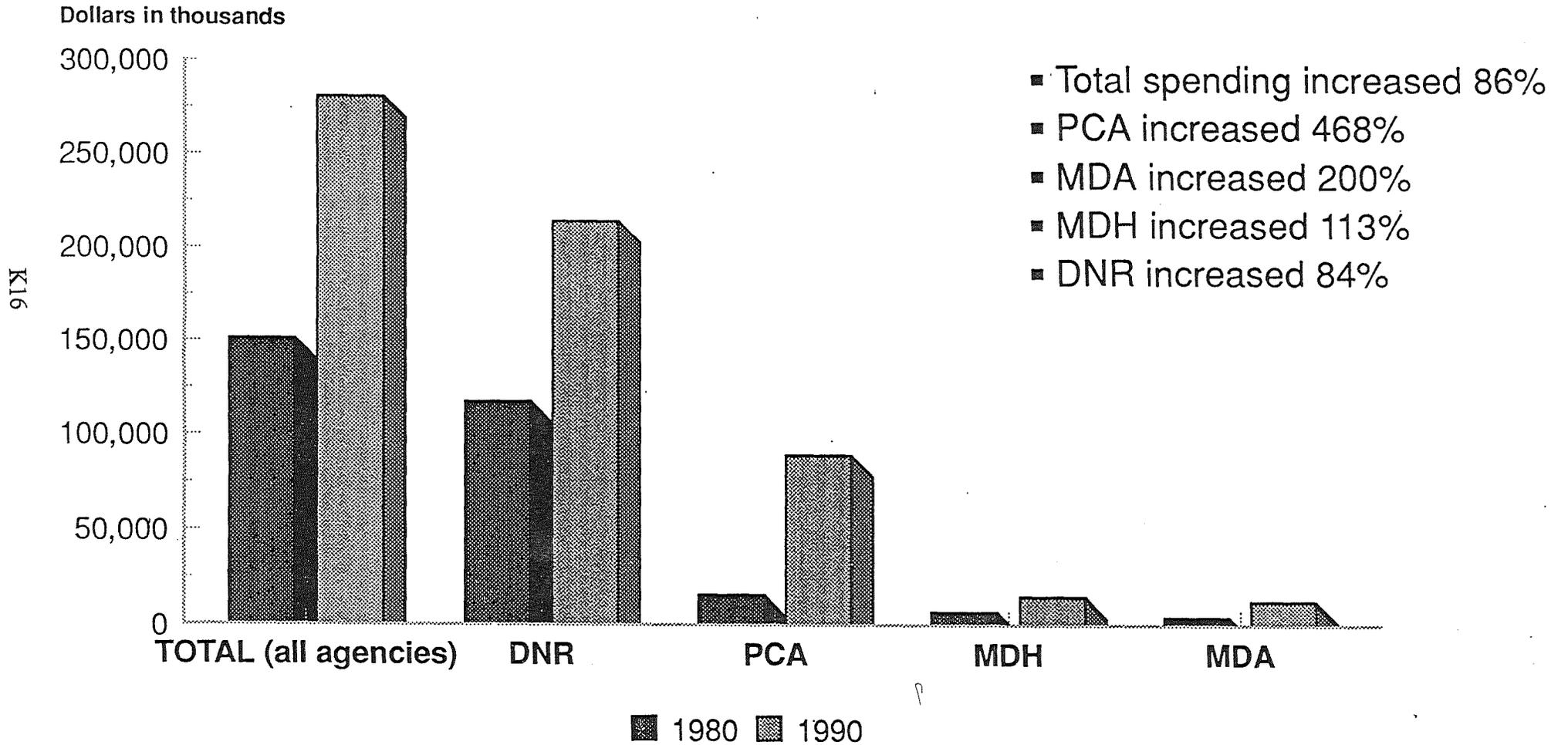
FY92-93



source: 1994-95 Departmental Earnings Report  
 note: covers total budgets for PCA, DNR, OWM

# CHANGE IN ENVIRONMENT AND NATURAL RESOURCES SPENDING

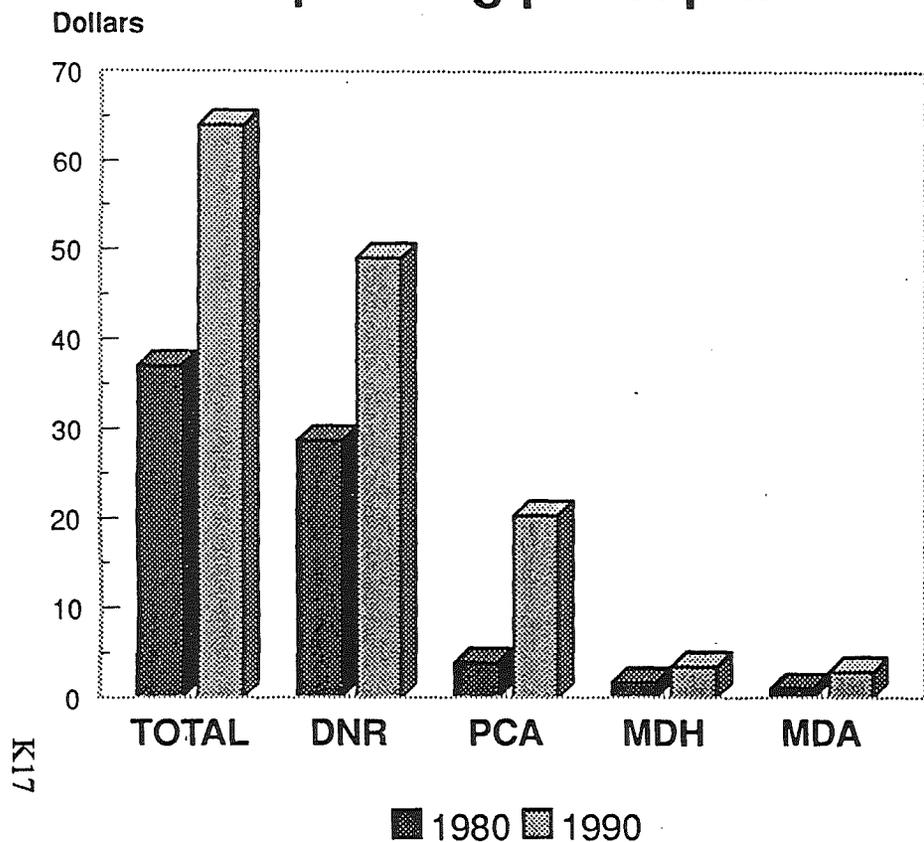
1980-1990



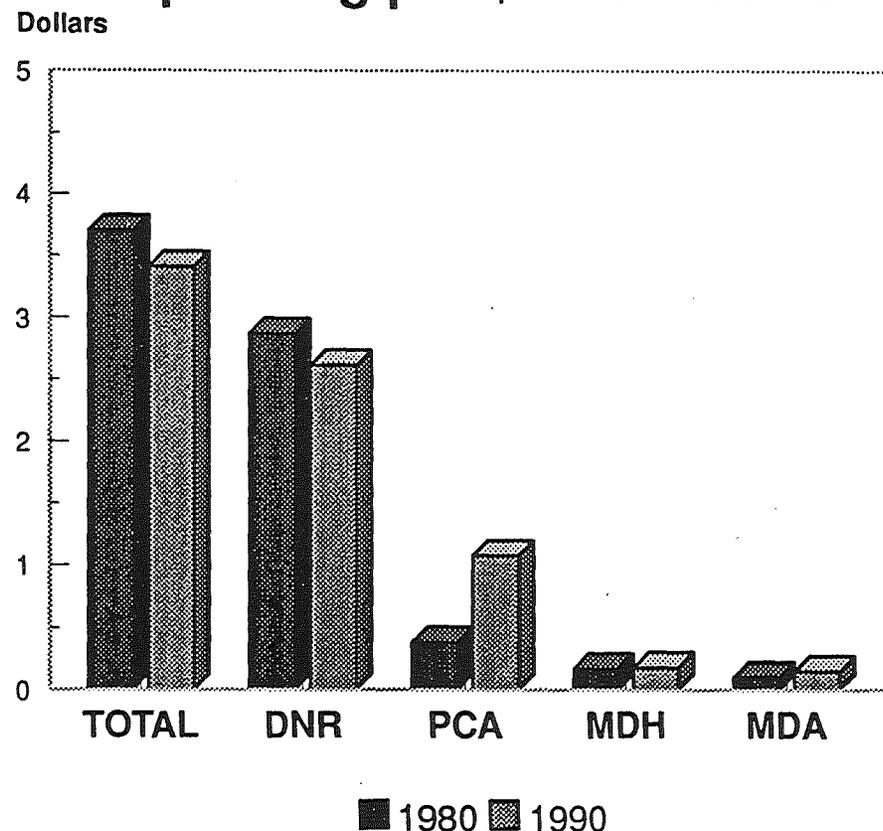
Figures in 1993 dollars  
SOURCE: Biennial Budget Documents  
MN Planning graphic

# ENVIRONMENT AND NATURAL RESOURCES SPENDING

## Spending per capita



## Spending per \$1000 income



■ Per capita increases were similar to overall increases

■ Spending per \$1000 income decreased for total and DNR

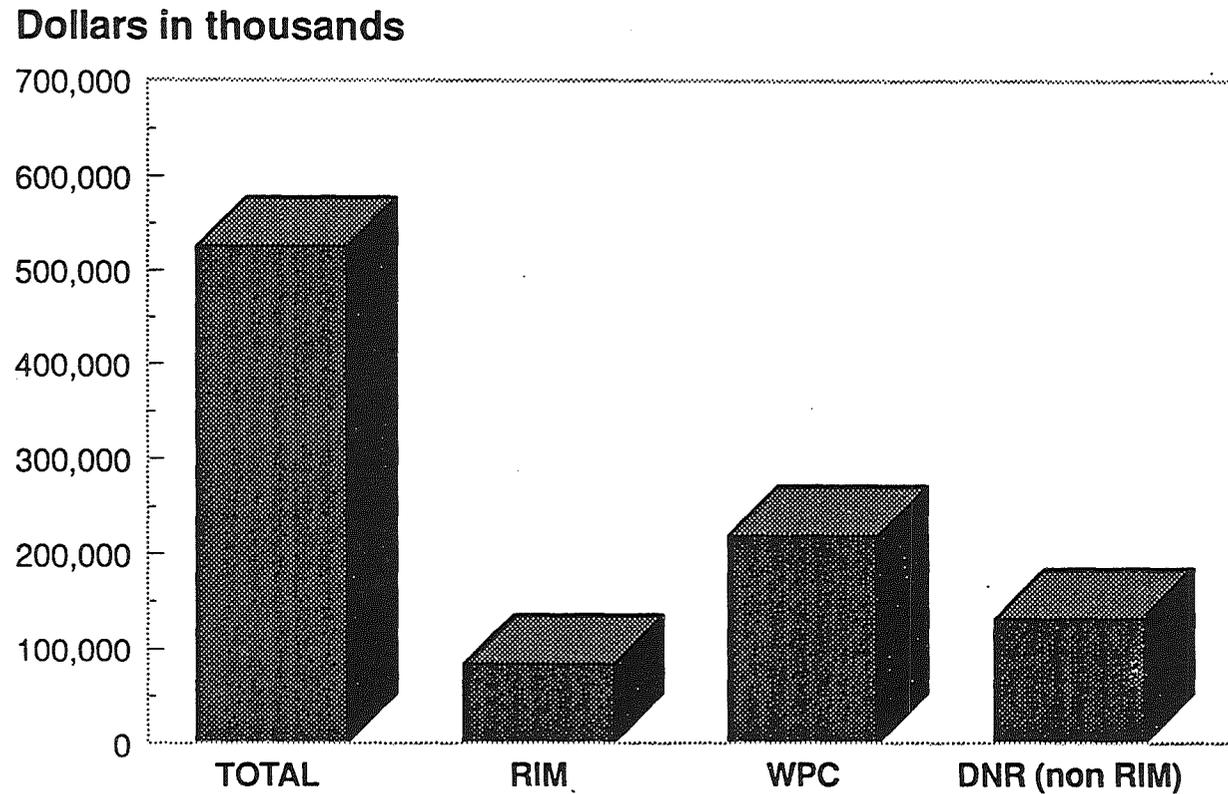
Figures in 1993 dollars

SOURCE: Biennial Budget Documents  
Bureau of Economic Analysis

MN Planning gra

# ENVIRONMENT AND NATURAL RESOURCE BONDING 1981-1994

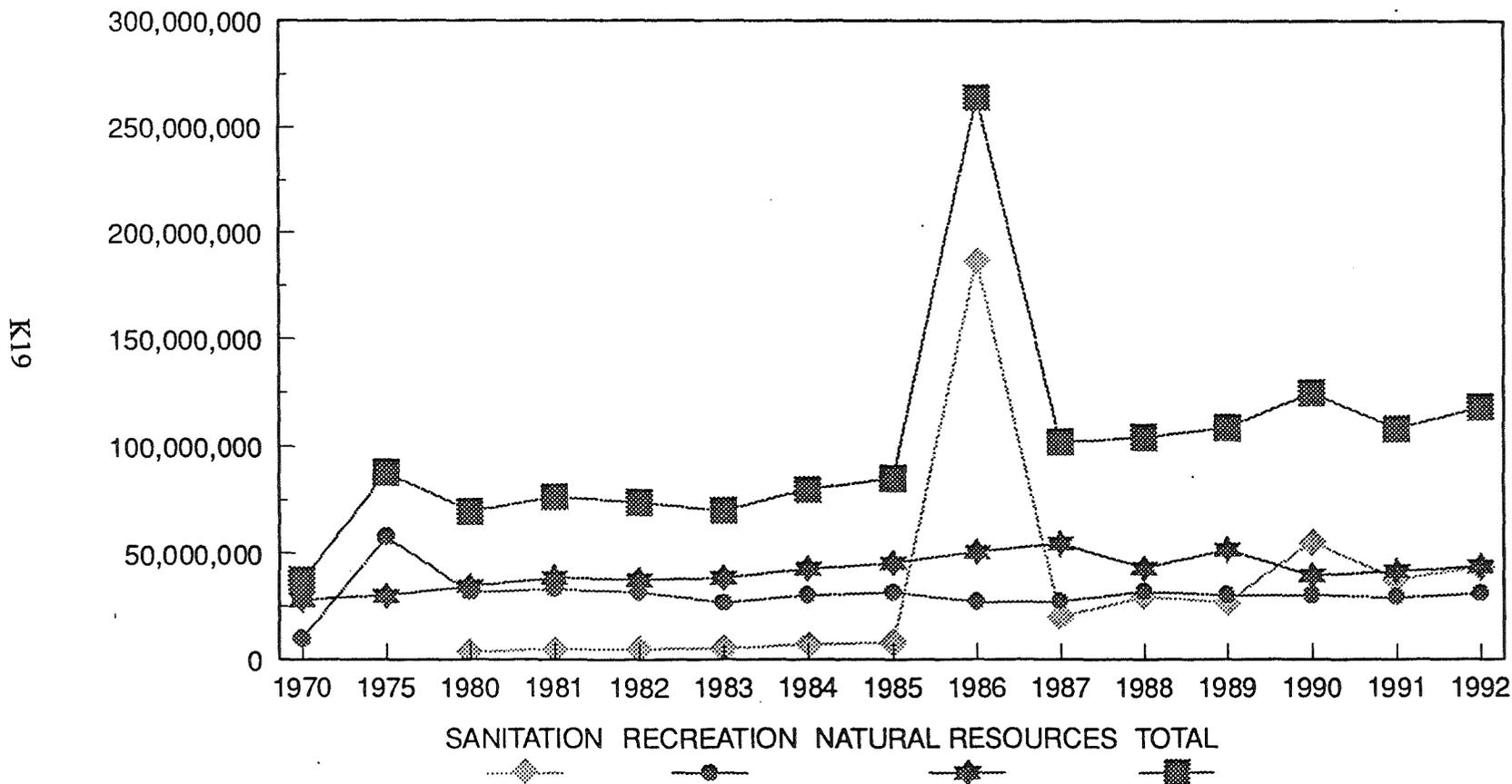
K18



■ Bonding increased environment / natural resource spending by more than 20%.

RIM (Reinvest In Minnesota)  
WPC (Water Pollution Control)  
SOUP — Minnesota Laws

# COUNTY ENVIRONMENTAL EXPENDITURES



•Adjusted 1993 dollars

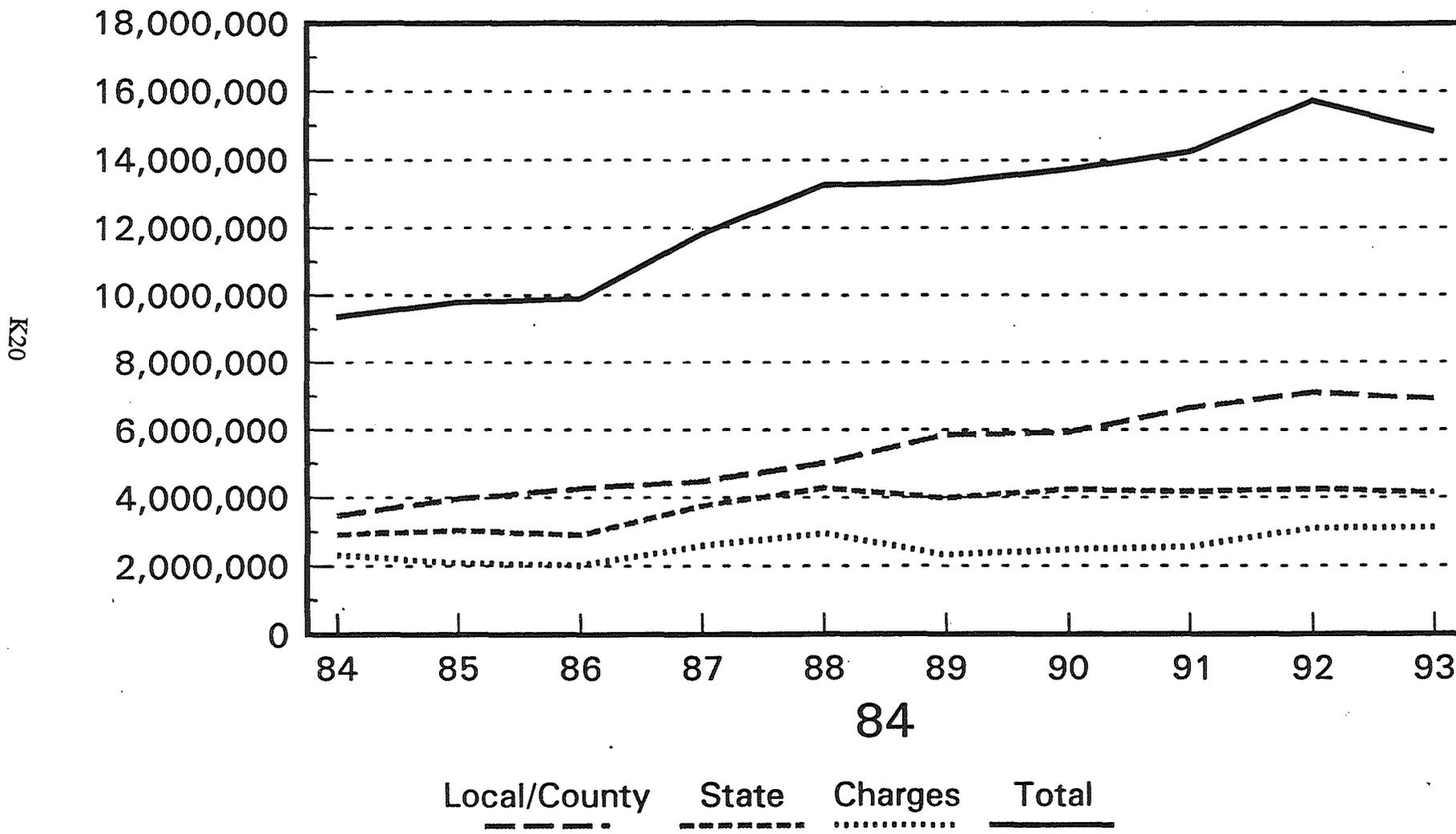
•SOURCE: State Auditors Report

Figure 7

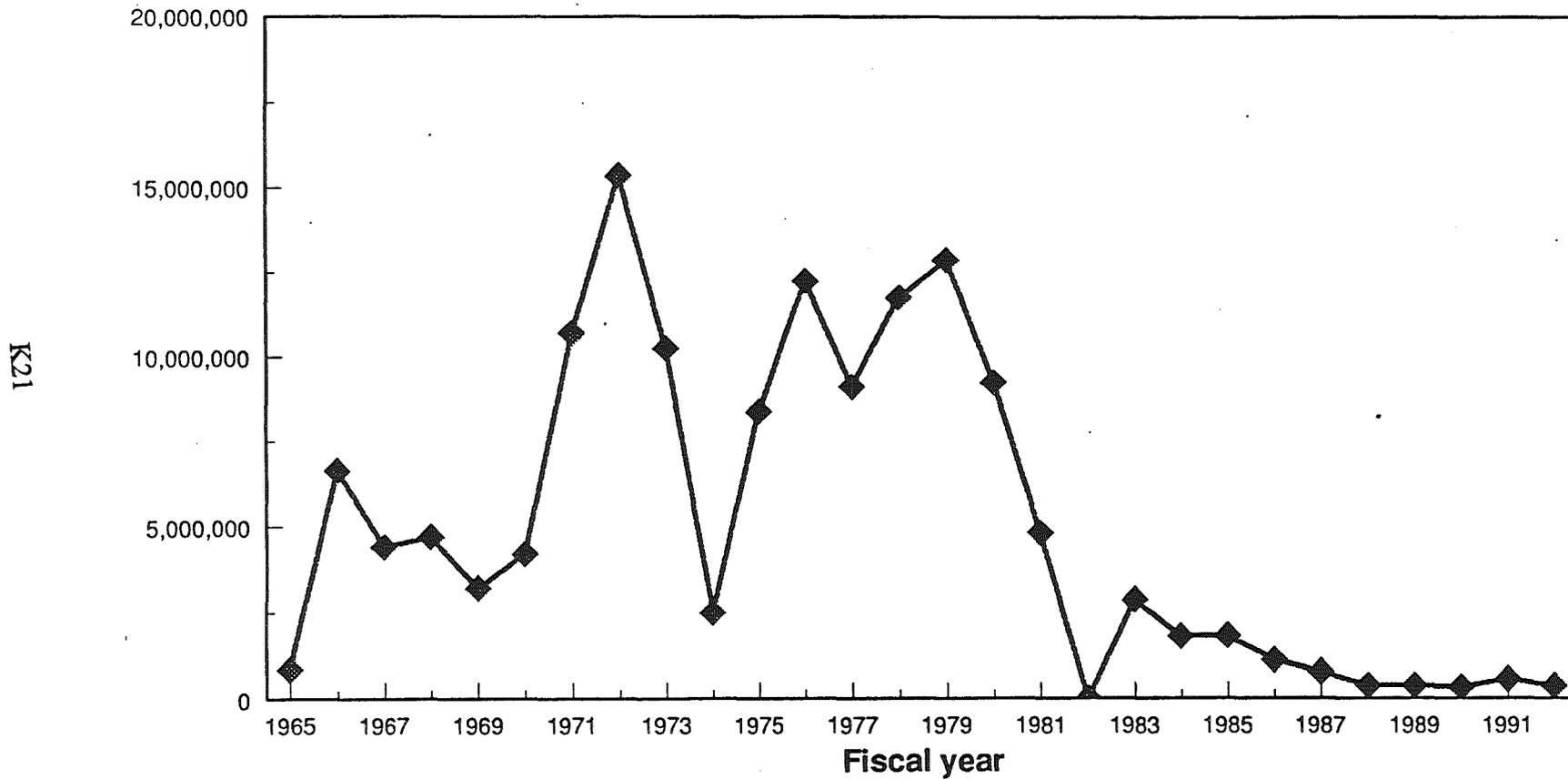
# Soil and Water Conservation Districts

## Revenues -- FY84 to FY93

### in 1993 dollars



# ANNUAL APPORTIONMENTS TO MINNESOTA FROM THE LAND AND WATER CONSERVATION GRANT PROGRAM 1965-1992 IN 1993 DOLLARS



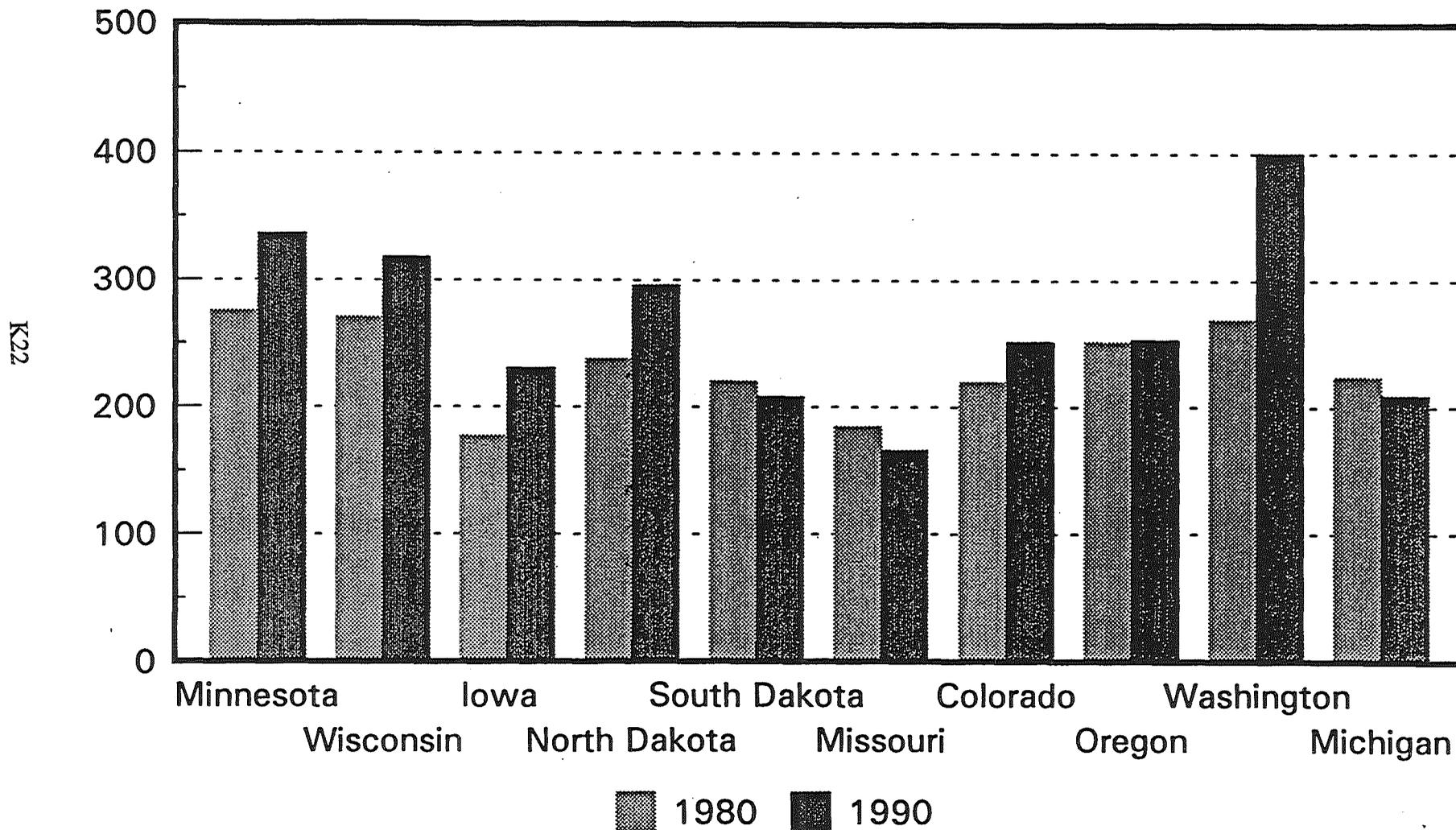
■ 1983 Figures include Jobs Bill

SOURCE: Minnesota Department of Natural Resources

# Per Capita Environment/Natural Resource Spending

Selected States, 1980 and 1990

in 1993 dollars



source: USCensus Government Finance Series

STATE ENVIRONMENT/NATURAL RESOURCE SPEND. .980 THROUGH 1993 IN \$1,000

	DNR	PCA	OWM	MDH	MDA	BWSR	LCMR	LWC, etc.	MIN/MISC.	VOG: NP	VICT. COMP	WATERBD	TOTAL	TOTAL GF	TOT FED
FY93 total	194,524	80,494	20,971	13,477	11,337	11,013	390	303	127	83	210		332929		
GF	88,888	9,387	19,607	9,221	2,333	9,629		303	127	83	210			139788	
Fed	6,618	21,263	127	3,649	776	182									32615
assist	12,210	5,905	16,176		115	7,239									
FY92 total	192,268	66,409	21,064	11,163	8308	9342	335	320	126	59	215		309609		
GF	88,319	10,404	19,373	7,910	2300	8330		320	126	59	215			137358	
Fed	4,489	18,230	286	3,087	497	121									26710
assist	12,660	5,300	16,976	85	60	6866									
FY91 total	184010	54150	20508	10234	8045	8998	320	315	115	69	104		286668		
GF	91513	13048	19790	7081	2721	8952		315	115	69	104			143708	
Fed	4376	14473		2199	407	46									21501
assist	12640	6907	17547	20	185	6733									
FY90 total	174616	46644	9144	8494	7489	6275	340	227	110	74	208		253621		
GF	88795	11943	8950			6275		227	110	74	208			118582	
Fed	5960	13724													19684
assist	12233	4526	7041			4454									
FY89 total	159182	34922	4257	5748	5756	4679	263	184	99	76	64		215228		
GF	71543	6573	2344			4679		184	99	76	64			85562	
Fed	6118	15100													21218
assist	11679	2517	1749			3424									
FY88 total	135882	30267	3906	4881	4683	1578	390	177	91	66	190		182111		
GF	58220	6167	1922	2928	1903	1578		177	91	66	190			73242	
Fed	6063	11849		1743	216										19871
assist	6117	3319	49	53	787				89						
FY87 total	114970.8	30412.7	9713.1	4628.2	3623	3683.6	328	183.2	76.8	59.2	330.3	138.1	168121		
GF	45764.1	5826.5	1982.1	2833.5	2447.4	3655.9		163.2	76.8	59.2	330.3	138.1		63275.1	
Fed	5671.1	9192.8		1437.2	359.1										16600.2
assist	4547.7	2298.5	6597.5	268	40	2886.2			73.8						
FY86 total	108539.4	24267.1	5273.3	4285.5	3674.3	3571.1	268.7	137.6	72.1	56.2	3.1	136	150284.4		
GF	45932.3	6154.8	1471.3	2654.1	2423.5	3554.4		137.6	72.1	56.2	3.1	136		62595.4	
Fed	4450.3	10590.6		1408.5	430.7										16880.1
assist	5084.5	4082.4	3369.7	224.9	51.7	2781.4			71						
FY85 total	105037.5	17593.5	3737.7	3633.5	3448	3450.1	221.5	156.8	67.3	74.6		140.1	137580.8		
GF	53365.2	8016.6	2310	2407.1	2005.5	3450	221.5	156.8	67.3	74.6		140.1		72214.7	
Fed	1473.2	8105.9		1184.4	698.1										11481.8
assist	6192.8	1039.7	1487.7	56.1	81.4	2712.1			66.1						
FY84 total	93915.5	15374.4	1744.3	4905.6	2863.8	3135.5	223.6	152	65.8	71.6		109.1	122561.2		
GF	51051.9	6805.7	1350.5	2741.4	1889.5	3131.4	223.6	152	65.8	71.6		109.1		67562.5	
Fed	1541.4	7537.2		1272.2	413										10763.8
assist	3228.2	389.7	117.7	78.2	20.2	2524.5			63.4						
FY83 total	86529.4	11726.4	1485.3	4517.5	2506.8	2626.6	202	113.6	55.6	54.3		334.4	110151.8		
GF	46921.2	5832.8	1055.9	2378.7	1888.1	2623.3	202	113.6	55.6	54.3		286.4		61411.8	
Fed	1688.9	5834.9		1385.2	361.5	3.3						48			6321.8
assist	2988.4	449.6	100	78.2		2049.2			54.7						
FY82 total	76645	10985.7	1767	4053.2	2401.8	2413.7	189.5	117.8	51.4	54.4		495.7	99175		
GF	42446.5	5808.6	1138.1	2368	1811.1	2394	189.5	117.8	51.4	54.4		399.6		56779	
Fed	2622.4	5838		988.5	360	19.7						86.1			9924.7
assist	2932.7	144.7	6			2110.3			50.2						
FY81 total	75887	12870	657.9	4301.3	2429.8	2457.6	455.7	104.4	48.7	50.5		564.1	99827		
GF	45582.8	6730.3	515.8	2337.4	1713.7	2426.5	455.7	104.4	48.7	50.5		394.8		60360.6	
Fed	4723.2	6100.2		1317.1	501.5	31.1						169.3			12842.4
assist	2543.7	3457.8				2140.8			47.8						
FY80 total	66811.8	8938.8	18.8	3990.8	2386.5	2891.8	384.6	79.3	48.1	50.2		480.4	86081.1		
GF	38924.8	4853.9	18.8	2199	1679.5	2801.3	384.6	79.3	48.1	50.2		414		51453.5	
Fed	6475.1	4047.9		1235.3	473	90.5						66.4			12386.2
assist	4425.5	70.1				2580.3			46.8						

source: biennial budget documents; includes breakdowns by general fund, federal funds and local assistance; MDH covers environmental health; MDA covers agonomy and plant protection services.

**TOTAL ENVIRONMENT/NATURAL RESOURCE SPENDING IN 1993 DOLLARS**

	TOTAL	TOTAL GF	TOT FED	TOT ASSIST	CPI	ADJ TOT	ADJ FED
FY80	86081.1	51453.5	12388.2	7122.7	0.57	151019.5	21733.68
FY81	99827	60360.6	12842.4	8190.1	0.629	158707.5	20417.17
FY82	99175	56779	9924.7	5243.9	0.668	148465.6	14857.34
FY83	110151.9	61411.9	9321.8	5720.1	0.689	159872.1	13529.46
FY84	122561.2	67592.5	10763.8	6421.9	0.719	170460.6	14970.51
FY85	137560.6	72214.7	11461.6	11635.9	0.744	184893.3	15405.38
FY86	150284.4	62595.4	16880.1	15665.6	0.759	198003.2	22239.92
FY87	168121	63275.1	16660.2	16711.7	0.786	213894.4	21196.18
FY88	182111	73242	19871	10414	0.818	222629.6	24292.18
FY89	215228	85562	21218	19369	0.858	250848.5	24729.6
FY90	253621	116582	19684	28254	0.904	280554.2	21774.34
FY91	286868	143708	21501	44032	0.943	304207.8	22800.64
FY92	309609	137356	26710	41947	0.971	318855.8	27507.72
FY93	332929	139788	32615	41645	1	332929	32615

percent cha 120.45% 50.07%

source: biennial budget documents

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**ENVIRONMENT AND NATURAL RESOURCES  
TRUST FUND**

**SELECTED SCOPE FINANCIAL AUDIT**

**FOR THE PERIOD JULY 1, 1991 - FEBRUARY 28, 1994**

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**SEPTEMBER 1994**

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**Financial Audit Division  
Office of the Legislative Auditor  
State of Minnesota**

**94-48**

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## Financial Audit Division

The Office of the Legislative Auditor is responsible for financial audits of funds administered by the executive and judicial branches of state government. The audits are conducted by the office's Financial Audit Division. The division has a staff of approximately forty governmental accounting and auditing professionals, the majority of whom are Certified Public Accountants.

The Financial Audit Division does its work in accordance with standards established by the American Institute of Certified Public Accountants and the Comptroller General of the United States. Annually, the division performs a Statewide Financial Audit of the state's financial statements. The audit reviews the major financial systems maintained by the state's largest thirty departments. The Statewide Audit also includes a "Single Audit" which tests whether agencies are adhering to federal requirements in the administration of

federally assisted programs. The division also conducts approximately thirty to forty financial and compliance audits of individual agencies or institutes each year after the Statewide audit is completed.

In addition to financial audits, the Office of the Legislative Auditor performs program evaluations through a Program Evaluation Division.

The Legislative Auditor is appointed by the Legislative Audit Commission for a six year term. The Financial Audit Division and the Program Evaluation Division are each under the direction of a deputy legislative auditor. All audit, evaluation, and investigation reports are solely the responsibility of the Legislative Auditor and his staff, and they are available on request from the office.

# SUMMARY

State of Minnesota  
Office of the Legislative Auditor  
Centennial Office Building • St. Paul, MN 55155  
612/296-4708

## ENVIRONMENT AND NATURAL RESOURCES TRUST FUND

SELECTED SCOPE FINANCIAL AUDIT  
FOR THE PERIOD JULY 1, 1991 - FEBRUARY 28, 1994

Public Release Date: September 14, 1994

No. 94-48

### AGENCY BACKGROUND

The Environment and Natural Resources Trust Fund was established by constitutional amendment in November 1988. It provides a long-term permanent and stable source of funding for natural resources. The legislature authorized the first appropriations from the trust fund in 1991. The appropriations, which totaled \$14,960,000, were made to nine different agencies and were available for the period July 1, 1991 through June 30, 1993. As of February 28, 1994, the agencies had spent \$13,734,398 of the appropriated funds.

### SELECTED AUDIT AREAS

As provided in Minn. Stat. Section 116P.04, Subd. 5, the objective of our audit was to determine of trust fund expenditures were made for the purposes provided in the Legislative Commission on Minnesota Resources budget plan. We selected a sample of departments and individual projects for review. We performed tests of project activity at the Board of Water and Soil Resources, the Department of Natural Resources, the Department of Education, and the Department of Administration.

#### ◆ *Board of Water and Soil Resources Projects*

The Board of Water and Soil Resources (BWSR) received funding of \$2,060,000 for six trust fund projects. We found problems with three of the six projects. The board did not adequately monitor close out of the well sealing project grants. In addition, the board did not have timely written commitments from some landowners for two easement projects.

#### ◆ *Department of Natural Resources Projects*

The Department of Natural Resources (DNR) had 16 trust fund projects funded from \$5,760,000 in appropriations and \$35,000 in grant receipts. We had concerns on three of the eight projects we reviewed at DNR. The department purchased a large amount of equipment at the end of one project. In addition, the department's accounting procedures for one project's required match needed improvement. Also, the department did not exercise adequate oversight for one project.

#### ◆ *Department of Education Projects*

The Department of Education (DOE) had two projects funded from appropriations totaling \$830,000. We question the department's allocation of per diem to one project.

#### ◆ *Department of Administration Projects*

The Department of Administration had two projects funded from \$2,100,000 in appropriations. We reviewed one of the projects and found that costs were in compliance with the budget plan.

Contact the Financial Audit Division for additional information.

296-1730





STATE OF MINNESOTA

**OFFICE OF THE LEGISLATIVE AUDITOR**

CENTENNIAL BUILDING, ST. PAUL, MN 55155 • 612/296-4708

JAMES R. NOBLES, LEGISLATIVE AUDITOR

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Legislative Audit Commission

Members of the Legislative Audit Commission

Representative Phyllis Kahn, Chair  
Legislative Commission on Minnesota Resources

Members of the Legislative Commission on Minnesota Resources

Mr. John Velin, Director  
Legislative Commission on Minnesota Resources

Mr. Ronald Harnack, Executive Director  
Board of Water and Soil Resources

Ms. Linda Powell, Commissioner  
Department of Education

Mr. Rodney Sando, Commissioner  
Department of Natural Resources

Ms. Debra Rae Anderson, Commissioner  
Department of Administration

## **Audit Scope**

We have conducted a financial related audit of selected expenditures of the Environment and Natural Resources Trust Fund for the period July 1, 1991 through February 28, 1994. In November 1993, we issued a separate report on an audit of 12 trust fund projects for the period July 1, 1991 through December 31, 1992. This report incorporates the results of the prior audit testing. Chapter 1 provides a brief description of the Environment and Natural Resources Trust Fund and our audit scope. Chapters 2 through 5 discuss the results of our audit.

We conducted our audit in accordance with generally accepted government auditing standards. Those standards require that we plan and perform the audit to obtain reasonable assurance about whether the financial activities attributable to the transactions of the Environment and Natural Resources Trust Fund are free of material misstatements.

As provided in Minn. Stat. Section 116P.04, Subd. 5, the objective of our audit was to determine if trust fund expenditures were made for the purposes provided in the Legislative Commission on

Senator Phil Riveness, Chair  
Members of the Legislative Audit Commission  
Representative Phyllis Kahn, Chair  
Members of the Legislative Commission on Minnesota Resources  
Mr. John Velin, Director  
Mr. Ronald Harnack, Executive Director  
Ms. Linda Powell, Commissioner  
Mr. Rodney Sando, Commissioner  
Ms. Debra Rae Anderson, Commissioner  
Page 2

Minnesota Resources (LCMR) budget plan. To accomplish this objective, we interviewed LCMR staff to gain an understanding of the budget plan and the policies and procedures established to control expenditures. We then selected a sample of departments and individual projects for further review. We performed tests of project activity at the Board of Water and Soil Resources, the Department of Natural Resources, the Department of Education and the Department of Administration. We tested compliance with certain provisions of laws, regulations, contracts, and grants related to the Environment and Natural Resources Trust Fund. However, our objective was not to provide an opinion on overall compliance with such provisions.

To achieve our objective, we obtained an understanding of the design of relevant internal control policies and procedures and determined whether they have been placed in operation, and we assessed control risk. Our review was more limited than would be necessary to express an opinion on the internal control structures taken as a whole for the Board of Water and Soil Resources, the Department of Natural Resources, the Department of Education and the Department of Administration.

### **Management Responsibilities**

The management of the Board of Water and Soil Resources, the Department of Natural Resources, the Department of Education and the Department of Administration are responsible for establishing and maintaining internal control structures. This responsibility includes compliance with applicable laws, regulations, contracts, and grants. In fulfilling this responsibility, estimates and judgments by management are required to assess the expected benefits and related costs of internal control structure policies and procedures. The objectives of an internal control structure are to provide management with reasonable, but not absolute, assurance that:

- assets are safeguarded against loss from unauthorized use or disposition;
- transactions are executed in accordance with applicable legal and regulatory provisions, as well as management's authorization; and
- transactions are recorded properly on the statewide accounting system in accordance with Department of Finance policies and procedures.

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Because of inherent limitations in any internal control structure, errors or irregularities may nevertheless occur and not be detected. Also, projection of any evaluation of the structure to future periods is subject to the risk that procedures may become inadequate because of changes in conditions or that the effectiveness of the design and operation of policies and procedures may deteriorate.

## Conclusions

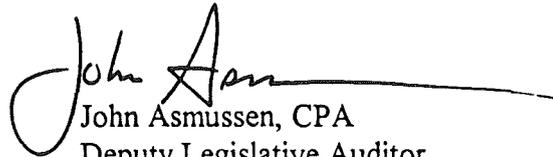
Our review of selected project expenditures identified some areas of concern relating to agency project administration. We believe additional statutory or procedural guidance may be necessary to clarify certain fiscal requirements, such as the time frame during which project appropriations may be expended. We found that for three projects, commitments were finalized or purchased equipment was received after the end of the appropriation period. We also question the allocation of certain costs to trust fund projects. In addition, departments did not adequately monitor flow-through projects. We believe that the Legislative Commission on Minnesota Resources should review these areas of concern to determine if further project guidelines or statutory revisions are necessary. We discuss our specific conclusions in Chapter 2 through 5.

This report is intended for the information of the Legislative Audit Commission and management of the Legislative Commission on Minnesota Resources, the Board of Water and Soil Resources, the Department of Natural Resources, the Department of Education, and the Department of Administration. This restriction is not intended to limit the distribution of this report, which was released as a public document on September 14, 1994.

We thank staff from the Legislative Commission on Minnesota Resources, the Board of Water and Soil Resources, the Department of Education, the Department of Natural Resources, and the Department of Administration for their cooperation during this audit.



James R. Nobles  
Legislative Auditor



John Asmussen, CPA  
Deputy Legislative Auditor

End of Fieldwork: April 29, 1994

Report Signed On: September 7, 1994

# Environment and Natural Resources Trust Fund

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### Audit Participation

The following members of the Office of the Legislative Auditor prepared this report:

John Asmussen, CPA	Deputy Legislative Auditor
Claudia Gudvangen, CPA	Audit Manager
Lori Pellicci, CPA	Auditor-In-Charge
Geniene Herrlich	Auditor

### Exit Conferences

The issues in this report were discussed with staff of the following agencies:

- Board of Water and Soil Resources
- Department of Natural Resources
- Department of Education
- Department of Administration

# Environmental and Natural Resources Trust Fund

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## Chapter 1. Introduction

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The Environment and Natural Resources Trust Fund was established by constitutional amendment in 1988. Article XI, Sec. 14 of the Constitution of the State of Minnesota, as amended in November 1990, provides, in part:

The principal of the environment and natural resources trust fund must be perpetual and inviolate forever, except appropriations may be made from up to 25 percent of the annual revenues deposited in the fund until fiscal year 1997 and loans may be made of up to five percent of the principal of the fund for water system improvements as provided by law..... The net earnings from the fund shall be appropriated in a manner prescribed 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. Not less than 40 percent of the net proceeds from any state-operated lottery must be credited to the fund until the year 2001.

This constitutional provision provides a long-term permanent and stable source of funding for natural resources. The State Board of Investment invests trust fund moneys pursuant to Minn. Stat. Section 11A.24. Investment income is available each biennium for expenditure. In addition, as shown in Table 1-1, for each biennium through 1997 the Legislature has provided varying percentages of additional revenue up to the constitutional limitation.

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**Table 1-1**  
**Environment and Natural Resources Trust Fund**  
**Additional Revenue Available for Funding Projects**

- For the 1991-1993 biennium, up to 25 percent of the revenue deposited in the trust fund in fiscal years 1990 and 1991;
- For the 1993-1995 biennium, up to 20 percent of the revenue deposited in the trust fund in fiscal year 1992 and up to 15 percent of the revenue deposited in the fund in fiscal year 1993;
- For the 1993-1995 biennium, up to 25 percent of the revenue deposited in trust fund in fiscal years 1994 and 1995, to be expended only for capital investments in parks and trails; and
- For the 1995-1997 biennium, up to ten percent of the revenue deposited in the fund in fiscal year 1996.

Note: Table 1-3 shows the additional revenue collected during fiscal years 1990 through 1993 and available for expenditure in accordance with these guidelines.

Source: Minn. Stat. Section 116P.11 (b).

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## Environmental and Natural Resources Trust Fund

Table 1-2 shows the financial activity for the trust fund corpus from inception of the fund through Fiscal Year 1993.

	Year Ended June 30			
	1990	1991	1992	1993
Beginning Fund Balance	\$ 0	\$ 2,734,734	\$22,799,621	\$40,291,056
Revenue:				
Lottery Proceeds	\$2,734,434	\$20,064,082	\$17,491,835	19,429,227
Gifts and Donations	<u>300</u>	<u>805</u>	<u>3,602</u>	<u>0</u>
Total	<u>\$2,734,734</u>	<u>\$20,064,887</u>	<u>\$17,495,437</u>	<u>19,429,227</u>
Ending Fund Balance	<u>\$2,734,734</u>	<u>\$22,799,621</u>	<u>\$40,291,056</u>	<u>\$59,720,283</u>

Note: In addition, any appropriated funds not encumbered in the biennium in which they are appropriated cancel and are to be credited to the principal of the trust fund.

Source: State of Minnesota Comprehensive Annual Financial Reports and supporting accounting records.

As provided in Minn. Stat. Section 116P.03, 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. The trust fund is to be used primarily to support activities whose benefits become available only over an extended period of time.

Table 1-3 shows the financial activity for the expendable portion of the trust fund for the same four year period.

## Environmental and Natural Resources Trust Fund

**Table 1-3**  
**Environment and Natural Resources Trust Fund**  
**Expendable Trust Fund Portion**  
**Summary of Financial Activity**  
**Four Years Ended June 30, 1993**

	Year Ended June 30			
	1990	1991	1992	1993
Beginning Fund Balance	\$ 0	\$ 911,505	\$ 8,840,055	\$10,802,997
Revenue:				
Lottery Proceeds	\$911,478	\$6,688,027	\$ 4,372,058	3,428,687
Investment Income	27	1,240,253	2,611,161	3,477,179
Gifts and Donations	<u>0</u>	<u>270</u>	<u>901</u>	<u>0</u>
Total Revenue	<u>\$911,505</u>	<u>\$7,928,550</u>	<u>\$ 6,984,120</u>	<u>\$ 6,905,866</u>
Expenditures:				
Current Expenditures			\$ 2,508,700	\$ 5,650,461
Capital Outlay			699,929	323,362
Grants			<u>1,812,549</u>	<u>1,803,534</u>
Total Expenditures			<u>\$ 5,021,178</u>	<u>\$ 7,777,357</u>
Ending Fund Balance	<u>\$911,505</u>	<u>\$8,840,055</u>	<u>\$10,802,997</u>	<u>\$ 9,931,506</u>

Note: In addition, any appropriated funds not encumbered in the biennium in which they are appropriated cancel and are to be credited to the principal of the trust fund.

Source: State of Minnesota Comprehensive Annual Financial Reports and supporting accounting records.

During our annual statewide audit, we verified the propriety of revenue deposited to the trust fund. We performed tests of investment income at the State Board of Investment. We also verified the proper distribution of lottery proceeds to the trust fund, and the appropriate allocation of revenues between fund corpus and expendable balance. In our audits of the Minnesota State Lottery for fiscal years 1991 and 1992, we questioned the lottery's authority to maintain reserve accounts, thereby reducing distributions to the trust fund.

The Legislative Commission on Minnesota Resources (LCMR), consisting of 16 members of the legislature, administers the trust fund. LCMR recommends a biennial budget plan for trust fund expenditures. In addition, it adopts a six year strategic plan identifying priority areas for funding. LCMR employs a staff to assist it in its responsibilities. John Velin currently serves as LCMR Director.

Biennially, state agencies and other entities submit proposed projects to LCMR for review and, if approved, inclusion in the state's budget plan. The Legislature appropriates funds to state agencies for two-year projects based on LCMR recommendations. A peer review panel reviews all research proposals before they receive an appropriation from the trust fund. In addition to the trust fund, environmental projects may be funded from the Minnesota Future Resources Fund or federal oil overcharge funds.

## Environmental and Natural Resources Trust Fund

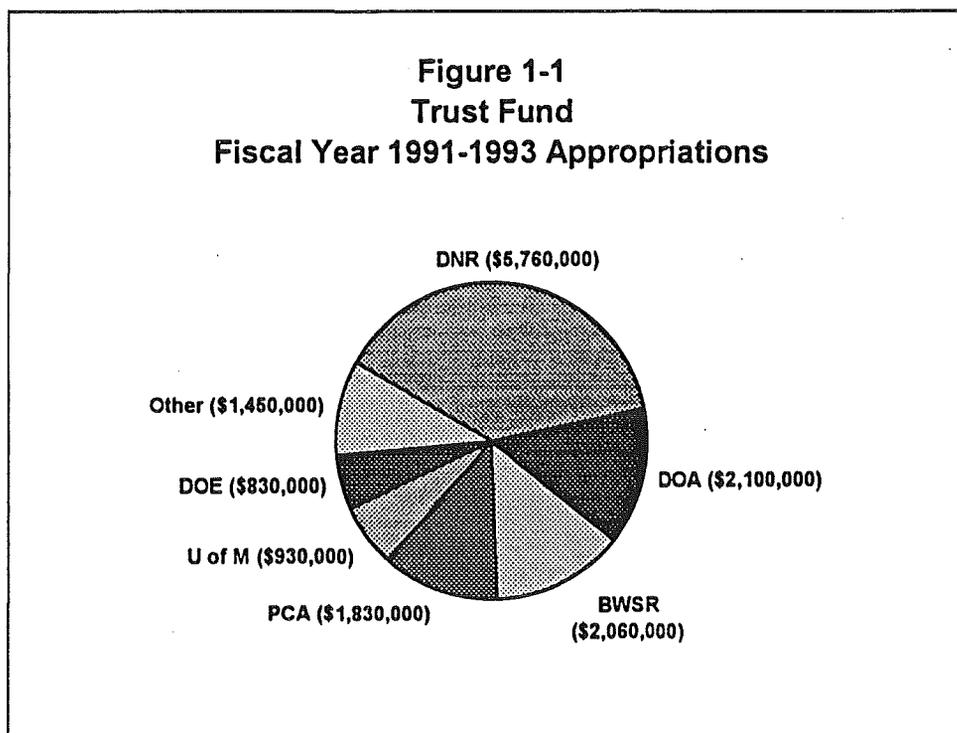
The Legislature authorized the first appropriations from the trust fund in the 1991 legislative session. The appropriations funded projects scheduled for the period July 1991 through June 1993. Table 1-4 shows the financial status of the trust fund at February 28, 1994.

**Table 1-4**  
**Environment and Natural Resources Trust Fund**  
**Summary of Project Financial Activity**  
**July 1, 1991 - February 28, 1994**

Project Appropriations	\$14,960,000
Expenditures through June 30, 1993	12,798,535
Expenditures from July 1, 1993 through February 28, 1994	935,863
Canceled Appropriations	<u>209,195</u>
 Unexpended Balance	 <u>\$ 1,016,407</u>

Source: Statewide Accounting System accounting records and detailed transactions as of February 28, 1994.

We examined all financial activity from July 1, 1991, through February 28, 1994, for a sample of projects funded for the 1991-1993 biennium. State agencies receiving trust fund appropriations are responsible for administering approved projects and monitoring flow-through grants to other entities. Figure 1-1 shows the level of funding received by various agencies for the 1991-1993 biennium.



As a condition of acceptance of trust fund appropriations, agencies must submit a work program and semiannual progress reports to LCMR. As provided in Minn. Stat. Section 116P.05, LCMR must approve the work program before an agency can spend trust fund appropriations.

## **Environmental and Natural Resources Trust Fund**

In Chapters 2 through 5, we discuss our specific conclusions on the projects reviewed at the Board of Water and Soil Resources, the Department of Natural Resources, the Department of Education and the Department of Administration.

**Environmental and Natural Resources Trust Fund**

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# Environmental and Natural Resources Trust Fund

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## Chapter 2. Board of Water and Soil Resources

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### *Chapter Conclusions*

*We found problems with three of the six projects administered by the Board of Water and Soil Resources. The board did not adequately monitor close out of the well sealing project grants. It did not promptly recover \$15,010 that Dakota County had to return to the trust fund. In addition, it did not have firm commitments from many landowners on two projects before it encumbered the funds in the Statewide Accounting System.*

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The Board of Water and Soil Resources (BWSR) received funding of \$2,060,000 for six trust fund projects for the 1991-1993 biennium. As of February 28, 1994, it had spent \$1,531,268 on these projects.

### Well Sealing Cost Sharing Grants

This project provided grants to counties to share in the cost of sealing wells. It accelerated work that was started under the Groundwork Protection Act of 1989.

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**Table 2-1**  
**Well Sealing Cost Share Grant**  
**Financial Status as of February 28, 1994**

Appropriation Amount	\$750,000
Grant Expenditures	<u>750,000</u>
Unexpended Appropriation	<u>\$ 0</u>

Note: As discussed in finding 1, there is a receivable of \$15,010 due from Dakota County for unexpended grant funds. Additional amounts may be due from other counties which have unobligated funds.

Source: Statewide Accounting System accounting reports and detailed transactions as of February 28, 1994.

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In our November 1993 audit of this project we questioned BWSR's process for review of certain project applications. In addition, we concluded that BWSR had not exercised adequate oversight of the well sealing project grants. Our review of activity through February 28, 1994 showed that, except for the issues noted in the November 1993 audit and in finding 1 below, costs were in compliance with the budget plan.

## Environmental and Natural Resources Trust Fund

### 1. The Board of Water and Soil Resources did not adequately monitor close out of the well sealing project grants.

The Board of Water and Soil Resources did not monitor the timely receipt of unused funds from grantee counties. BWSR has not followed up with counties to ensure that they return unobligated funds at the end of the grant period. The grant agreements require that each county return any remaining funds within two months after the expiration of the grant agreement. We noted one instance where a county was holding unobligated funds, which it should have returned to the state. Dakota County submitted the required reports and requested to keep the funds for other well sealing projects. BWSR staff intended to request the funds back from Dakota County but had not done so at the time of our review. Instead, they allowed Dakota County to retain \$15,010 beyond March 15, 1994, the date for return of funds specified in the contract. According to board records, there are also 38 other counties that had unexpended funds totaling \$232,000, as of March 1994. A portion of the unexpended funds may also be due back to the trust fund.

#### *Recommendations*

- *The Board of Water and Soil Resources should recover from Dakota County the \$15,010 of unexpended project funds.*
- *The board should review the financial status of all grants to ensure that grantees return unobligated moneys to the state in a timely manner.*

### Easement Acquisition on Restored Wetlands

The purpose of this project was to contract with the U.S. Fish and Wildlife Service and the Izaak Walton League to acquire permanent easements on federally restored lands. The Fish and Wildlife Service and the League were to provide the required match.

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**Table 2-2**  
**Easement Acquisition on Restored Wetlands**  
**Financial Status as of February 28, 1994**

Appropriation Amount	\$400,000
Expenditures	
Perpetual Easements	\$ 62,058
Other	<u>17,961</u>
Total Expenditures	<u>\$ 80,019</u>
Future Commitments - Note 1	
10 signed agreements at June 30, 1993	62,189
9 unsigned agreements at June 30, 1993	235,093
1 unsigned agreement package not sent out timely	<u>22,439</u>
Total Future Commitments	<u>\$319,721</u>
Canceled Appropriation	<u>\$ 260</u>

Note 1: Landowners may elect to receive a lump sum easement payment or four equal annual installment payments. Therefore, the board may be disbursing these funds for up to four years.

Source: Statewide Accounting System accounting reports and detailed transactions as of February 28, 1994.

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## Environmental and Natural Resources Trust Fund

Our review of activity through February 28, 1994 showed that, except for the issue noted in finding 2 below, costs were in compliance with the budget plan.

### **2. The board did not have written commitments from 10 landowners in a timely manner.**

We question the board's practice for encumbering funds due to the timing of obligations and the length of time appropriations are available for expenditure. The easement process takes an extended period of time to complete. Once approved, the board may make easement payments over a four year period. However, the legislature appropriates, and the board encumbers, moneys for the entire payment at the beginning of the process.

The board did not have signed agreements at the end of the 1991-1993 biennium with 10 of the 20 landowners who eventually will receive easement payments. However, as of June 30, 1993, staff encumbered \$257,531 in the statewide accounting system (SWA) for these easement payments. The appropriated funds would have canceled if the amounts were not encumbered. We think the board did not complete these contracts in a timely manner. The board had started the contracting process with each of the 10 landowners. In May and June 1993 it sent out nine agreement packages to the landowners for signature. They received the signed agreements in July 1993 through February 1994. The board did not send out the other landowner agreement package until April 1994. We question the board's authority to encumber funds for this agreement since the formal offer to purchase an easement was made after year end.

#### *Recommendations*

- *The board should work with LCMR to establish guidelines for the timing of easement encumbrances and payments.*
- *The board should promptly complete contracts with landowners.*
- *The board should seek LCMR approval for the expenditures relating to the easement agreement sent out after the project end date.*

## Conservation Reserve Easements

The purpose of this project was to acquire perpetual easements with priority for wetland areas, to enhance wildlife habitat, control erosion, and improve water quality.

# Environmental and Natural Resources Trust Fund

**Table 2-3**  
**Conservation Reserve Easements**  
**Financial Status as of February 28, 1994**

Appropriation Amount	\$600,000
Expenditures:	
Unclassified Salaries BWSR employees	65,201
Unclassified Salaries - AG Representative	54,298
Perpetual Easements	228,808
Other	<u>11,061</u>
Total Expenditures	<u>\$359,368</u>
Future Commitments:	
16 signed agreements at June 30, 1993	115,710
5 unsigned agreements at June 30, 1993	<u>42,877</u>
Total Future Commitments	<u>\$158,587</u>
Canceled Appropriation	<u>82,045</u>

Source: Statewide Accounting System accounting reports and detailed transactions as of February 28, 1994.

In our November 1993 audit of this project, we questioned whether legal fees charged to the project complied with the work plan. LCMR did not request repayment of the amounts in question. During our current review, we noted that the board charged \$7,542 in additional legal fees to the project. Our review of activity through February 28, 1994 showed that, except for the issues noted in the November 1993 audit and in finding 3 below, costs were in compliance with the budget plan.

**3. The board did not have written commitments from five landowners when it encumbered moneys for easement payments.**

We have similar concerns about the timing of easement encumbrances and payments for this project, as was discussed for Easement Acquisition on Restored Wetlands. The board did not have signed agreements with 5 of the 21 landowners at the end of the 1991-1993 biennium. The board had started the process with each of the five landowners. It sent two of the agreement packages out for signature in May 1992. The other three were sent out in January and February 1993. The Board received the signed agreements back from August 1993 through March 1994. At the time of our review, they have not paid out any funds to these five landowners. The agreements with these five landowners totaled \$42,877.

*Recommendation*

- *The board should work with LCMR to establish guidelines for the timing of easement encumbrances and payments.*

## Environmental and Natural Resources Trust Fund

### Erosion Control Cost Sharing Grants

This project funded grants to share the cost of conservation practices to control erosion and protect water quality including water quality practices that divert water from sinkholes.

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**Table 2-4**  
**Erosion Control Cost Sharing Grants**  
**Financial Status as of February 28, 1994**

Appropriation Amount	\$250,000
Expenditures:	
Grants	229,300
Other	<u>20,700</u>
Total Expenditures	<u>\$249,469</u>
Canceled Appropriation	<u>\$ 531</u>

---

Source: Statewide Accounting System accounting reports and detailed transactions as of February 28, 1994.

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In our November 1993 audit of this project, we questioned whether the board had appropriate project selection controls. Our review of activity through February 28, 1994 showed that, except for issues noted in the November 1993 audit, costs were in compliance with the budget plan.

### Cannon River Watershed Grants

This purpose of this project was to provide research and demonstration grants to counties consistent with the comprehensive local water management program as part of the Cannon River watershed protection program.

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**Table 2-5**  
**Cannon River Watershed Grant**  
**Financial Status as of February 28, 1994**

Appropriation Amount	\$60,000
Grant Expenditures	<u>60,000</u>
Unexpended Appropriation	<u>\$ 0</u>

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Source: Statewide Accounting System accounting reports and detailed transactions as of February 28, 1994.

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Our review of activity through February 28, 1994, showed that costs were in compliance with the budget plan.

## Environmental and Natural Resources Trust Fund

### River Basin Water Quality Monitoring

This was a Pollution Control Agency (PCA) project to conduct assessments of non-point source pollution in the Minnesota River Basin. PCA granted a portion of the appropriation to the board. This portion funded a part time employee at the board who served as project coordinator.

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**Table 2-6**  
**River Basin Water Quality Monitoring**  
**Financial Status as of February 28, 1994**

Grant Receipts	\$32,600
Expenditures:	
Part-time Salaries	\$31,685
Other	<u>727</u>
Total Expenditures	<u>\$32,412</u>
Canceled Grant Receipts	<u>\$ 188</u>

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Source: Statewide Accounting System accounting reports and detailed transactions as of February 28, 1994.

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Our review of activity through February 28, 1994, showed that costs were in compliance with the budget plan.

## Environmental and Natural Resources Trust Fund

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### Chapter 3. Department of Natural Resources

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#### *Chapter Conclusions*

*We had concerns on three of the eight projects reviewed at the Department of Natural Resources. We question certain expenditures for one of the projects reviewed. The department purchased a large amount of equipment at the end of the project. In addition, the department's accounting procedures for one project's required match needed improvement. The department also did not exercise adequate oversight for one project.*

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The Department of Natural Resources had 16 trust fund projects funded from \$5,760,000 in appropriations and \$35,000 in grant receipts. As of February 28, 1994, expenditures for these projects totaled \$5,446,365. We tested expenditures for eight projects administered by the department, with expenditures totaling \$4,746,045.

#### **County Geological Atlas and Groundwater Sensitivity Mapping (Department of Natural Resources Portion)**

The purpose of this project is to expand production of county geologic atlases and create a new atlas services office.

---

**Table 3-1**  
**County Geological Atlas and Groundwater Sensitivity Mapping**  
**Financial Status as of February 28, 1994**

Appropriation	\$600,000
Expenditures:	
Unclassified Salaries	\$333,671
Part-time Salaries	20,564
Professional Technical Services	44,151
Travel	15,410
Fixed Assets	56,436
Other	<u>85,665</u>
Total Expenditures	<u>\$555,897</u>
Canceled Appropriation	<u>\$ 44,103</u>

---

Source: Statewide Accounting System accounting reports and detailed transactions as of February 28, 1994.

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In our November 1993 audit of this project, we questioned the propriety of certain lump sum achievements awards. The department subsequently reimbursed the trust fund \$44,091 for the inappropriate expenditures. We also questioned whether the allocation of \$51,484 for certain capital asset costs to the trust fund was appropriate. Program guidelines do not address the allowability of charges for capital equipment to trust fund projects. During the current audit, we found that the department charged \$4,554 to the project for computer equipment for a Local Area

## Environmental and Natural Resources Trust Fund

Network (LAN) hook-up and a computer upgrade. The department allocated the equipment cost to this project and other funding sources. Our review of activity through February 28, 1994 showed that except for the issues noted above, costs were in compliance with the budget plan.

### Minnesota County Biological Survey

The purpose of this project is to continue the biological survey in Minnesota counties.

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**Table 3-2**  
**Minnesota County Biological Survey**  
**Financial Status as of February 28, 1994**

Appropriation	\$1,000,000
Expenditures:	
Classified Salaries	\$ 59,292
Unclassified Salaries	706,749
Other Payroll	54,708
Computer Equipment	31,962
Professional Technical Services	28,275
Purchased Services	15,609
Travel	11,426
Other	<u>86,438</u>
Total Expenditures	<u>\$994,459</u>
Canceled Appropriation	<u>\$ 1,557</u>
Unexpended Appropriation	<u>\$ 3,984</u>

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Source: Statewide Accounting System accounting reports and detailed transactions as of February 28, 1994.

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In our November 1993 audit of this project, we questioned whether certain salary expenditures complied with statutory requirements. Our review of activity through February 28, 1994 showed that, except for the issues noted in the November 1993 audit and in finding 4 below, costs were in compliance with the budget plan.

#### **4. The propriety of certain capital expenditures is questionable.**

The department spent \$31,962 on a computer and other equipment after the project had ended. The project appropriation was available for the 1991-1993 biennium and unobligated funds would cancel as of June 30, 1993. The department received two navigation instruments and a computer on June 28 and 30, 1993, respectively. It received ten items in July, August, and September 1993. Table 3-3 details the items and the dates received. The department could not have used items received this late on the current project. This is a continuing project, and the department received an additional trust fund appropriation in the subsequent biennium. The department asserted that the equipment would be used in the subsequent year's project.

## Environmental and Natural Resources Trust Fund

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Table 3-3  
Equipment Purchases After Year End

<u>Date Received</u>	<u>Item</u>
June 28, 1993	2 navigation instruments
June 30, 1993	Computer
July 29, 1993	Navigation instrument
August 16, 1993	2 stereoscopes
September 7, 1993	5 microscopes and attachments
September 15, 1993	Illuminator

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### *Recommendation*

- *The department should work with LCMR to determine the propriety of capital equipment charges to the project.*

## Effects of Changes in the Forest Ecosystem on the Biodiversity of Minnesota's Northern Forest Birds

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Table 3-4  
Effects of Changes in the Forest Ecosystem on the  
Biodiversity of Minnesota's Northern Forest Birds  
Financial Status as of February 28, 1994

Appropriation	\$300,000
Expenditures:	
Professional Technical Services	\$220,000
Grants	<u>80,000</u>
Total Expenditures	<u>\$300,000</u>
Canceled Appropriation	<u>\$ 0</u>

Note 1: The appropriation required \$200,000 in matching funds.

Source: Statewide Accounting System accounting reports and detailed transactions as of February 28, 1994.

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Our review of activity through February 28, 1994, showed that costs were in compliance with the budget plan. In addition, the department received the required matching funds. However, we believe procedures to account for match could be improved, as discussed in finding 5.

### **5. The Department of Natural Resources did not properly account for match funds.**

The department records match funds in several accounts outside of the trust fund. At the time of our review, it deposited the match funds in at least seven separate accounts. This makes it very

## Environmental and Natural Resources Trust Fund

difficult to track the funds and may allow the funds to also be used as match for other projects. The match funds that are committed to a project should be more clearly accounted for to ensure they are used for the specific project.

### *Recommendation*

- *The Department of Natural Resources should simplify the accounting practices for match funds and ensure they are used for the purpose of the project.*

## South Central MN Surface Water Resources Atlases and Database

This appropriation was for the development of surface hydrology atlases and data base in both hard and electronic formats for the 13 counties of south central Minnesota.

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**Table 3-5**  
**South Central MN Surface Water Resources Atlases and Database**  
**Financial Status as of February 28, 1994**

Appropriation Amount	\$300,000
Grant Expenditures	<u>\$299,972</u>
Canceled Appropriation	<u>\$ 28</u>

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Source: Statewide Accounting System accounting reports and detailed transactions as of February 28, 1994.

---

Our review of activity through February 18, 1994 showed that, except for the issue discussed in finding 6, costs were in compliance with the budget plan.

### **6. The Department of Natural Resources did not adequately monitor a project grant.**

The Department of Natural Resources did not monitor the pass-through grant to Mankato State University. The department paid funds to the university based on staggered payment dates established in the contract. However, the department did not base the payments on costs incurred. Once the department paid the grant funds, it did not monitor whether the expenditures were appropriate. It did not require the university to submit expenditure status reports. The department did monitor to ensure that the university submitted semiannual project status reports to LCMR. However, we believe the department, as recipient of the appropriation, has a responsibility to monitor specific expenditures and grantee performance. To help ensure that projects are progressing as anticipated, the department should require grantees to periodically report on expenditures. Staff should review reports for compliance with established budgetary requirements and program guidelines.

### *Recommendation*

- *The Department of Natural Resources should establish a process to review grantee expenditures for propriety.*

## Environmental and Natural Resources Trust Fund

### Rails-to-Trails

The purpose of this project was to acquire and develop trails on unused railroad property in Northern Minnesota.

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**Table 3-6**  
**Rails-to-Trails**  
**Financial Status as of February 28, 1994**

Appropriation	\$1,000,000
Expenditures:	
Land Purchases	\$ 950,000
Other	<u>50,000</u>
Total Expenditures	<u>\$1,000,000</u>
Canceled Appropriation	<u>\$ 0</u>

---

Source: Statewide Accounting System accounting reports and detailed transactions as of February 28, 1994.

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Our review of activity through February 28, 1994, showed that costs were in compliance with the budget plan.

### Statewide National Wetlands Inventory, Protected Waters Inventory, and Watershed Map Digitization

This appropriation provided funds to complete the digitization of the national wetlands inventory, protected waters inventory, and watershed boundaries.

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**Table 3-7**  
**Statewide National Wetlands Inventory, Protected**  
**Waters Inventory, and Watershed Map Digitization**  
**Financial Status as of February 28, 1994**

Appropriation Amount	\$750,000
Expenditures:	
Unclassified Salaries	\$187,366
Map Production	71,647
Office Machines/Computer Equipment	118,325
Grants	320,494
Other	<u>51,369</u>
Total Expenditures	<u>\$749,201</u>
Canceled Appropriation	<u>\$ 799</u>

---

Source: Statewide Accounting System accounting reports and detailed transactions as of February 28, 1994.

## Environmental and Natural Resources Trust Fund

Our review of activity through February 28, 1994, showed that costs were in compliance with the budget plan.

### Research Insecticide Impact on Wetland and Upland Wildlife

This project researched the magnitude of impacts on growth, behavior, and survival of upland and wetland birds caused by insecticides used to control agricultural pests.

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**Table 3-8**  
**Research Insecticide Impact on Wetland and Upland Wildlife**  
**Financial Status as of February 28, 1994**

Appropriation Amount	\$650,000
Expenditures:	
Professional/Technical Services	\$635,000
Other	<u>14,786</u>
Total Expenditures	<u>\$649,786</u>
Canceled Appropriation	<u>\$ 214</u>

---

Source: Statewide Accounting System accounting reports and detailed transactions as of February 28, 1994.

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Our review of activity through February 28, 1994, showed that costs were in compliance with the budget plan.

### Environmental Education Program

The purpose of this project is to complete a long term plan for the development and coordination of environmental learning centers.

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**Table 3-9**  
**Environmental Education Program**  
**Financial Status as of February 28, 1994**

Appropriation Amount	\$60,000
Expenditures:	
Classified Salaries	\$13,720
Unclassified Salaries	24,183
Rent	6,342
Professional Technical Services	6,000
Other	<u>2,394</u>
Total Expenditures	<u>\$52,639</u>
Canceled Appropriation	<u>\$ 7,361</u>

---

Source: Statewide Accounting System accounting reports and detailed transactions as of February 28, 1994.

---

## **Environmental and Natural Resources Trust Fund**

In our November 1993 audit of this project we questioned whether the classified employee salaries complied with statutory requirements relating to the employment status of staff paid from trust fund moneys. LCMR did not request repayment of the amounts in question. Our review of financial activity through February 28, 1994 showed that, except for the issues noted in the November 1993 audit, costs were in compliance with the budget plan.

**Environmental and Natural Resources Trust Fund**

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# Environmental and Natural Resources Trust Fund

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## Chapter 4. Department of Education

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### *Chapter Conclusions*

*We have concerns about one of the two trust fund projects administered by the Department of Education. We question the department's allocation of per diem expense to one project.*

---

The Department of Education has two projects, incorporating several individual appropriations for the 1991-1993 biennium. The Legislature allocated \$830,000 for the projects. As of February 28, 1994, the department had spent \$794,228.

### **Environmental Education Program**

This project has several environmental education objectives, including development of a statewide environmental education plan. The statewide plan will integrate the plans, strategies, and policies of the Department of Education, post-secondary institutions, the Department of Natural Resources and other deliverers of environmental education.

---

**Table 4-1**  
**Environmental Education Program**  
**Financial Status as of February 28, 1994**

Appropriation Amount	\$730,000
Expenditures:	
Classified Salaries	\$ 25,102
Unclassified Salaries	96,297
Part-time Salaries	79,436
Other Payroll	31,697
Professional Technical Services	88,061
Printing	31,061
Grants	288,000
Other	53,940
Total Expenditures	<u>\$694,228</u>
Canceled Appropriation	<u>\$ 29,551</u>
Unliquidated Appropriation -- Note 1	<u>\$ 6,221</u>

Note 1: Subsequent to February 28, 1994, the remaining balance of \$6,221 was canceled.

Source: Statewide Accounting System accounting reports and detailed transactions as of February 28, 1994.

---

In our November 1993 audit of this project we questioned whether the classified employee salaries complied with statutory requirements relating to the employment status of staff paid from trust fund moneys. LCMR did not request repayment of the amounts in question. In addition, we recommended that the department establish a process to review grantee expenditures for

## Environmental and Natural Resources Trust Fund

propriety. Our review of activity through February 28, 1994 showed that, except for the issues noted in the November 1993 audit and in finding 7 below, costs were in compliance with the budget plan.

### 7. The Department of Education paid the Environmental Education Advisory Board per diems out of trust fund project funds.

The department spent \$4,785 in per diems for the Environmental Education Advisory Board. The board was created by in 1990 to help pupils and other citizens better understand the environment. The project work plan states that the board will review all phases of the planning effort for the state plan. Completion of the state plan was one of the board's major objectives. The board received a separate General Fund appropriation for normal operating costs which it used on other board expenditures. It originally paid some per diem expenses out of the board appropriation and later transferred them to the trust fund appropriation. It charged both regular board meeting per diems and special meeting per diems to the trust fund. The board had enough funds to pay for the per diems out of its operating budget since \$5,985 of their operating budget canceled back to the General Fund. We believe that normal operating expenses of the board should not be charged to the project.

#### *Recommendations*

- *The department should only charge costs outside of the board's regular business to the state plan.*
- *The department should work with LCMR to determine the propriety of per diem charges to the project.*

## Video Education Research and Demonstration Project

The purpose of this project was to develop a video education demonstration project and a model for a statewide video environmental education communication network. As provided in the appropriation, the department granted the project funds to Twin Cities Public Television.

---

**Table 4-2**  
**Video Education Research and Demonstration Project**  
**Financial Status as of February 28, 1994**

Appropriation Amount	\$100,000
Grant Expenditures:	<u>100,000</u>
Unexpended Appropriation	<u>\$ 0</u>

---

Source: Statewide Accounting System accounting reports and detailed transactions as of February 28, 1994.

---

In our November 1993 audit of this project, we recommended improvements in the department's cash management procedures and increased monitoring of grantee expenditure reports. Our review of activity through February 28, 1994 showed that, except for the issues noted in the November 1993 audit, costs were in compliance with the budget plan.

# Environmental and Natural Resources Trust Fund

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## Chapter 5. Department of Administration

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### *Chapter Conclusions*

*We reviewed one project at the Department of Administration. Our review of activity through February 28, 1994, showed that costs were in compliance with the budget plan.*

---

The Department of Administration had two projects funded from \$2,100,000 in appropriations. As of February 28, 1994, expenditures for these projects totaled \$2,073,616. We tested one project administered by the department, with expenditures totaling \$1,897,684.

### Base Maps for the 1990's

The purpose of this appropriation was to provide a state match for a federal program to complete a major portion of the statewide air photo and base map coverage.

---

Table 5-1  
Base Maps for the 1990's  
Financial Status as of February 28, 1994

Appropriation Amount	\$1,900,000
Expenditures:	
Professional/Technical Services	\$1,740,000
Books, Maps, Publications	157,684
Total Expenditures	<u>\$1,897,684</u>
Unexpended Appropriation (Note 1)	<u>\$ 2.316</u>

Note 1. Subsequent to February 28, 1994, an additional \$458 was expended and \$1,858 was canceled.

Source: Statewide Accounting System accounting reports and detailed transactions as of February 28, 1994.

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Our review of activity through February 28, 1994, showed that costs were in compliance with the budget plan.

**Environmental and Natural Resources Trust Fund**

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August 29, 1994

Mr. James Nobles, Legislative Auditor  
Office of Legislative Auditor  
Centennial Office Building  
St. Paul, Minnesota 55155

Dear Mr. Nobles:

We have received the audit of the six projects we administered under the Environment and Natural Resources Trust Fund for FY92 and FY93. Thank you for the opportunity to comment on those findings.

**WELL SEALING COST-SHARING GRANTS**

*Recommendation #1* - The BWSR did not adequately monitor close out of the well sealing project grants.

*Recommendations:*

- The BWSR should recover from Dakota County the \$15,010 of unexpended project funds.
- The BWSR should review the financial status of all grants to ensure that grantees return unobligated moneys to the state in a timely manner.

*Agency Response:*

- BWSR continues to monitor and review the program and financial status of these well sealing grants. We will make every effort to have grantees return unused grant funds within 30 days of grant agreement expiration.
- BWSR requested return of the dollars from Dakota County orally and in writing three months ago. The county thought they had paid the money back right away. However, they found that they had misplaced the paperwork and have issued a repayment recently.

Mr. James Nobles, Legislative Auditor  
August 29, 1994  
Page Two

## **EASEMENT ACQUISITION ON RESTORED WETLANDS**

*Recommendation #2* - The BWSR did not have written commitments from ten landowners in a timely manner.

### *Recommendations:*

- The BWSR should work with LCMR to establish guidelines for the timing of easement encumbrances and payments.
- The BWSR should promptly complete contracts with landowners.
- The BWSR should seek LCMR approval for the expenditures relating to the easement agreement sent out after the project end date.

### *Agency Response:*

- We appreciate the basis of this recommendation and will continue to communicate with LCMR regarding timing issues keeping in mind statutory and rule requirements, Department of Finance policies and overall state grant administration efficiency and effectiveness.
- It always has been and continues to be a goal of BWSR to promptly, efficiently and effectively deliver all of our programs to our clientele. The easement acquisition area is no exception. Sometimes there are time delays due to legal description problems, land title and ownership problems, construction problems or simply landowner delays in returning documents. We have analyzed and streamlined our process and continue to encourage local units of government (who coordinate and deliver this program at the local level) to keep the process moving.
- We were assured by the Department of Finance that if funds are requisitioned prior to the close of the fiscal year, they view them as valid obligations of the state. Sometimes land and "interest in land" transactions take an inordinate amount of time; however, it is BWSR's contention that the state's "obligation" occurs when we requisition the funds for an approved easement. All of the dollars associated with this grant were requisitioned on or before June 30, 1993.

Mr. James Nobles, Legislative Auditor  
August 29, 1994  
Page Three

### CONSERVATION RESERVE EASEMENTS

*Recommendation #3* - The BWSR did not have written commitments from five landowners when it encumbered moneys for easement payments.

*Recommendation:*

- The BWSR should work with LCMR to establish guidelines for the timing of easement encumbrances and payments.

*Agency Response:*

- We appreciate the basis of this recommendation and will continue to communicate with LCMR regarding timing issues keeping in mind statutory and rule requirements, Department of Finance policies and overall state grant administration efficiency and effectiveness. We believe that consistent guidelines for encumbrances and payments are important for efficiency and that the Department of Finance guidelines are sufficient to address these concerns.

Again, thank you for the opportunity to respond to your audit findings. We look forward to audits of all our program areas to ensure that legislative and agency goals are being achieved in an efficient and effective manner. If you have any further questions, contact me at your convenience.

Sincerely,



Ronald D. Harnack  
Executive Director

RDH:mja





# Minnesota Department of Natural Resources

OFFICE OF THE COMMISSIONER  
500 Lafayette Road  
St. Paul, Minnesota 55155-4037

August 22, 1994

Mr. James R. Nobles, Legislative Auditor  
Office of the Legislative Auditor  
First Floor, Centennial Office Building  
658 Cedar Street  
St. Paul, Minnesota 55155

Dear Mr. Nobles:

Thank you for the opportunity to respond in writing to the audit report of the Environmental and Natural Resources Trust Fund programs administered by the Department of Natural Resources (DNR).

**Minnesota County Biological Survey: Finding #4**

If this is viewed as a two-year project that terminated on June 30, 1993, then these equipment purchases obviously could not be used on the project and would be inappropriate. However, we knew at the time, and the audit acknowledges, that this appropriation was a segment of a continuing long-term project. These purchases allowed us to accelerate the program by taking advantage of a full field season. Viewed in this context, we believe the purchases supported the goals of the project and were entirely appropriate.

**Effects of Changes in the Forest Ecosystem on the Biodiversity of Minnesota's Northern Forest Birds: Finding #5**

As you pointed out, DNR did receive the required matching funds for this project. The project received matching money from many different sources. As noted, the funds were deposited to seven accounts in several funds. Department of Finance policies prevent us, in many instances, from commingling funds. Where match is required on future projects, we will seek to use the fewest possible accounts consistent with Department of Finance procedures.

**South Central Minnesota Surface Water Resources Atlases and Database: Finding #6**

To address this finding, DNR staff worked with Legislative Commission on Minnesota Resources (LCMR) staff to develop new model contract language for grants that will specify that reimbursements will be based on actual cost documentation. This new language is now in effect for all LCMR-funded pass-through projects.

Yours truly,

  
Rodney W. Sando  
Commissioner

cc: Gene Gere                      Lee Pfannmuller  
Ray Hitchcock                  Bill Becker  
Kent Lokkesmoe                John Bouthilet  
John Heintz

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Capitol Square 550 Cedar Street  
Saint Paul, Minnesota 55101 612/296-6104

M E M O R A N D U M

TO: Minnesota Office of the Legislative Auditor

FROM: Linda Powell, Commissioner *[Signature]*  
Minnesota Department of Education

DATE: August 24, 1994

RE: Response to Audit of Environmental & Natural Resources Trust Fund  
Audit Report of August 18, 1994.

Since the initiation of Environmental & Natural Resources Trust Fund Grants for environmental education in the 1991-1993 biennium, the Department of Education has tried to work closely with the Legislative Commission on Minnesota Resources Staff to meet our programmatic and fiscal responsibilities. Upon review of the Auditor's report of August 18, 1994 we accept the conclusions and recommendations regarding the two areas of concern.

First, we agree that we should only charge costs outside of the Environmental Education Advisory Board regular business to the State Plan. With the State Plan completed in the summer of 1993 and with no further LCMR funds requested, this per diem issue is no longer current practice. Further, the Board has established specific by-laws which refer specifically to per diem expenditures.

Second, in July 1993, the Department in collaboration with LCMR staff established specific cash management procedures and increased monitoring of grantee expenditures reports and products as related to the LCMR's pass-through grants to other agencies and organizations.

Finally, we believe we are in compliance and concurrence with the Auditor's report.

LP:MP:do



**LCMR STAFF FINDINGS AND RECOMMENDATIONS ON THE SECOND TRUST  
FUND FINANCIAL AUDIT DATED SEPTEMBER 1994, FOR THE PERIOD 7/91-2/94,  
LEGISLATIVE AUDIT REPORT #94-48**

(Note: Text in this report that appear in *bold italics* is taken directly from the Legislative Audit Report #94-48. Page references are to that same report.)

ML 1991, Chp. 254, Sec. 14, Subd. 4(p)

Well Sealing Cost Share Grants (Board of Water and Soil Resources)

***Audit Report Page 8/Finding #1: The Board of Water and Soil Resources did not adequately monitor close out of the well sealing project grants.***

***The Board of Water and Soil Resources did not monitor the timely receipt of unused funds from grantee counties. BWSR has not followed up with counties to ensure that they return unobligated funds at the end of the grant period. The grant agreements require that each county return any remaining funds within two months after the expiration of the grant agreement. We noted one instance where a county was holding unobligated funds, which it should have returned to the state. Dakota County submitted the required reports and requested to keep the funds for other well sealing projects. BWSR staff intended to request the funds back from Dakota County but had not done so at the time of our review. Instead, they allowed Dakota County to retain \$15,010 beyond March 15, 1994, the date for return of funds specified in the contract. According to board records, there are also 38 other counties that had unexpended funds totaling \$232,000, as of March 1994. A portion of the unexpended funds may also be due back to the trust fund.***

***Recommendations:***

- ***The Board of Water and Soil Resources should recover from Dakota County the \$15,010 of unexpended project funds.***
- ***The board should review the financial status of all grants to ensure that grantees return unobligated moneys to the state in a timely manner.***

**LCMR STAFF FINDINGS AND RECOMMENDATIONS**

1. LCMR members discovered these discrepancies during a spring 1994 field trip evaluating projects. BWSR told us then they would close out the agreements and had estimated over \$100,000 might be returned. BWSR reported verbally in November 1994 that Dakota County has paid back \$14,000 and that another \$25,000 is expected from other counties as final closeout. The difference in final amounts versus the estimates at the time of the audit represent further work performed under the agreements before final closeout. LCMR staff suggested that BWSR not advance the

whole amount to the local units and instead operate on a reimbursable basis for work performed. However, BWSR Director Harnack feels that local units, mainly SWCD's, cannot provide the front end cash flow to sustain such arrangements and that billing for work performed would create substantial additional administrative expense. Clearly the contracts were written to exceed the biennium. In addition, BWSR allowed the contracts to remain open long after the time period agreed upon in the contracts. BWSR maintains that the advance payments made as front end funded grants constitute full expenditure. This interpretation was discussed and clarified. Future communications of expectations will be more clear to avoid a similar result.

2. LCMR has adopted 1995 recommended appropriation rider language that makes all the appropriations for non-state entities on a reimbursable basis. The language should probably be softened to allow the LCMR Director to negotiate small percentages to be paid out as advances in order to alleviate the cash flow.
3. Staff disagrees with the assertion that a reimbursable basis creates excess administration. In fact it reduces administration expense over the long run by ensuring that money is paid out only for work actually performed. Retain the reimbursable basis adopted, modified as in LCMR Staff Finding #2 above.
4. Various communications to all 1993 program managers and to potential 1995 managers make the interpretation perfectly clear, namely that all work promised is to be completed within the availability of the appropriation. No further action necessary as potential managers have responded with stated needs for extensions and they have been accommodated with 1995 recommended language and 1993 extension requests.

ML 1991, Chp. 254, Sec. 14, Subd. 6(d)

Conservation Reserve Easements (Board of Water and Soil Resources)

***Audit Report Page 9/Finding #2: The board did not have written commitments from 10 landowners in a timely manner.***

***We question the board's practice for encumbering funds due to the timing of obligations and the length of time appropriations are available for expenditure. The easement process takes an extended period of time to complete. Once approved, the board may make easement payments over a four year period. However, the legislature appropriates, and the board encumbers, moneys for the entire payment at the beginning of the process.***

***The board did not have signed agreements at the end of the 1991-1993 biennium with 10 of the 20 landowners who eventually will receive easement payments. However, as of June 30, 1993, staff encumbered \$257,531 in the statewide accounting system (SWA) for these easement payments. The appropriated funds would have canceled if the amounts were not encumbered. We think the board did not complete these contracts in***

*a timely manner. The board had started the contracting process with each of the 10 landowners. In May and June 1993 it sent out nine agreement packages to the landowners for signature. They received the signed agreements in July 1993 through February 1994. The board did not send out the other landowner agreement package until April 1994. We question the board's authority to encumber funds for this agreement since the formal offer to purchase an easement was made after year end.*

**Recommendations:**

- *The board should work with LCMR to establish guidelines for the timing of easement encumbrances and payments.*
- *The board should promptly complete contracts with landowners.*
- *The board should seek LCMR approval for the expenditures relating to the easement agreement sent out after the project end date.*

**LCMR STAFF FINDINGS AND RECOMMENDATIONS**

1. BWSR maintains the procedures followed were in full compliance with Finance Department guidelines and procedures. They specifically checked with Finance to clarify the legality of encumbering money without the commitments and were told the encumbrance must be made prior to sending out the agreement packages for landowner signature.  
RECOMMENDATION: No action.
2. Work program design for 1995 appropriations displays the real time needed to accomplish the intended tasks and, where additional time is needed, appropriation language has been suggested to allow the extra time. This problem should not occur again since both agency staff and LCMR staff are sensitized to the expectations.
3. The approval for expenditures after the project end date are already covered in Finance Department guidelines. The solution to the underlying problem is addressed in LCMR Staff Findings #2 above.
4. The Finance Department should respond as to the logic of allowing expenditures after the appropriation availability period.

ML1991, Chp. 254, Sec. 14, Subd 6(d)

Conservation Reserve Easements (Board of Water and Soil Resources)

*Audit Report Page 10: In our November, 1993 audit of this project, we questioned whether legal fees charged to the project complied with the work plan.*

*LCMR did not request repayment of the amounts in question. During our current review, we noted that the board charged \$7,542 in additional legal fees to the project. Our review of activity through February 28, 1994 showed that, except for the issues noted in the November 1993 audit and in finding 3 below, costs were in compliance with the budget plan.*

#### LCMR STAFF FINDINGS AND RECOMMENDATIONS

1. The disputed legal fees were not requested because legal fees are always considered part of the expense of acquiring land. The work programs are designed to focus on the end products achieved from the overall expenditure not the line item budgets. After the first audit, staff requested an explanation of the legal fee allocations. The memo received clearly shows that administrative efficiencies were employed so that some expenses chargeable to the Trust Fund appropriation were paid in their entirety from the other sources for the exact same purposes, that is Conservation Easements, while legal fees were charged to the Trust Fund appropriation. This resulted in a wash. The accounting is unclear, but a review shows that, taken as a whole, the various appropriations were charged only for allowable expenses.

RECOMMENDATION: No action.

ML1991, Chp. 254, Sec. 14, Subd. 6(d)

Conservation Reserve Easements (Board of Water and Soil Resources)

*Audit Report Page 10/Finding #3: The board did not have written commitments from five landowners when it encumbered moneys for easement payments.*

*We have similar concerns about the timing of easement encumbrances and payments for this project, as was discussed for Easement Acquisition on Restored Wetlands. The board did not have signed agreements with 5 of the 21 landowners at the end of the 1991-1993 biennium. The board had started the process with each of the five landowners. It sent two of the agreement packages out for signature in May 1992. The other three were sent out in January and February 1993. The Board received the signed agreements back from August 1993 through March 1994. At the time of our review, they have not paid out any funds to these five landowners. The agreements with these five landowners totaled \$42,877.*

**Recommendation:**

- *The board should work with LCMR to establish guidelines for the timing of easement encumbrances and payments.*

LCMR STAFF FINDINGS AND RECOMMENDATIONS

1. Findings and recommendations are the same as for LCMR Staff Findings # 2 of the Audit Report Page 9/Finding #2 section, and the Department of Finance should explain their practices.

ML 1991, Chp. 254, Sec. 14, Subd. 4(o)

Erosion Control Cost Sharing (Board of Water and Soil Resources)

*Audit Report Page 11: Erosion Control Cost Sharing Grants.*

*This project funded grants to share the cost of conservation practices to control erosion and protect water quality including water quality practices that divert water from sinkholes. In our November 1993 audit of this project, we questioned whether the board had appropriate project selection controls. Our review of activity through February 28, 1994 showed that, except for issues noted in the November 1993 audit, costs were in compliance with the budget plan.*

LCMR STAFF FINDINGS AND RECOMMENDATIONS

1. BWSR did consult verbally with the project selection review committee, but did not convene formal meetings.  
RECOMMENDATION: No action.

ML 1991, Chp. 254, Sec. 14, Subd. 4(f)

County Geologic Atlas and Groundwater Sensitivity Mapping (DNR)

*Audit Report Page 13: County Geological Atlas and Groundwater Sensitivity Mapping (Department of Natural Resources Portion).*

*The purpose of this project is to expand production of county geologic atlases and create a new atlas services office.*

*In our November, 1993 audit of this project, we questioned the propriety of certain lump sum achievements awards. The department subsequently reimbursed the trust fund \$44,091 for the inappropriate expenditures. We also questioned whether the allocation*

*of \$51,484 for certain capital asset costs to the trust fund was appropriate. Program guidelines do not address the allocability of charges for capital equipment to trust fund projects. During the current audit, we found that the department charged \$4,554 to the project for computer equipment for a Local Area Network (LAN) hook-up and a computer upgrade. The department allocated the equipment cost to this project and other funding sources. Our review of activity through February 28, 1994 showed that except for the issues noted above, costs were in compliance with the budget plan.*

#### LCMR STAFF FINDINGS AND RECOMMENDATIONS

1. The work program format and 1995 recommended legislation contain a requirement for specific work program approval for any capital equipment. The work programs focus on the end products, not the line item budgets. Clearly the capital equipment purchases will help accelerate an established long term program of the state, so no supplanting occurred.  
RECOMMENDATION: No action.
2. Discussions with the DNR indicate that fleet management will be used to finance necessary vehicle purchases and the appropriate use rates applied in the future.  
RECOMMENDATION: No action.
3. The local area network is consistent with the need to establish and manage large amounts of data and improved staff efficiency.  
RECOMMENDATION: No action.

ML 1991, Chp. 254, Sec. 14, Subd. 9(d)  
Minnesota County Biological Survey (DNR)

#### *Audit Report Page 14: DNR Minnesota County Biological Survey.*

*In our November 1993 audit of this project, we questioned whether certain salary expenditures complied with statutory requirements. Our review of activity through February 28, 1994 showed that, except for the issues noted in the November 1993 audit and in finding 4 below, costs were in compliance with the budget plan.*

#### LCMR STAFF FINDINGS AND RECOMMENDATIONS

1. The unclassified staff problem was remedied two ways. First, DNR switched the employees to the unclassified service at the start of the next biennium. Second, the Legislature adopted the LCMR recommendation to give LCMR flexibility to approve classified positions within the workprogram. LCMR has rigorously reviewed several proposed classified position requests. Most have been approved with one withdrawn.

ML 1991, Chp. 254, Sec. 14, Subd. 9(d)  
Minnesota County Biological Survey (DNR)

***Audit Report Page 14/Finding #4: The propriety of certain capital expenditures is questionable.***

***The department spent \$31,962 on a computer and other equipment after the project had ended. The project appropriation was available for the 1991-1993 biennium and unobligated funds would cancel as of June 30, 1993. The department received two navigation instruments and a computer on June 28 and 30, 1993, respectively. It received ten items in July, August, and September 1993. Table 3-3 details the items and the dates received. The department could not have used items received this late on the current project. This is a continuing project, and the department received an additional trust fund appropriation in the subsequent year's project.***

LCMR STAFF FINDINGS AND RECOMMENDATIONS

1. Staff has requested a report by 1993 funded projects of capital equipment expenditures to supplement the work program information. We are in the process of reviewing the reports. It appears there are only a handful of significant and somewhat questionable expenses. We will report separately on our analysis.
2. This finding raises again the issue of capital equipment. LCMR needs to adopt some guidance: (1) Should the LCMR projects be allowed to purchase capital equipment at all? (2) How to define what is capital (a) long lived?, (b) non consumable? (3) What dollar amount cutoff? (a) \$5,000 per item indexed biennially? or (b) a two-tiered system with equipment between \$2,000 and \$5,000 subject to Director approval and over \$5,000 subject to full LCMR determination? (4) Should a justification statement include (a) alternatives analysis including lease, lease purchase or fleet type management? (5) Should the approval include a promise by the recipient that the particular equipment will continue to be used for the same project or substantially similar purpose through its useful life, and that if the use changes the recipient will reimburse the state either the cash amount received from a sale or the value, to be negotiated with the Director, if they choose not to sell it?

RECOMMENDATION: Adopt some version of the above suggestion as standing policy.

3. The 1995 appropriation recommendations contain a requirement for specific approval in the work program if capital equipment is to be purchased. To date capital is being defined as \$1,500 in cost and long lived.
4. DNR ordered equipment in April, expecting delivery shortly, in time for the initial months of the field season within the appropriate biennium. Procurement

delays and delivery delays extended the delivery of some equipment. All the equipment was used in either the 1991 funded project or the subsequent 1993 funded project.  
RECOMMENDATION: No action. Clearly the equipment will stay in state service and as demonstrated, will continue for the same purpose. LCMR could view this as an extended acceleration of the effort, with the LCMR recommendation creating long term benefits well beyond the life of the particular appropriation.

ML 1991, Chp. 254, Sec. 14, Subd. 9(o)  
Changes in Ecosystem on Biodiversity of Forest Birds (DNR)

***Audit Report Page 15/Finding 5: The Department of Natural Resources did not properly account for match funds.***

***The department records match funds in several accounts outside of the trust fund. At the time of our review, it deposited the match funds in at least seven separate accounts. This makes it very difficult to track the funds and may allow the funds to also be used as match for other projects. The match funds that are committed to a project should be more clearly accounted for to ensure they are used for the specific project.***

***Recommendation:***

- ***The Department of Natural Resources should simplify the accounting practices for match funds and ensure they are used for the purpose of the project.***

LCMR STAFF FINDINGS AND RECOMMENDATIONS

1. In discussion with DNR it is clear the match was utilized only once.
2. Finance department guidelines require a certain separation and accounting for match money.

RECOMMENDATION: No action.

ML 1991, Chp. 254, Sec. 14, Subd. 4(b)  
South Central MN Surface Water Resource Atlases/Data Base (Mankato State University)

***Audit Report Page 16/Finding 6: South Central MN Surface Water Resources Atlases and Database.***

*The Department of Natural Resources did not adequately monitor a project grant. The Department of Natural Resources did not monitor the pass-through grant to Mankato State University. The department paid funds to the university based on staggered payment dates established in the contract. However, the department did not base the payments on costs incurred. Once the department paid the grant funds, it did not monitor whether the expenditures were appropriate. It did not require the university to submit expenditure status reports. The department did monitor to ensure that the university submitted semiannual project status reports to LCMR. However, we believe the department, as recipient of the appropriation, has a responsibility to monitor specific expenditures and grantee performance. To help ensure that projects are progressing as anticipated, the department should require grantees to periodically report on expenditures. Staff should review reports for compliance with established budgetary requirements and program guidelines.*

**Recommendation:**

- *The Department of Natural Resources should establish a process to review grantee expenditures for propriety.*

**LCMR STAFF FINDINGS AND RECOMMENDATIONS**

1. MSU did submit regular status reports with cumulative expenditures shown concurrently to LCMR and DNR. However, the appropriation law and state agency custom allowed the practice criticized. In fact most university contracts operate on a staged payment basis. Only through LCMR staff insistence in the 1993 biennium did the practice change to a requirement that performance be documented before money is released to a university contractor. The products of this 1991 appropriation were reasonable and consistent with the overall appropriation and workprogram.
2. The 1995 recommendations and workprogram development present a marked change to past practice in that specific products are outlined and reimbursement will be based only on achieving the products .

RECOMMENDATION: No action.

ML 1991, Chp. 254, Sec. 14, Subd. 5(a)

Environmental Education Program (Department of Education)

***Audit Report Page 18: Environmental Education Program.***

*The purpose of this project is to complete a long term plan for the development and coordination of environmental learning centers.*

*In our November 1993 audit of this project we questioned whether the classified employee salaries complied with statutory requirements relating to the employment status of staff paid from trust fund moneys. LCMR did not request repayment of the amounts in question. Our review of financial activity through February 28, 1994 showed that, except for the issues noted in the November 1993 audit, costs were in compliance with the budget plan.*

#### LCMR STAFF FINDINGS AND RECOMMENDATIONS

1. We reported some recommendations after the first audit. LCMR resolved the issue by recommending, and the Legislature enacted, a provision to allow for classified staff expense when and if specifically approved in workprograms.
2. Fundamentally, the requirement to use unclassified staff no longer serves the same purpose as when it was enacted in 1963. We have requested DNR to report on a series of questions that, when answered and discussed, should illuminate the problem well.
3. Repayment was not requested as it seemed that changing systemic procedures and arrangements, among them the existence of classified but part time staff, had lead to questionable interpretations.

RECOMMENDATION: No action.

ML 1991, Chp. 254, Sec. 14, Subd. 5(a)  
Environmental Education Program (Department of Education)

#### *Audit Report Page 21, Chapter 4: Department of Education.*

*In our November 1993 audit of this project we questioned whether the classified employee salaries complied with statutory requirements relating to the employment status of staff paid from trust fund moneys. LCMR did not request repayment of the amounts in question. In addition, we recommended that the department establish a process to review grantee expenditures for propriety. Our review of activity through February 28, 1994 showed that, except for the issues noted in the November 1993 audit and in finding 7 below, costs were in compliance with the budget plan.*

#### LCMR STAFF FINDINGS AND RECOMMENDATIONS

1. Please see "LCMR Staff Findings and Recommendations" in the response to "Audit Report Page 18" section above about classified versus unclassified staff.
2. Director John Velin advised DOE that classified staff were unacceptable. DOE felt they were operating "consistent with other" agencies. If it were feasible, staff would recommend that DOE payback the inappropriate amounts. However, the books were closed on this and other 1991 appropriations prior to audit.

3. Prior to the issuance of the first Trust Fund audit, LCMR staff advised DOE staff to keep closer track of projects for which DOE was given pass through responsibility. In early 1993 we met with Pam Landers who greatly improved the project reporting processes and the process of ensuring that expenditures were in line with expectations. Subsequent biennial appropriations have been managed on a reimbursement basis, thus ending the process criticized, where grantees received money but had little or no accountability. Under the reimbursement routine, recipients spend their own money first then apply for reimbursement along with evidence of performing the deliverables.
4. The 1995 workprogram development will further improve on their accountability for money.

ML 1991, Chp. 254, Sec. 14, Subd. 5(a)

Environmental Education Program (Department of Education)

***Audit Report Page 22/Finding 7: The Department of Education paid the Environmental Education Advisory Board per diem out of trust fund project funds.***

***The department spent \$4,785 in per diem for the Environmental Education Advisory Board. The board was created by in 1990 to help pupils and other citizens better understand the environment. The project work plan states that the board will review all phases of the planning effort for the state plan. Completion of the state plan was one of the board's major objectives. The board received a separate General Fund appropriation for normal operating costs which it used on other board expenditures. It originally paid some per diem expenses out of the board appropriation and later transferred them to the trust fund appropriation. It charged both regular board meeting per diem and special meeting per diem to the trust fund. The board had enough funds to pay for the per diem out of its operating budget since \$5,985 of their operating budget canceled back to the General Fund. We believe that normal operating expenses of the board should not be charged to the project.***

***Recommendations:***

- ***The department should only charge costs outside of the board's regular business to the state plan.***
- ***The department should work with LCMR to determine the propriety of per diem charges to the project.***

### LCMR STAFF FINDINGS AND RECOMMENDATIONS

1. Per diem expenses for Environmental Education Advisory Board members are entirely appropriate to the workprogram. The Board was an integral part of Green Plan development. The work performed by the Board on the Green Plan was over and above their regular quarterly meetings. Documentation of the extra effort shows the state received an extremely good value for the expenditure of \$4,785 in per diem, inasmuch as several of the "days" were extremely long and involved travel as well.
2. Money cancelled from both the regular operating budget and from the Trust Fund appropriation. Thus the existence of cancellations presents no particular case one way or the other. At issue is the applicability of Board meetings and related per diems to the production of the Green Print Plan.  
RECOMMENDATION: No action.
3. The Environmental Education Advisory Board was established and funded as an ongoing operation from the regular budget. Trust Fund appropriations were added to create the Green Plan for environmental education. The Environmental Education Advisory Board supplemented their regular meeting schedule with a large number of meetings devoted exclusively, or nearly exclusively, to Green Plan development. In the work program for ML 1991, Chp. 254, Sec. 14, Subd 5(a), Part c.1.2, the Environmental Education Advisory Board is scheduled to "review all phases of the planning effort". Clearly the Board was to be employed in making the plan and clearly the plan was an extraordinary effort. Since the Board is compensated, the reviews would require payment of per diem. Payment for direct costs associated with LCMR recommended programs has been a long standing practice. The Commission wants its programs to pay their own way and not simply drain off regular budget sources. The latter would be counter productive.  
RECOMMENDATION: No action.

ML 1991, Chp. 254, Sec. 14, Subd. 5(c)

Video Education Research and Demonstration Project (Twin Cities Public Television)

#### *Audit Report Page 22: Video Education Research and Demonstration Project.*

*The purpose of this project was to develop a video education demonstration project and a model for a statewide video environmental education communication network. As provided in the appropriation, the department granted the project funds to Twin Cities Public Television. In our November 1993 audit of this project, we recommended improvements in the department's cash management procedures and increased monitoring of grantee expenditure reports. Our review of activity through February 28, 1994 showed that, except for the issues noted in the November 1993 audit, costs were in compliance with the budget plan.*

### LCMR STAFF RECOMMENDATIONS AND FINDINGS

1. During the biennium Director John Velin personally monitored this particular project on numerous occasions because of his belief that video technology and medium would be an important attractant for environmental education. The expenses incurred for salaries and materials seemed very reasonable, especially in light of the context, namely the hyper perception of the TV industry. Again products were viewed--not line item budgets and expenditures.
2. DOE was reminded on several occasions of the need to follow projects. But the prevailing practice of making " grants" and simply functioning as a payment conduit seemed prevalent. As mentioned earlier, this attitude has changed and LCMR protocols have changed, to increase accountability for production from the appropriations.

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**ENVIRONMENT AND NATURAL RESOURCES  
TRUST FUND**

**\*SELECTED SCOPE FINANCIAL AUDIT**

**JULY 1, 1991 - DECEMBER 31, 1992**

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**NOVEMBER 1993**

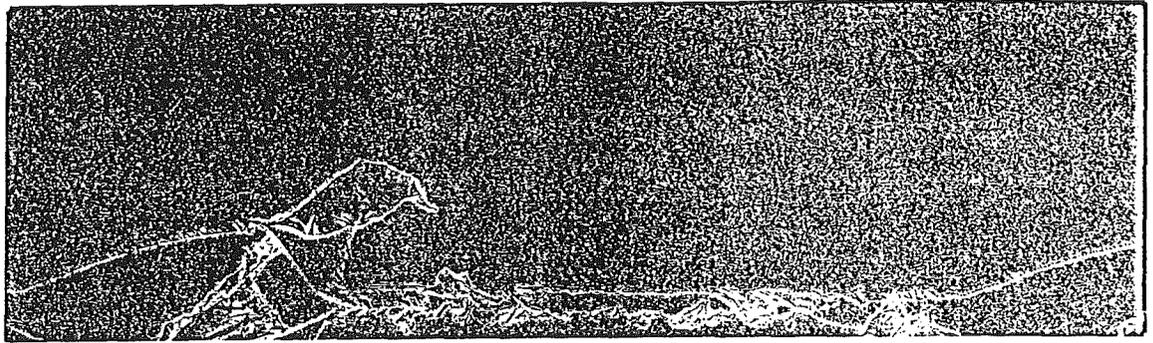
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report style in the following  
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## Financial Audit Division

The Office of the Legislative Auditor is responsible for financial audits of funds administered by the executive and judicial branches of state government. The audits are conducted by the office's Financial Audit Division. The division has a staff of approximately forty governmental accounting and auditing professionals, the majority of whom are Certified Public Accountants.

The Financial Audit Division does its work in accordance with standards established by the American Institute of Certified Public Accountants and the Comptroller General of the United States. Annually, the division performs a Statewide Financial Audit of the state's financial statements. The audit reviews the major financial systems maintained by the state's largest thirty departments. The Statewide Audit also includes a "Single Audit" which tests whether agencies are adhering to federal requirements in the administration of

federally assisted programs. The division also conducts approximately thirty to forty financial and compliance audits of individual agencies or institutes each year after the Statewide audit is completed.

In addition to financial audits, the Office of the Legislative Auditor performs program evaluations through a Program Evaluation Division.

The Legislative Auditor is appointed by the Legislative Audit Commission for a six year term. The Financial Audit Division and the Program Evaluation Division are each under the direction of a deputy legislative auditor. All audit, evaluation, and investigation reports are solely the responsibility of the Legislative Auditor and his staff, and they are available on request from the office.

**ENVIRONMENT AND NATURAL RESOURCES  
TRUST FUND**

**\*SELECTED SCOPE FINANCIAL AUDIT**

**JULY 1, 1991 - DECEMBER 31, 1992**

NOVEMBER 1993

**\*See description of this new  
report style in the following  
Note to Report Readers.**

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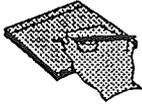
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# Note to Report Readers

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The Financial Audit Division introduces a new report style in nine audits being released during the Summer of 1993. The division plans to use the new style on a trial basis and will later evaluate report readers' preferences. The new style replaces the traditional format of reporting only on an "exception basis." In the traditional format, auditors commented primarily on problems which the reports presented as findings and recommendations. Readers may have grown accustomed to using report length as a gauge for the extent of problems. With the new style, report length is not a reliable indicator of the extent of audit findings. These new reports contain more extensive factual and analytical data. Report readers should find this additional information useful. The division has attempted to make the new report style easy to identify and understand.

## Identifying the New Report Style

The division distinguishes the new style reports by printing the report title in red ink, rather than the black ink used for traditional financial audit reports. All Financial Audit Division reports continue to use the gray-colored report covers. The report title shows through the window cutout on the gray cover. The inside cover page highlights the new style. This Note to Report Readers follows the inside cover page and describes the new style.

## New Features

The new reports devote a separate chapter to each major audit area. Chapters contain detailed information on the audit scope, analytical results, and conclusions. Each chapter also elaborates on applicable management practices and processes. Financial auditors have always accumulated this additional information, but traditionally retained the information in the working papers and did not publish it as part of the final report.

To provide for a quick understanding of the audit results, the chapter structure allows readers to visually scan for items of interest or concern. Readers should look for the following features in each chapter:

1. The audit conclusions summarized at the beginning of the each chapter,
2. Tables and charts highlighting important financial information, and
3. Any audit findings and recommendations.

Aside from the format for presenting audit findings and recommendations, the new report style preserves the other elements of the traditional financial audit report. Report readers should recognize these other standard elements of the traditional reports: (1) Scope and Conclusions Letter, (2) Table of Contents, (3) Introduction, (4) Agency Response, and (5) an inserted Report Summary (although the new style uses a modified version of the report summary). Audit findings continue to be numbered and presented in bold-faced print. Recommendations are highlighted in italics. However, the Audit Findings and Recommendations are embedded in the appropriate report chapters, rather than aggregated in a separate report section.

## **Reasons for the Change**

The traditional financial audit reports have several limitations. The reports often tend to be very technical documents. Also, reports with few findings communicate the audit results in a very abbreviated manner. Exception-based reporting requires auditors to either present audit findings or to simply state that the audit revealed no findings. This reporting style does not allow for positive conclusions or analysis of areas without audit findings.

The division was concerned about the risk that some report readers may have difficulty understanding audit results. It had begun to narrow its audit scope for several larger, more complex agencies. These "selected scope" audits were an effort to stretch scarce staff resources into as many audits as possible. But the division was particularly concerned that readers would project the audit results from a few selected programs to conclusions about an entity's overall financial management. The new report style more effectively presents the audit scope within the context of the entity's total operations.

Exception-based reporting does not fully accommodate the extent that auditors must exercise professional judgment. Auditors must interpret laws and policies. They must weigh the costs of control deficiencies against the benefits of preventing potential problems. It is particularly challenging to audit entities that are exempt from standard state policies and regulations. For those audits, the auditors must judge whether the entity has adopted "reasonable" and prudent practices for a public entity. Many issues require difficult decisions about whether or not an audit finding exists. Under the traditional report format, the auditor presents comments only when concluding that a finding exists. The new report style removes this limitation. Although the auditor's judgment remains important, the new report style also allows readers to reach their own conclusions.

## **Audits with the New Report Style**

Look for the new report style in the audits of the following nine entities.

Department of Corrections	Department of Human Services
State University System	Community College System
Department of Natural Resources	University of Minnesota Medical School
Minnesota State Lottery	Environment and Natural Resources
State Public Defender	Trust Fund

Eight of the nine are "selected scope" audits covering only some programs of the entity. The Minnesota State Lottery is an entity-wide audit limited to testing for legal compliance with state laws and regulations.

## **Share Your Comments**

If you have comments about the new report style, please contact the Financial Audit Division at (612) 296-1730.



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Senator Phil Riveness, Chair  
Legislative Audit Commission

Members of the Legislative Audit Commission

Senator Gene Merriam, Chair  
Legislative Commission on Minnesota Resources

Members of the Legislative Commission on Minnesota Resources

Mr. John Velin, Director  
Legislative Commission on Minnesota Resources

Mr. Ronald Harnack, Executive Director  
Board of Water and Soil Resources

Ms. Linda Powell, Commissioner  
Department of Education

Mr. Rodney Sando, Commissioner  
Department of Natural Resources

## **Audit Scope**

We have conducted a financial related audit of selected expenditures of the Environment and Natural Resources Trust Fund for the period July 1, 1991 through December 31, 1992. Chapter 1 provides a brief description of the Environment and Natural Resources Trust Fund and our audit scope. Chapters 2 through 4 discuss the results of our audit.

We conducted our audit in accordance with generally accepted government auditing standards. Those standards require that we plan and perform the audit to obtain reasonable assurance about whether the financial activities attributable to the transactions of the Environment and Natural Resources Trust Fund are free of material misstatements.

As provided in Minn. Stat. Section 116P.04, Subd. 5, the objective of our audit was to determine if trust fund expenditures were made for the purposes provided in the Legislative Commission on Minnesota Resources (LCMR) budget plan. To accomplish this objective, we interviewed LCMR staff to gain an understanding of the budget plan and the policies and procedures established to control expenditures. We then selected a sample of departments and individual projects for further review. We performed tests of project activity at the Department of Natural

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Resources, the Board of Water and Soil Resources, and the Department of Education. We tested compliance with certain provisions of laws, regulations, contracts, and grants related to the Environment and Natural Resources Trust Fund. However, our objective was not to provide an opinion on overall compliance with such provisions.

To achieve our objective, we obtained an understanding of the design of relevant internal control policies and procedures and determined whether they have been placed in operation, and we assessed control risk. Our review was more limited than would be necessary to express an opinion on the internal control structures taken as a whole for the Department of Natural Resources, the Board of Water and Soil Resources, and the Department of Education.

## Management Responsibilities

The management of the Department of Natural Resources, the Board of Water and Soil Resources, and the Department of Education are responsible for establishing and maintaining an internal control structure. This responsibility includes compliance with applicable laws, regulations, contracts, and grants. In fulfilling this responsibility, estimates and judgments by management are required to assess the expected benefits and related costs of internal control structure policies and procedures. The objectives of an internal control structure are to provide management with reasonable, but not absolute, assurance that:

- assets are safeguarded against loss from unauthorized use or disposition;
- transactions are executed in accordance with applicable legal and regulatory provisions, as well as management's authorization; and
- transactions are recorded properly on the statewide accounting system in accordance with Department of Finance policies and procedures.

Because of inherent limitations in any internal control structure, errors or irregularities may nevertheless occur and not be detected. Also, projection of any evaluation of the structure to future periods is subject to the risk that procedures may become inadequate because of changes in conditions or that the effectiveness of the design and operation of policies and procedures may deteriorate.

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Page 3

## Conclusions

Our review of selected project expenditures identified some common areas of concern relating to agency project administration. We found that:

- program guidelines and work plans did not address allowability of certain costs, such as capital expenditures and costs benefiting various projects;
- state agencies often did not exercise adequate oversight for grants to nonstate entities; and
- agencies did not strictly comply with statutory requirements relating to staff employment.

We believe the Legislative Commission on Minnesota Resources should review these areas of concern to determine if further project guidelines or statutory revisions are necessary. We discuss our specific conclusions in Chapters 2 through 4.

In Chapter 2, we question certain expenditures for three of the four projects reviewed. We conclude that the Department of Natural Resources inappropriately charged \$44,091 in lump sum employee achievement awards to one of its projects. In addition, the propriety of certain capital expenditures is questionable. Also, the department charged classified employee salaries to two projects in violation of statutory requirements.

As discussed in Chapter 3, our review identified concerns about three of the six projects administered by the Board of Water and Soil Resources. We found that the board did not adequately document the grantee selection process and did not monitor grantee expenditures for two projects. In addition, we questioned whether expenditures totaling \$46,756 complied with objectives for two projects.

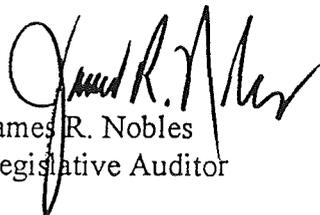
In Chapter 4, we discuss our conclusions from the review of the two projects administered by the Department of Education. We think the department did not effectively administer the grant portion of the two trust fund projects. In addition, we question whether selected expenditures complied with statutory and administrative guidelines for the two projects.

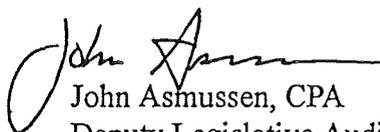
This report is intended for the information of the Legislative Audit Commission and the Legislative Commission on Minnesota Resources, and management of the Department of

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Page 4

Natural Resources, the Board of Water and Soil Resources, and the Department of Education. This restriction is not intended to limit the distribution of this report, which was released as a public document on November 19, 1993.

We thank the staff of the Legislative Commission on Minnesota Resources, the Department of Natural Resources, the Board of Water and Soil Resources, and the Department of Education for their cooperation during this audit.

  
James R. Nobles  
Legislative Auditor

  
John Asmussen, CPA  
Deputy Legislative Auditor

End of Fieldwork: June 18, 1993

Report Signed On: November 12, 1993

# Environment and Natural Resources Trust Fund

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### Audit Participation

The following members of the Office of the Legislative Auditor prepared this report:

John Asmussen, CPA	Deputy Legislative Auditor
Claudia Gudvangen, CPA	Audit Manager
Lori Pellicci, CPA	Auditor-In-Charge
Kari Irber, CPA	Auditor

### Exit Conferences

The issues on this report were discussed with the staff of the following agencies:

Board of Water and Soil Resources	October 6, 1993
Department of Education	October 7, 1993
Department of Natural Resources	October 13, 1993

# Environment and Natural Resources Trust Fund

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## Chapter 1. Introduction

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The Environment and Natural Resources Trust Fund was established by constitutional amendment in November 1988. Article XI, Sec. 14 of the Constitution of the State of Minnesota, as amended in November 1990, provides, in part:

The principal of the environment and natural resources trust fund must be perpetual and inviolate forever, except appropriations may be made from up to 25 percent of the annual revenues deposited in the fund until fiscal year 1997 and loans may be made of up to five percent of the principal of the fund for water system improvements as provided by law.....The net earnings from the fund shall be appropriated in a manner prescribed 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. Not less than 40 percent of the net proceeds from any state-operated lottery must be credited to the fund until the year 2001.

This constitutional provision provides a long-term permanent and stable source of funding for natural resources. The State Board of Investment invests trust fund monies pursuant to Minn. Stat. Section 11A.24. Investment income is available each biennium for expenditure. In addition, as shown in Table 1-1, for each biennium through 1997 the Legislature has provided varying percentages of additional revenue up to the constitutional limitation.

**Table 1-1**  
**Environment and Natural Resources Trust Fund**  
**Additional Revenue Available for Funding Projects**

- For the 1991-1993 biennium, up to 25 percent of the revenue deposited in the trust fund in fiscal years 1990 and 1991;
- For the 1993-1995 biennium, up to 20 percent of the revenue deposited in the trust fund in fiscal year 1992 and up to 15 percent of the revenue deposited in the fund in fiscal year 1993;
- For the 1993-1995 biennium, up to 25 percent of the revenue deposited in trust fund in fiscal years 1994 and 1995, to be expended only for capital investments in parks and trails; and
- For the 1995-1997 biennium, up to ten percent of the revenue deposited in the fund in fiscal year 1996.

Source: Minn. Stat. Section 116P.11 (b).

## Environment and Natural Resources Trust Fund

Table 1-2 shows the financial activity for the trust fund corpus from inception of the fund through Fiscal Year 1992.

**Table 1-2**  
**Environment and Natural Resources Trust Fund**  
**Trust Fund Corpus**  
**Summary of Financial Activity**  
**Three Years Ended June 30, 1992**

	<u>Year Ended June 30</u>		
	<u>1990</u>	<u>1991</u>	<u>1992</u>
Beginning Fund Balance	<u>\$ 0</u>	<u>\$ 2,734,734</u>	<u>\$22,799,621</u>
Revenue:			
Lottery Proceeds	\$2,734,434	\$20,064,887	\$17,487,833
Gifts and Donations	<u>300</u>	<u>805</u>	<u>3,602</u>
Total	<u>\$2,734,734</u>	<u>\$20,064,887</u>	<u>\$17,491,435</u>
Ending Fund Balance	<u>\$2,734,734</u>	<u>\$22,799,621</u>	<u>\$40,291,056</u>

Note 1: In addition, any appropriated funds not encumbered in the biennium in which they are appropriated cancel and are to be credited to the principal of the trust fund.

Source: State of Minnesota Comprehensive Annual Financial Reports and supporting accounting records.

As provided in Minn. Stat. Section 116P.03, 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. The trust fund is to be used primarily to support activities whose benefits become available only over an extended period of time.

## Environment and Natural Resources Trust Fund

Table 1-3 shows the financial activity for the expendable portion of the trust fund for the same three year period.

	Year Ended June 30		
	<u>1990</u>	<u>1991</u>	<u>1992</u>
Beginning Fund Balance	\$ 0	\$ 911,505	\$ 8,840,055
Revenue:			
Lottery Proceeds	\$911,478	\$6,688,027	\$ 4,372,058
Investment Income	27	1,240,253	2,611,109
Gifts and Donations		<u>270</u>	<u>901</u>
Total Revenue	<u>\$911,505</u>	<u>\$7,928,550</u>	<u>\$ 6,984,068</u>
Expenditures:			
Current Expenditures			\$ 2,508,700
Capital Outlay			699,929
Grants			<u>1,812,549</u>
Total Expenditures			<u>\$ 5,021,178</u>
Ending Fund Balance	<u>\$911,505</u>	<u>\$8,840,055</u>	<u>\$10,802,945</u>
Source:	State of Minnesota Comprehensive Annual Financial Reports and supporting accounting records.		

During our annual statewide audit, we verify the propriety of revenue deposited to the trust fund. We perform tests of investment income at the State Board of Investment. We also verify the proper distribution of lottery proceeds to the trust fund, and the appropriate allocation of revenues between fund corpus and expendable balance. In our audits of the Minnesota State Lottery for the years ended June 30, 1991 and 1992, we questioned the Lottery's authority to maintain reserve accounts, thereby reducing distributions to the trust fund.

The Legislative Commission on Minnesota Resources (LCMR), consisting of 16 members of the legislature, administers the trust fund. LCMR recommends a biennial budget plan for trust fund expenditures. In addition, it adopts a six year strategic plan identifying priority areas for funding. LCMR employs a staff to assist it in its responsibilities. John Velin currently serves as LCMR Director.

## Environment and Natural Resources Trust Fund

Biennially, state agencies and other entities submit proposed projects to LCMR for review. The Legislature appropriates funds to state agencies for two-year projects based on LCMR recommendations. A peer review panel must review research proposals before the Legislature appropriates monies from the trust fund. In addition to the trust fund, appropriations from the Minnesota Future Resources Fund and federal oil overcharge funds finance similar environmental projects.

The Legislature authorized the first appropriations from the trust fund in the 1991 legislative session. The appropriations funded projects scheduled for the period July 1991 through June 1993. Table 1-5 identifies the projects approved in 1991.

In many cases, project appropriations were not fully expended and the projects had not been completed at the time of our review. Table 1-4 shows the financial status of the trust fund at December 31, 1992.

**Table 1-4**  
**Environment and Natural Resources Trust Fund**  
**Summary of Project Financial Activity**  
**July 1, 1991 - December 31, 1992**

Project Appropriations	\$ 14,960,000
Appropriation Canceled	(100,000)
Expenditures	<u>(7,155,124)</u>
Unexpended Appropriation	<u>\$ 7,704,876</u>

Note 1: Subsequent to December 31, 1992, an additional \$40,000 appropriation was canceled.

Source: Statewide Accounting System accounting records and detailed transactions as of December 31, 1992.

## Environment and Natural Resources Trust Fund

**Table 1-5  
Environment and Natural Resources Trust Fund  
Projects Funded for 1991-1993 Biennium**

Agency (Note 1)	Project	Appropriation <u>Amount</u>
<u>Recreation Projects:</u>		
DNR	Lower St. Croix Riverway Land & Water Management	\$ 360,000
DNR	Mississippi River Valley Blufflands Initiative	150,000
DNR	Rails-to-Trails Acquisition and Development	<u>1,000,000</u>
Subtotal Recreation		<u>\$ 1,510,000</u>
<u>Water Projects:</u>		
SPA	Stream & Watershed Information System	\$ 200,000
DNR	So. Cent. Mn Surface Water Atlases & Data Bases	300,000
PCA	Mn River Basin Water Quality Monitoring	700,000
UM	County Geologic Atlases	800,000
DNR	Groundwater Sensitivity Mapping	600,000
PCA	Clean Water Partnership Grants	700,000
BWSR	Cannon River Watershed Grants	60,000
PCA	Mitigating Mercury in NE Mn Lakes	300,000
DNR	Ecological Evaluation of Year-Round Aeration	100,000
BWSR	Erosion Control Cost-Sharing	250,000
BWSR	Well Sealing Cost-Share Grants	<u>750,000</u>
Subtotal Water		<u>\$ 4,760,000</u>
<u>Education Projects:</u>		
DOE - Note 4	Model K-12 Environmental Education Curriculum	\$ 400,000
DOE - Note 4	Environmental Education in Community Education	30,000
DNR - Note 4	Environmental Learning Centers Plan	60,000
SPA - Note 4	Assessment of Environmental Learning Centers	85,000
SPA - Note 4	Statewide Environmental Education Plan	215,000
DOE	Video Education Research and Demonstration	100,000
DNR	Integrated Resource Management Education	300,000
SM	Environmental Exhibits Collaborative	400,000
Subtotal Education		<u>\$ 1,590,000</u>
<u>Agriculture Projects:</u>		
AGR	Biological Control of Pests	\$ 650,000
BWSR	Conservation Reserve Easements	600,000
EQB	Generic Environmental Impact Statement	<u>400,000</u>
Subtotal Agriculture		<u>\$ 1,650,000</u>

## Environment and Natural Resources Trust Fund

Table 1-5 (continued)

Agency (Note 1)	Project	Appropriation <u>Amount</u>
<u>Wildlife Projects:</u>		
DNR	Insecticide Impact on Wetland and Upland Wildlife	\$ 650,000
DNR	Biological Control of Eurasian Water Milfoil (Note 3)	100,000
DNR	County Biological Survey	1,000,000
UM	Data Base for Plants of Minnesota	130,000
PCA	Aquatic Invertebrate Assessment Archive	130,000
DNR	Wetlands Forum (Note 3)	40,000
BWSR	Easement Acquisition on Restored Wetlands	400,000
DNR	Restore Thomas Sadler Roberts Bird Sanctuary	50,000
DNR	Changes in Ecosystem on Forest Bird Biodiversity	<u>300,000</u>
Subtotal Wildlife		<u>\$ 2,800,000</u>
<u>Land Projects:</u>		
SPA	Base Maps for the 1990s	\$ 1,900,000
DNR	Digitalization of Wetlands & Waters Inventory	<u>750,000</u>
Subtotal Land		<u>\$ 2,650,000</u>
Total Projects		<u>\$14,960,000</u>

Note 1: Agencies: DNR-Department of Natural Resources; SPA-State Planning Agency; PCA-Pollution Control Agency; BWSR-Board of Water and Soil Resources; UM-University of Minnesota; DOE-Department of Education; SM-Science Museum of Minnesota; EQB-Environmental Quality Board.

Note 2: As a result of agency reorganization, State Planning Agency water and land projects were transferred to the Department of Administration and education projects were transferred to the Department of Education.

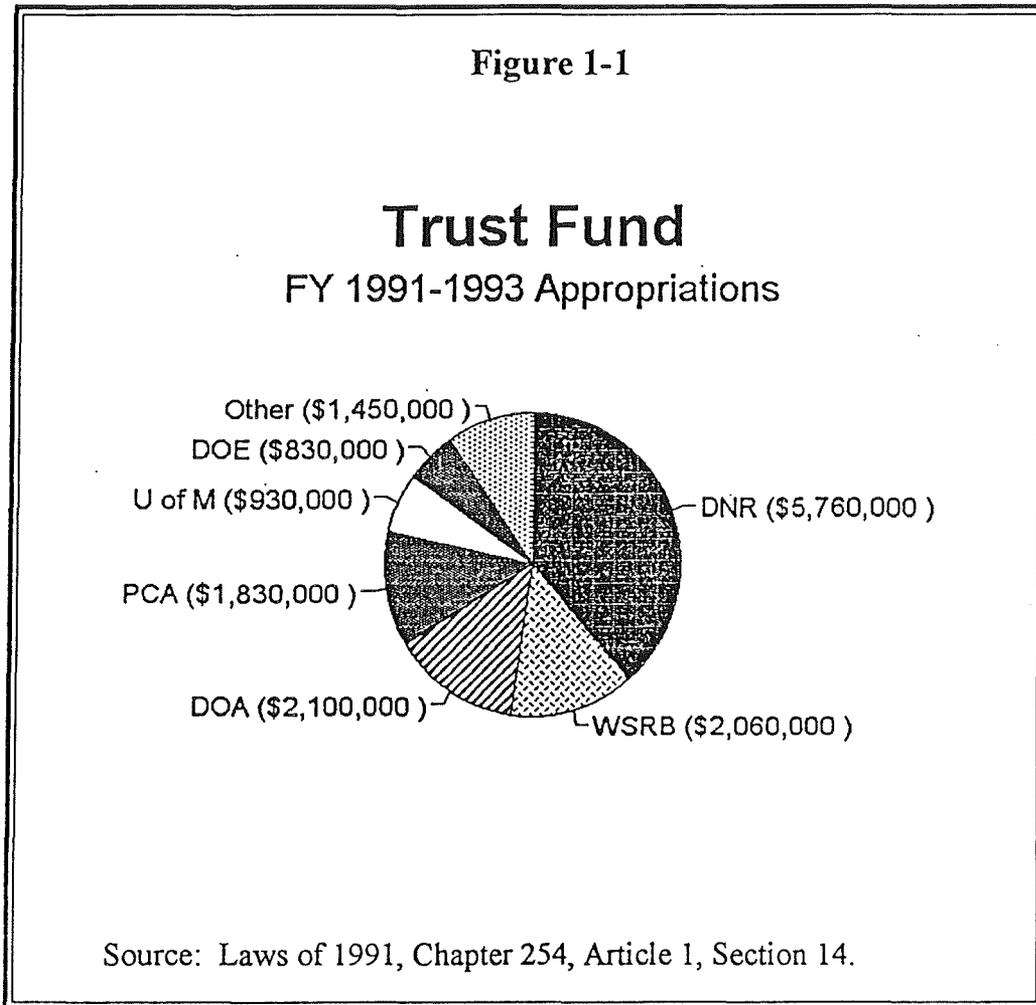
Note 3: These appropriations were subsequently canceled, when required match was not provided.

Note 4: These appropriations were combined into the environmental education project.

Source: Laws of 1991, Chapter 254, Article 1, Section 14.

## Environment and Natural Resources Trust Fund

We examined the first 18 months of financial activity for a sample of projects funded for the 1991-1993 biennium. State agencies receiving trust fund appropriations are responsible for administering approved projects and monitoring flow-through grants to other entities. Figure 1-1 shows the level of funding received by the various agencies for the 1991-1993 biennium.



As a condition of acceptance of trust fund appropriations, agencies must submit a work program and semiannual progress reports to LCMR. As provided in Minn. Stat. Section 116P.05, LCMR must approve the work program before an agency can spend trust fund appropriations.

In Chapters 2 through 4, we discuss our specific conclusions on the projects reviewed at the Department of Natural Resources, Board of Water and Soil Resources, and the Department of Education, respectively.

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## Chapter 2. Department of Natural Resources Projects

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### Chapter Conclusions

*We question certain expenditures for three of the four projects reviewed at the Department of Natural Resources. The department inappropriately charged \$44,091 in lump sum employee achievement awards to the groundwater sensitivity mapping project. In addition, the propriety of certain capital expenditures is questionable. Also, the department charged classified employee salaries to two projects in violation of statutory requirements.*

---

The Department of Natural Resources had 16 trust fund projects funded from \$5,760,000 in appropriations and \$35,000 in grant receipts. As of December 31, 1992, expenditures for these projects totalled \$3,140,698. Three projects did not have any expenditures as of December 31, 1992. We tested expenditures for four projects administered by the department, with expenditures totaling \$1,716,017.

### Groundwater Sensitivity Mapping

This appropriation is for groundwater sensitivity mapping, including contract drilling and geophysics, performing and interpreting aquifer tests, hydrologic monitoring, and collecting water level data.

Table 2-1  
Groundwater Sensitivity Mapping  
Financial Status as of December 31, 1992

Appropriation Amount	<u>\$600,000</u>
Expenditures:	
Classified Salaries	\$ 44,091
Unclassified Salaries	210,797
Part-time Salaries	16,074
Fixed Assets	51,483
Supplies	11,527
Other	<u>72,465</u>
Total Expenditures	<u>\$406,437</u>
Unexpended Appropriation	<u>\$193,563</u>

Source: Statewide Accounting System accounting reports and detailed transactions as of December 31, 1992.

## Environment and Natural Resources Trust Fund

### 1. The Department of Natural Resources charged inappropriate salary expenditures to the trust fund project.

The department charged 34 employee lump sum achievement awards to the groundwater sensitivity mapping project, even though the affected staff did not work on the project. Individual awards, including related fringe benefits, ranged from \$1,145 to \$1,812. The awards, which totalled \$44,091, were for performance during fiscal year 1991. The department paid the awards in January 1992. The staff worked in the waters division but not on the trust fund project. The department paid the employees' regular salaries from the General Fund.

#### *Recommendation*

- *The Department of Natural Resources should reimburse the trust fund for the \$44,091 in inappropriate expenditures.*

### 2. The propriety of certain capital expenditures is questionable.

The Department of Natural Resources purchased two minivans, at a cost of \$25,605, and various computers, at a cost of \$25,879, from project funds. Although we believe that the department used the vehicles and equipment on project activities, we have various questions about the transactions. LCMR program guidelines and the work plans did not specifically address the allowability of capital expenditures for trust fund projects. Appropriate disposition of capital equipment at the project's completion is a concern. It is unclear whether equipment purchased with trust fund monies becomes the property of the department purchasing the equipment, or if the project can recover the remaining value of the assets from other sources.

In addition, we question whether the project obtained sufficient value from the user fees it paid to the department's fleet management program. As of December 31, 1992, the project spent over \$2,300 on fleet management fees for the two minivans for four months activity. Fleet management records show that for the period June 1992 through September 1993, the project paid \$11,200 in usage fees. Because the project had purchased its vehicles outright, it was in a position to benefit only from the maintenance services of the program, which amounted to approximately \$2,000 during the 16 month period. However, the fleet management fees are structured to recoup both capital and maintenance costs from vehicle users. It has been a cost effective method for the department to retain its vehicle fleet on a long-term basis. However, after purchasing its own vehicles, a short-term project, such as the ground water sensitivity monitoring, was not able to obtain full value from participating in the fleet management program.

The appropriate means of obtaining fixed assets is a concern for short term projects. There are various options, including purchasing or leasing needed equipment. Departments must determine the most cost efficient method of obtaining required assets. In addition, they must ensure that an individual project only incurs costs which represent its share of the asset's usage.

## Environment and Natural Resources Trust Fund

### *Recommendation*

- *The department should work with LCMR to determine an equitable share of capital costs financed with trust fund moneys.*

## Environmental Education Program

The purpose of this project is to complete a long term plan for the development and coordination of environmental learning centers.

**Table 2-2**  
**Environmental Education Program**  
**Financial Status as of December 31, 1992**

Appropriation Amount	\$60,000
Expenditures:	
Classified Salaries	\$13,720
Part-time Salaries	24,183
Rent	6,342
Professional/Technical Services	6,000
Other	<u>2,392</u>
Total Expenditures	<u>\$52,637</u>
Unexpended Appropriation	<u>\$ 7,363</u>

Source: Statewide Accounting System accounting reports and detailed transactions as of December 31, 1992.

### **3. The department did not strictly follow statutory requirements relating to the employment status of staff paid from trust fund moneys.**

The Department of Natural Resources used trust fund monies to pay three classified employees for work on the environmental education project, contrary to statutory requirements. The employees were regular full time departmental employees in the planning office. The department allocated salary charges of \$13,720 based on an estimate of time the employees spent on the project. The department transferred the salary charges from the General Fund, the regular funding source for these employees. The department used current staff to perform these duties rather than hiring new unclassified employees.

## Environment and Natural Resources Trust Fund

Minn. Stat. Section 116P.09, Subd. 4, provides:

persons who are employed by a state agency to work on a project and are paid by an appropriation from the trust fund or Minnesota future resources 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 intent of this provision is to ensure that agencies do not have permanent classified employees on staff after a project has ended. Some agencies believe it may be more cost effective to have current staff work a portion of their time on trust fund projects rather than hiring new staff. The department believes the statutory provision applies only to new staff hired for the project and not to all staff charged to the appropriation.

### *Recommendations*

- *The Department of Natural Resources should work with LCMR to modify statutory personnel requirements to provide more flexibility for part-time employment.*
- *The department should allocate payroll expenditures based on actual hours worked on individual projects.*

## Minnesota County Biological Survey

The purpose of this project is to continue the biological survey in Minnesota counties. The survey began in 1987 in response to the need to determine the status of biological diversity in the state.

Appropriation Amount	\$1,000,000
Expenditures:	
Classified Salaries	\$ 18,180
Unclassified Salaries	477,991
Other Payroll	22,087
Other	<u>64,111</u>
Total Expenditures	<u>\$582,369</u>
Unexpended Appropriation	<u>\$417,631</u>

Source: Statewide Accounting System accounting reports and detailed transactions as of December 31, 1992.

## Environment and Natural Resources Trust Fund

4. The department did not strictly follow statutory requirements relating to the employment status of staff paid from trust fund moneys.

The department funded a portion of the cost of two classified employees from the trust fund project. The costs totalled \$18,180 and included 25 percent of the salary of a computer programmer and 50 percent of the salary of a botanist. As discussed previously, Minn. Stat. Section 116P.09, Subd. 4 provides that persons paid by an appropriation from the trust fund should be in the unclassified service. Again, the department wanted to use currently employed staff on the project rather than hire new unclassified employees for a short time period.

### *Recommendations*

- *The Department of Natural Resources should work with LCMR to revise statutory personnel requirements to provide more flexibility for part-time employment.*
- *The department should allocate payroll expenditures based on actual hours worked on individual projects.*

## Rails-to-Trails

The purpose of this project is to acquire and develop trails on unused railroad property in northern Minnesota.

**Table 2-4  
Rails-to-Trails  
Financial Status as of December 31, 1992**

Appropriation Amount	<u>\$1,000,000</u>
Expenditures:	
Land Purchase	650,000
Other	<u>24,574</u>
Total Expenditures	<u>\$ 674,574</u>
Unexpended Appropriation	<u>\$ 375,426</u>

Source: Statewide Accounting System accounting reports and detailed transactions as of December 31, 1992.

Our review of activity through December 31, 1992 showed that costs were in compliance with the budget plan.

# Environment and Natural Resources Trust Fund

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## Chapter 3. Board of Water and Soil Resources Projects

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### Chapter Conclusions

*We found problems with three of the six projects administered by the Board of Water and Soil Resources. The board did not adequately document the grantee selection process and did not monitor grantee expenditures for two projects. In addition, we questioned whether expenditures totaling \$46,756 complied with a project's objectives.*

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The Board of Water and Soil Resources received funding of \$2,060,000 for six trust fund projects for the 1991-1993 biennium. As of December 31, 1992, it had spent \$976,475 on these projects.

### Well Sealing Cost Sharing Grants

This project provides grants to counties for sharing the cost of sealing wells. It accelerates work started under the Groundwater Protection Act of 1989.

**Table 3-1**  
**Well Sealing Cost Sharing Grants**  
**Financial Status as of December 31, 1992**

Appropriation Amount	\$750,000
Grant Expenditures	<u>665,000</u>
Unexpended Appropriation	<u>\$ 85,000</u>

Source: Statewide Accounting System accounting reports and detailed transactions as of December 31, 1992

5. **The Board of Water and Soil Resources did not appropriately document the review process for project applications received after the initial review period.**

The board awarded \$233,000 in grants without completing the required review process. The work plan provides that an interagency advisory group is to evaluate proposals. The committee met and selected first round projects totalling \$517,000. However, we found no evidence that the advisory committee reviewed second round project applications for three of the four

## Environment and Natural Resources Trust Fund

counties tested. The committee decided not to meet as a group to evaluate these applications. Instead, the program coordinator forwarded copies of the applications to committee members. The coordinator said he received responses from the members and tried to put notes in the county file indicating member comments. However, we found no evidence of this review for three projects.

The advisory committee included representatives from the Board of Water and Soil Resources, Pollution Control Agency, Department of Natural Resources, Department of Health and the Minnesota Geological Society. Use of a committee provides more independence and impartiality in the selection process.

### *Recommendation*

- *For future projects, the Board of Water and Soil Resources should document required advisory group reviews of all grant applications.*

### **6. The Board of Water and Soil Resources has not exercised adequate oversight of the well sealing project grants.**

The board has not used effective cash management techniques in administering the well sealing project grants. During the audit period, the board disbursed \$665,000 to 37 counties. As provided in the project guidelines, it paid the full grant amount at the beginning of the projects, after the parties signed the grant agreements. The grant funds were available for up to two years from the effective date of the grant agreements. The board did not actively monitor the cash flow needs of these counties. By paying grant funds on an advance basis, the trust fund loses investment income on the monies. We think it would be more appropriate to provide funding on an as needed basis, at least for grants over a specified minimum amount.

Also, counties have not submitted required reports to the board. The grant agreements require each county to submit an annual status report, audit reports, and copies of sealed well reports filed by contractors. The board has a responsibility to followup on delinquent reports. In addition, staff should review the reports to ensure the projects are proceeding as anticipated, expenditures are appropriate, and grantees provide required match.

### *Recommendations*

- *The Board of Water and Soil Resources should revise its cash management procedures for grant programs, making payments on an as needed basis.*
- *The board should ensure that grantees submit required reports on a timely basis.*

## Environment and Natural Resources Trust Fund

### Erosion Control Cost Sharing Grants

This project funds grants to share the cost of conservation practices to control erosion and protect water quality including water quality practices that divert water from sinkholes.

Appropriation Amount	\$250,000
Expenditures:	
Grants	\$121,313
Other	<u>2,028</u>
Total Expenditures	<u>\$123,341</u>
Unexpended Appropriation	<u>\$126,659</u>

Source: Statewide Accounting System accounting reports and detailed transactions as of December 31, 1992.

**7. The Board of Water and Soil Resources did not have appropriate project selection controls.**

The Board of Water and Soil Resources did not follow a formal approval process for soil and water conservation district applications for the erosion control sinkhole project. Generally, one staff person approved the grants. The program coordinator forwarded copies of the applications to a panel of hydrologists for review. However, they did not respond back with comments. According to the work plan, the board was to use a panel of hydrologists to develop application criteria and screen and rank the accepted applications.

*Recommendation*

- *The Board of Water and Soil Resources should follow required procedures for review of project applications.*

### Conservation Reserve Easements

The purpose of this project is to acquire perpetual easements with priority for wetland areas, to enhance wildlife habitat, control erosion and improve water quality.

## Environment and Natural Resources Trust Fund

As of December 31, 1992, the board completed most paperwork for the easement acquisition, but it had not made any easement payments. The landowners may elect payment in one lump sum or up to four equal annual installments. Easement obligations totalled \$441,630.

**Table 3-3**  
**Conservation Reserve Easements**  
**Financial Status as of December 31, 1992**

Appropriation Amount	\$600,000
Expenditures:	
Unclassified Salaries	\$ 57,961
Legal Fees	46,756
Other	<u>1,525</u>
Total Expenditures	<u>\$106,242</u>
Unexpended Appropriation	<u>\$493,758</u>

Source: Statewide Accounting System accounting reports and detailed transactions as of December 31, 1992.

**8. The propriety of certain costs charged to the conservation reserve easements project is questionable.**

The Board of Water and Soil Resources paid \$46,756 in legal fees from the easements project although the work plan does not discuss this cost. The board entered into an agreement with the Office of the Attorney General for legal services. The board agreed to fund 75 percent of salary and fringe benefits for an attorney to assist in implementation of resource conservation programs, including specifically the Reinvest in Minnesota (RIM) program. The Department of Natural Resources agreed to pay the remaining 25 percent of these attorney costs.

The board allocated all of its share of the legal fees to the trust fund project even though the work at times also related to the Reinvest In Minnesota program, which receives funding from bond proceeds. Normally, when services benefit more than one program, costs should be allocated to the various funding sources.

The project work plan provided that trust fund monies for the 1991-1993 biennium would fund actual easement acquisitions (\$479,000 budget) and an easement programs coordinator (\$121,000 budget). The appropriation law and work plan do not discuss legal fees. In 1993, the legislature added a provision to the project's subsequent appropriation prohibiting administrative cost charges to the project.

## Environment and Natural Resources Trust Fund

### Recommendation

- *The Board of Water and Soil Resources should obtain approval from LCMR to charge legal fees to this project, or transfer the costs to another appropriate funding source.*

### Easement Acquisition on Restored Lands

The purpose of this project is to contract with the U.S. Fish and Wildlife Service and the Izaak Walton League to acquire permanent easements on federally restored lands. The Fish and Wildlife Service and the League are to provide required match.

Appropriation Amount	\$400,000
Expenditures	<u>0</u>
Unexpended Appropriation	<u>\$400,000</u>

Source: Statewide Accounting System accounting reports and detailed transactions as of December 31, 1992

The board had made no expenditures as of December 31, 1992. However, it had written agreements with 19 landowners. Obligations totalled \$399,760. Expenditures could take up to four years to complete.

### Cannon River Watershed Grants

This project is to provide research and demonstration grants to counties consistent with the comprehensive local water management program as part of the Cannon River watershed protection program.

Appropriation Amount	\$60,000
Grant Expenditures	<u>60,000</u>
Unliquidated Appropriation	<u>\$ 0</u>

Source: Statewide Accounting System accounting reports and detailed transactions as of December 31, 1992.

## Environment and Natural Resources Trust Fund

Our review of activity through December 31, 1992 showed that costs were in compliance with the budget plan.

### River Basin Water Quality Monitoring

This is a Pollution Control Agency project to conduct assessments of non-point source pollution in the Minnesota River Basin. PCA granted a portion of the appropriation to the board. This portion funds a part time employee at the board who serves as project coordinator.

**Table 3-6**  
**River Basin Water Quality Monitoring**  
**Financial Status as of December 31, 1992**

Grant Receipts	\$ 32,600
Expenditures:	
Part-time Salaries	\$ 21,165
Other	<u>727</u>
Total Expenditures	<u>\$21,892</u>
Unexpended Grant Receipts	<u>\$10,708</u>

Source: Statewide Accounting System accounting reports and detailed transactions as of December 31, 1992.

Our review of activity through December 31, 1992 showed that costs were in compliance with the budget plan.

# Environment and Natural Resources Trust Fund

## Chapter 4. Department of Education Projects

### Chapter Conclusions:

*We have concerns about the two trust fund projects administered by the Department of Education. We believe the department did not exercise adequate oversight for the grant portion of the projects. In addition, we question whether selected expenditures complied with statutory and administrative guidelines for the two projects.*

The Department of Education had two projects, incorporating several individual appropriations, for the 1991-1993 biennium. The Legislature allocated \$830,000 for the projects. As of December 31, 1992, the department had spent \$564,049.

### Environmental Education Program

This project has several environmental education objectives, including development of a statewide environmental education plan. The statewide plan will integrate the plans, strategies, and policies of the Department of Education, post-secondary institutions, the Department of Natural Resources and other deliverers of environmental education.

**Table 4-1**  
**Environmental Education Program**  
**Financial Status as of December 31, 1992**

Appropriation Amount	<u>\$730,000</u>
Expenditures:	
Classified Salaries	\$ 19,461
Unclassified Salaries	69,110
Other Payroll	83,967
Professional Technical Services	37,236
Purchased Services	7,677
Grants	216,000
Other	<u>30,598</u>
Total Expenditures	<u>\$464,049</u>
Unexpended Appropriation	<u>\$265,951</u>

Source: Statewide Accounting System accounting reports and detailed transactions as of December 31, 1992.

## Environment and Natural Resources Trust Fund

### 9. The Department of Education has not exercised adequate oversight for environmental education grants to nonstate entities.

The Department of Education has not been monitoring the pass-through grants to the Audubon Center (\$85,000 appropriation; \$81,000 expenditures), the Community Education Association (\$30,000 appropriation; \$25,000 expenditures) and the pilot school districts who are developing new curriculum (\$110,000 expenditures). The department paid funds to the grantees based on staggered payment dates established in the grant agreement. However, the payments were not based on costs incurred. Once the department paid the grant funds, it did not monitor whether expenditures were appropriate. It did not require grantees to submit expenditure status reports. The grantees were required to submit semiannual project status reports directly to LCMR. However, we believe the department, as recipient of the appropriation, has a responsibility to monitor grantee performance. To help ensure that projects are progressing as anticipated, the department should require grantees to periodically report on expenditures. Staff should review the reports for compliance with established budgetary requirements and program guidelines.

#### *Recommendation*

- *The Department of Education should establish a process to review grantee expenditures for propriety.*

### 10. Selected project expenditures did not comply with statutory or administrative procedures.

Contrary to statutory provisions, the department partially funded a classified employee from the environmental education plan project. The department charged one-third of an administrative secretary's salary to the trust fund account. Minn. Stat. Section 116P.09, Subd. 4 provides that persons paid by an appropriation from the trust fund should be in the unclassified service. Rather than hire another employee to perform secretarial duties, the department funded a portion of a current classified employee's salary from the project.

Also, the department exceeded contract limits by \$405 when paying a consultant for travel expenses. The department's spending plan allows honorarium payments not to exceed \$5,000 per vendor, including expenses. The department paid a consultant for actual expenses, which exceeded the honorarium contract limit. The department subsequently hired the consultant as project manager.

#### *Recommendations*

- *The Department of Education should work with LCMR to modify statutory personnel requirements to provide more flexibility for part-time employment.*
- *The department should ensure all payments comply with contract provisions.*

## Environment and Natural Resources Trust Fund

### Video Education Research and Demonstration Project

The purpose of this project is to develop a video education demonstration project and a model for a statewide video environmental education communication network. As provided in the appropriation, the department granted project funds to Twin Cities Public Television.

Appropriation Amount	\$100,000
Grant Expenditures	(100,000)
Unexpended Appropriation	\$ 0

Source: Statewide Accounting System accounting reports and detailed transactions as of December 31, 1992.

#### 11. The Department of Education did not adequately monitor the grant to Twin Cities Public Television.

The department has not established appropriate cash management and expenditure control procedures for this grant. For example, the department paid the grantee \$100,000 on August 15, 1991. However, the grantee reported expenses totaling only \$27,320 as of December 16, 1991. This is poor cash management for the state. The state could invest excess trust fund monies until needed for expenditure by the grantee.

The grant agreement states that Twin Cities Public Television will report to the department. The grantee submitted a financial report and summary of progress in December, 1991. The report states that the grantee will submit quarterly reports. However, the department received no further reports.

#### *Recommendations*

- *The Department of Education should revise its cash management procedures for grant programs, making payments on an as needed basis.*
- *The department should ensure that grantees submit appropriate expenditure reports on a timely basis.*

**Environment and Natural Resources Trust Fund**

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STATE OF  
**MINNESOTA**  
DEPARTMENT OF NATURAL RESOURCES

500 LAFAYETTE ROAD, ST. PAUL, MINNESOTA 55155-4037

OFFICE OF THE  
COMMISSIONER

DNR INFORMATION  
(612) 296-6157

November 8, 1993

James Nobles, Legislative Auditor  
Office of the Legislative Auditor  
1st Floor Centennial Building  
658 Cedar Street  
St. Paul, Minnesota 55155

Dear Mr. Nobles:

The purpose of this letter is to respond to the audit report of the Environmental and Natural Resources' Trust Fund programs administered by the Department of Natural Resources' for the period July 1, 1991 through December 30, 1992.

**GROUNDWATER SENSITIVITY MAPPING**

Salary Expenditures

The Division of Waters purchased a seismograph, from general operations funding, before project monies were available. By purchasing this equipment early they were able to take full advantage of the first field season of this project. Achievement awards that would have been paid from general operations were paid from the project monies.

This expenditure may have been inappropriate from an accounting standpoint and this is not the usual way we do business. However, the decision to accelerate the project was, we believe, appropriate from a resource management perspective in that it directly benefitted trust fund projects. In fact significant general operations monies have been used to support this project.

Equipment Purchases

As stated, the vehicles were purchased and assessed a monthly fleet rate. In accordance with fleet policy, any expansion to the fleet must be initially financed by the unit; the monthly rates are intended to cover the replacement of the vehicles. We concur that handling equipment purchases for short term projects presents special problems. However, given the magnitude of our operations it is unrealistic to maintain multiple administrative "infrastructures".

James Nobles  
Legislative Auditor  
November 8, 1993  
Page 2

Additionally, we do not view the Groundwater Sensitivity program as short term; this two year appropriation represents a segment of a ten year project. Viewed in the long term context, the equipment purchases are entirely appropriate.

**ENVIRONMENTAL EDUCATION PROGRAM**

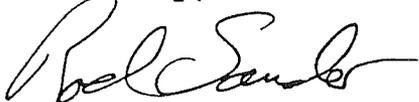
The salary costs of several current staff were allocated to this project. This practice occurs where it is more efficient and cost effective to use current employees rather than hire new staff. The audit states that the intent of the statute is to ensure that staff is hired only for the duration of the project funding. The charging of salary costs of existing employees does not violate this principal.

**MINNESOTA COUNTY BIOLOGICAL SURVEY**

Again, we charged salary costs of existing employees rather than hiring new unclassified employees for a short term project. This practice is most cost efficient and does not violate the intent of the statute.

It is apparent that our interpretation of the statute on this matter differs and therefore it may be helpful to get it clarified.

Sincerely,



Rodney W. Sando  
Commissioner

cc: Gene Gere  
Al Yozamp  
John Bouthilet  
Kent Lokkesmoe  
Bill Becker  
Dick Hassinger



November 10, 1993

Mr. James Nobles, Legislative Auditor  
Office of Legislative Auditor  
Centennial Office Building  
St. Paul, MN 55155

Dear Mr. Nobles:

We have received the audit of the six projects we administered under the Environment and Natural Resource Trust Fund for FY92 and FY93. Thank you for the opportunity to comment on those findings.

**Recommendation #5 - The BWSR did not appropriately document the review process for project applications received after the initial review period.**

*Recommendations*

- *For future projects, the BWSR should document required advisory group reviews of all grant applications.*

**Response:**

- The advisory group was heavily involved in evaluating applications. Meetings were not formal and often were conducted over the phone with individual members or the group on a conference call basis. Recommendations and evaluations of the advisory group was utilized. In the future, we will attempt to formalize these meetings, or at a minimum, document their finding and recommendations.

**Recommendation # 6 - The BWSR has not exercised adequate oversight of the well sealing project grants.**

*Recommendations*

- *The BWSR should revise its cash management procedures for grant programs making payment on an as needed basis.*
- *The BWSR should ensure that grantees submit required reports on a timely basis.*

**Response:**

- The technique of grant advance payments versus reimbursement payments continues to be a point of debate. In most cases, one method is more appropriate than the other. One of the goals of BWSR is to empower LGU's (Local Governmental Units) to act on environmental concerns, rather than react to them. One proven method of doing that is to get the resources (cash and technical support) to them as soon as possible. Working on a reimbursement basis would greatly increase costs in the administrative area.

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- We made great efforts to ensure timely reporting from the counties. In fact, 91% of the recipients met the requirements. Only 4 of 45 the counties were delinquent at the time of this audit. One of the projects started late and had nothing to report at the time of the audit. We will continue to monitor those projects outstanding and continue sending reminder letters as we have done in the past.

**Recommendation #7 - The BWSR did not have appropriate project selection controls.**

*Recommendations*

- *The BWSR should follow required procedures for review of project applications.*

**Response:**

- Basically, this recommendation and our response are stated under #5. We did follow the work plan and a panel of hydrologists was utilized to develop criteria and screen and rank applications. While there was only one formal meeting of the panel, there were many informal meetings and discussions. The BWSR did approve the initial allocations and not one staff person as stated. In the future, we will attempt to formalize and document our procedures and findings in an acceptable form.

**Recommendation #8 - The propriety of certain costs charged to the conservation reserve easement project is questionable.**

*Recommendations*

- *The BWSR should obtain approval from LCMR to charge legal fees to this project, or transfer the costs to another appropriate funding source.*

**Response:**

- While it is true the approved work plan did not list legal fees, it did not exclude them either. There are many components of administrative costs in acquiring RIM Easements. Professional Services necessary include attorneys, Realty Specialists, Accounting Personnel and Engineers. We did not charge any of these salary costs to this particular RIM project. They were paid from general and bond fund sources. While all of the legal fees were charged here, the total chargeable administrative costs would have been much greater. In the future, work plans will be more explicit in chargeable costs and we will attempt to allocate all costs to all components of a program.

Thank you again for the opportunity to respond to your audit findings. We look forward to audits of all our program areas to ensure that legislative and agency goals are being achieved in an acceptable, efficient manner. If you have any further questions, contact me at your convenience.

Sincerely,

Ron Harnack  
Executive Director

# MDE

MINNESOTA DEPARTMENT OF  
EDUCATION

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Capitol Square 550 Cedar Street  
Saint Paul, Minnesota 55101 612/296-6104

November 9, 1993

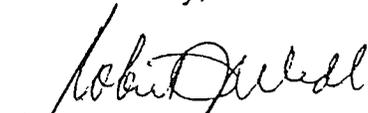
Mr. James Nobles  
Legislative Auditor  
Office of the Legislative Auditor  
Centennial Building  
St. Paul, MN 55155

Dear Mr. Nobles:

Enclosed is the Department of Education's written response to the legislative audit of the Environmental and Natural Resources Trust Fund projects administered by the Department of Education for the period July 1, 1991 through June 30, 1992.

If you have any questions regarding the contents of this response, please contact me at 296-2358.

Sincerely,

  
for Linda Powell  
Commissioner  
Minnesota Department of Education

LP:MP:do

Enclosure



**Minnesota Department of Education's Response  
to the  
Legislative Audit of Environmental and Natural Resources  
Trust Fund Project**

**Response to #9. The Department of Education has not exercised adequate oversight for environmental education grants to nonstate entities.**

- a. At the onset of these projects in July 1991, the Department's pass through grants manager and two other Department administrators were directed by the LCMR staff that the Department of Education was to provide administrative pass-through services to the grantees for the LCMR staff. Department staff were directly told they were not to act as monitors and/or enforcers. Department staff followed these directions.
- b. According to the directions from the LCMR Approved Workplan, the manager required the .5a grant projects to submit a written financial report and summary of progress every six months. Those reports were combined (State Plan, Model Curriculum, DNR Study, Community Education and Audubon Center) into a single report format as specified by LCMR staff and submitted to their offices.

In addition, during the period July 1, 1991 and June 30, 1992, the group of five project managers and the Department's grants manager met quarterly in three separate meetings of three to four hours with LCMR staff present to report on project progress as well as to assure that the various projects efforts were able to integrate into the state plan project.

The four additional grants to which the Department provided pass through services were instructed by the LCMR staff to submit their project progress reports directly to their offices.

- c. The Department of Education disagrees with the auditor's report statement that the pilot sites were "not monitored". From January, 1991 through May and in July. The pilot site teams met monthly for a day with the Department's project manager to report progress, receive specific training in curriculum and assessment, and to discuss concerns, issues, etc. Further, each site was directed to provide a six-month progress report to the Department. Finally, an outside evaluator conducted on-location evaluations at each site and wrote a report to the Department. During the last six months of the project, the project manager made site visits, conducted a two-day site meeting and compiled and published a curriculum model from the pilot sites' work. This was the scope of the "monitoring" the Department promised to do in its approved work plan.

- d. Finally, the Department of Education regularly applies a process to review grantee expenditures for propriety and serves as a monitor when required to do so.

**Response to #10. Selected project expenditures did not comply with statutory or administrative procedures.**

- a. The Department of Education agrees that we should work with the LCMR to modify statutory personnel requirements to provide more flexibility for part-time employment.
- b. A consultant's travel expenses exceeded the honorarium limits by \$405 because of direction from the Office of Environmental Education, Advisory Board to conduct additional meetings around the state. When submitting these expenditures for payment in December, the manager included an acceptable written justification for the additional cost. As a result of the consultant's work on this project, the consultant was hired as a project manager the next month and continued in that role until June 30, 1993.

**Response to #11. The Department of Education did not adequately monitor the grant to Twin Cities Public Television.**

- a. The Department of Education employs cash management procedures for all of its grants programs, making payments based on evidence of results as specified by the grant agreement. However, in this round of LCMR grants, Department staff was instructed by the LCMR staff that we were a pass-through agency, not a monitoring and enforcing agency. In serving as a pass-through agency for LCMR projects, the Department will work directly with LCMR staff to clarify the expectations of providing pass-through services to ensure fiscal accountability.
- b. Of the nine LCMR projects managed by the Department of Education, four projects including Twin Cities Public Television sent required progress reports directly to LCMR offices. We received no feedback on any of these reports.

# Legislative Commission on Minnesota Resources

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JOHN R. VELIN  
Director

November 23, 1993

Commissioner Rod Sando  
Department of Natural Resources  
500 Lafayette Road  
St. Paul, Minnesota 55155

Dear Commissioner Sando:

RE: Legislative Audit - Trust Fund 1991

Before delving into the other aspects of the Audit report, I wish to deal squarely with the Achievement awards issue. Please reimburse the Trust Fund immediately for the \$44,091 paid from the Trust Fund appropriation in ML 91 Ch. 254, Art. I, Sec. 14.

We expect a certain amount of regular budget support for LCMR recommended programs. This has always been the case. I believe you understand and appreciate this fact, and thus continue to accept appropriations from the Trust Fund and Minnesota Future Resources Fund. Certainly in many cases the regular budget projects and LCMR projects enjoy a symbiotic relationship. The closeness of the relationship should not, however, impede a rigorous execution of the appropriation laws.

The Trust Fund popularity emphasizes the need for sensitivity to appropriateness of expenditures. While I feel that all expenditures of state money should be above reproach, it is especially important for the Trust Fund to go one step further and avoid any action that even raises the suspicion of impropriety.

There is significant criticism abroad regarding the alleged favoritism of LCMR toward state agencies in making allocations from the Trust Fund. I believe that without expeditious solutions to the problems raised, that criticism will gain momentum, to the detriment of many good projects.

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Page 2  
November 23, 1993  
Commissioner Rodney Sando

Please complete the reimbursement and send something to the LCMR office that demonstrates that action. Thanks for your prompt attention to this matter. The LCMR staff will be in touch regarding other findings of the report.

Sincerely,

A handwritten signature in cursive script, appearing to read "Phyllis Kahn".

Representative Phyllis Kahn,  
Chair LCMR

cc: LCMR Members  
Senator Roger Moe  
Representative Irv Anderson

# Legislative Commission on Minnesota Resources

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JOHN R. VELIN  
Director

November 23, 1993

TO: LCMR Members

FROM: Representative Phyllis Kahn, Chair *PK*

Subject: Legislative Auditor Report on 1991 Trust Fund appropriations

1. I want you to know what we have done already, what we are working on and some expectations in terms of outcome and timing.

## 2. ACTION

Today I directed a letter to DNR requesting they reimburse the Trust Fund immediately for the \$44,091 in achievement awards paid to staff not working on the Ground Water Sensitivity project.

## 3. WORKING ON

LCMR was not the subject of the audit, so we have not yet investigated the problems raised. Staff will meet with appropriate people at the Auditor and state agencies to further explore the specific problems as well as to understand the systemic problems. It appears about 10% of the appropriation amount examined raised a concern.

The unclassified staff problem seems thorny and perhaps a revision to the statute is in order. The basic provision has been in place since the 60's when personnel management was quite different. Clearly the underlying purpose continues, that is, to avoid creation of long term employment obligations for the state. However, some provision should be made to use the most appropriate people for a task even from among existing employees, consistent with the underlying purpose.

## 4. EXPECTATIONS

Staff will report to the Commission on actions taken and additional actions recommended. We may at that time ask the Auditor to explain the report to the LCMR and comment on the actions taken or recommendations developed by staff

## 5. ACTIONS ALREADY IN PLACE

EXPENDITURE REVIEW. Several of the deficiencies deal with cash management and expenditure review on pass through projects. This was fixed in the '93 appropriations by requiring the agencies to "contract with..." the recipient and further by making those contracts on a reimbursement basis. This assures that no cash flows out until a performance is achieved. Dual purposes are served:

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Page 2  
November 23, 1993  
LCMR Members

retention of cash for investment earnings, and expenditure review for compliance prior to liquidation. So far in this biennium, this is working well.

CAPITAL EQUIPMENT. For the '95 RFP just released, the items eligible for expenditure are spelled out and the proposals must include a justification for equipment purchases as well as disposition post project in addition to the reimbursement feature described above.

6. I hope to schedule a meeting before the end of the year at which we can debate the merits of the staff suggested actions.

cc: Senator Roger Moe  
Representative Irv Anderson  
Jim Reinholdz, House Appropriations Committee  
Greg Knopff, Senate Finance

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