1995 Project Abstract
For the Period Ending June 30, 1997
This project was supported by Future Resources Fund
TITLE: Upper Mississippi River Adaptive Environmental Assessment
PROJECT MANAGER: Steve Light
ORGANIZATION: Minnesota Department of Natural Resources
WEB SITE ADDRESS: not applicable
LEGAL CITATION: ML 96, CHAP. 407,SEC.8, SUBD.5

Statement of Objectives: The AEA project for the Upper Mississippi River has two objectives: Phase I -- develop an integrated, science-based understanding of the river as a natural system; and Phase II -- explore alternative ways of reconciling the competing demands for the river resource. For the LCMR workprogram, a computer simulation model was developed and a second workshop conducted for the purpose of establishing a more integrated understanding of the river system and the competing demands for its use. A report evaluating the second workshop was prepared. In addition, the computer modeling team report and future modeling needs were incorporated into a comprehensive Phase I Report. The computer simulation model, the workshop participant evaluation report, and the Phase I Report are tangible products delivered as outcomes from this workprogram. The results of the activities conducted under this workprogram are the basis for Phase II (scenario development) in the process, which will occur after July 1, 1997 and will be funded from sources other than LCMR.

Overall Project Results: The Adaptive Environmental Assessment Phase I project has successfully established a regional forum to search for more sustainable futures for the Upper Mississippi River. Having developed a dynamic description of the river, serious exploration of this emerging integrated understanding of the river as source of economic and ecological benefit was undertaken. The development of a computer simulation model was used to engage stakeholders, scientists, and managers in a science-based dialogue. People talked about what values and functions of the river were important to them. These thoughts were turned into variables for the model. Then, people were asked how their concerns were related to what concerned others (ex. How does navigation relate to fish and wildlife habitat?). What resulted was a dynamic description of the river in the form of a user friendly computer package (Visual Basic with graphic interface).

Project Results Use and Dissemination. Ideas lead change. If you want to influence the future, you have to have ideas about the future. How you think about the future determines what you think about the future and what you ultimately do about the future. The Adaptive Environmental Assessment project is the only science-based systems-level effort on the Upper Mississippi River designed specifically to find new ways to reconcile economic and environmental objectives for the future. If the recent experiences in managing the Everglades and Columbia River Basin are instructive, a region without thoughtfully and thoroughly considered alternatives for its resource future is destined for political discord. Leading with ideas is extremely difficult. It is hard to discern options; it is harder still to unlearn traditional ways of thinking. Minnesota has seized the initiative and is attempting to assist the people of the Upper Mississippi River in inventing a sustainable tomorrow while most efforts remain focused on perfecting today.

The Adaptive Environmental Assessment project seeks to be a market place of ideas where we can experiment with more sustainable ways of thinking and acting. Phase II scenario development will allow us to begin trying out ideas from diverse perspectives and cobbling them together as ecological-economic composites. In the process we teach ourselves and raise awareness and understanding among others. We know from experience with complex resource problems that substance and acceptance must be worked on together. Ideas must be talked out and debated. In that way we get not only a broad sense of what people are thinking, but even more concrete ideas get generated in the process. Our hope is that by the time the next phase (scenario development) of the project is finished, the ideas generated will be well known and changes in thinking and acting will already be on-going.

Date of Report: July 1, 1997
LCMR Final Work Program Update Report

Date of Workprogram Approval: April 24, 1996

Project Completion Date: June 30, 1997

LCMR Work Program 1996

I. Project Title: Upper Mississippi River Adaptive Environmental Assessment Project

Project Manager: Steve Light
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Total Biennial Project Budget: $LCMR: $57,000
$Balance (6/30/97) $00,000

A. Legal Citation: ML 1996, Chap. 407, Sec. 8, Subd. 5.

Appropriation Language: This appropriation is from the future resources fund to the commissioner of natural resources to assist the evaluation of the economic and environmental sustainability of the upper Mississippi river.

II. Project Summary and Results:

Context: Degradation of the Upper Mississippi River environment is accelerating as a result of changes society made to the river for navigation. The navigation system is vital to Minnesota's economy, as is the river's environmental values for water supply, hunting, fishing, recreation, tourism, aesthetics, and ecosystem health.

Description: The Upper Mississippi River Adaptive Environmental Assessment Project assembles existing information to allow previously competing interests to work together to evaluate environmental and economic changes and develop an increased understanding of ways in which the Upper Mississippi River can be managed for the long-term sustainability of both the environment and the river's economic uses. The project utilizes a series of workshops that bring together all of the river's varied interests and scientific disciplines, as well as a computer model that utilizes existing data about the river and its uses and provides the basis for "what if" analyses to predict alternative river futures if different

management approaches were undertaken. An initial scoping workshop was held prior to initiation of the portion of the project described in this workprogram.

Results: Under this workprogram, the computer model was developed and a second workshop conducted for the purpose of evaluating and refining this model. A report evaluating the second workshop was prepared. In addition, the computer modeling team report and future modeling needs were incorporated into Phase I Report. The workshop participant evaluation report and the Phase I Report are tangible products delivered as outcomes from this workprogram. The results of the activities conducted under this workprogram are the basis for the next phase in the process (scenario development), which will occur after July 1, 1997 and will be funded from sources other than LCMR.

List of Deliverables: The enclosures with this report constitute the deliverables associated with the LCMR workprogram. Enclosures include:

- Phase I Final Report
- AEA Models (on diskettes)
- User's Guide for AEA Models
- Evaluation of Report for Workshop 1
- Evaluation of Report for Workshop 2
- Financial Report on Phase I AEA

III. Final Report Summary and Significance of Project.

A. Summary. The Adaptive Environmental Assessment Phase I project has successfully established a regional forum to search for more sustainable futures for the Upper Mississippi River. Having developed a dynamic description of the river, serious exploration of this emerging integrated understanding of the river as source of economic and ecological benefit can be fully engaged. The development of a computer simulation model was used to involve stakeholders, scientists, and managers in a science-based dialogue. People talked about what values and functions of the river were important to them. These thoughts were turned into variables for the model. Then, people were asked how their concerns were related to what concerned others (ex. How does navigation relate to fish and wildlife habitat?). What resulted is a dynamic description of the river in the form of a user friendly computer package(Visual Basic with graphic interface).

B. Significance. Ideas lead change. If you want to influence the future, you have to have ideas about the future. How you think about the future determines what you think about the future and what you ultimately do about the future. The Adaptive Environmental Assessment project is the only science-based systems-level effort on the Upper Mississippi River designed specifically to find new ways to reconcile economic and environmental objectives for the future. If the recent experiences in managing the Everglades and Columbia River Basin are instructive, a region without thoughtfully and thoroughly considered alternatives

for its resource future is destined for political discord. Leading with ideas is extremely difficult. It is hard to discern options; it is harder still to unlearn traditional ways of thinking. Minnesota has seized the initiative and is attempting to assist the people of the Upper Mississippi River in inventing a sustainable tomorrow while most efforts remain focused on perfecting today.

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IV. OUTLINE OF PROJECT RESULTS:

A. Outline:

Task 1. Preliminary Model Development [Completed]

Budget: $30,000 Actual Expenditures: $27,258.89
Completion Date: August 1, 1996

The modeling team of Korman and Walters developed the spatial hydrology/sediment transport component of the model based upon a scope of work and discussions with the AEA steering committee. The interface between the pool and river system models was completed. Corps of Engineers data was incorporated.

Task 2 Review, Test Model [Completed]

Budget: $4,000 Actual Expenditures: $6,597.86
Completion Date: August 10, 1996

A meeting was held on August 8-9, 1996 to review the model components and structure. That meeting was attended by the modeling team and approximately 13 key local scientists and technical reviewers. Decisions made at that meeting served as the basis for the modeling team's subsequent work on operating rules and assumptions; display graphics and output; and interrelationships of economic, hydrologic, and vegetation components.

Task 3 Refine Model [Completed]

Budget:	$5,000	Actual Expenditures: $8,812.00
Other Sources:	$00.00	Actual Expenditures: $ 237.00
Completion Date:	November 30, 1996	

Based on guidance provided to the modeling team in a memo of August 30, 1996, Korman and Walters worked on numerous refinements to the model including incorporation of the economic model, modifications to the sediment transport model, and various "debugging refinements." In addition, a fisheries component was developed and a user's guide prepared.

Task 4 Adaptive Assessment Workshop [Completed]

Budget:	$26,000	Actual Expenditures: $11,531.25
Other Sources:	$13,000	Actual Expenditures: $11,482.18
Completion Date:	January 18, 1997 (Approved Amended Date)	

On January 15-17, 1997 a workshop was held at the Alverna Center in Winona, Minnesota. That workshop was attended by approximately 45 people including scientists, river users and stakeholders, government agency resource managers, and the modeling team. In addition to learning how the model works, participants discussed additional refinements to the model, identified uncertainties and data needs, and began the process of identifying policy and management scenarios for potential evaluation with the model, including indicators and evaluators of those scenarios.

Task 5 Evaluation Report [Completed]

Budget:	$2,000	Actual Expenditures: $00.00
Other Sources:	$00.00	Actual Expenditures:$500.00
Completion Date:	May 29, 1997[1]	

Surveys completed by workshop participants were evaluated and summarized. A report of those findings was published, including the verbatim responses of workshop participants. (Copy enclosed.)

Task 6 Modeling Team Report from Workshop[2]

Budget:	$3,000	Actual Expenditures: $2,800.00
Other Sources:	$00.00	Actual Expenditures: $ 47.52
Completion Date:	June 1, 1997	

A comprehensive report documenting the entire first Phase of the AEA was developed and published. That report (copy enclosed) describes the

[1] March 1, 1997 (Approved Amended Date)

[2] The modeling team's was incorporated into the comprehensive Phase I Report (see enclosure)

background of the AEA project, results of the two workshops, model development, uncertainties, and next steps. Copies of the report have been transmitted to all AEA workshop participants, financial contributors, and members of the Upper Mississippi River Basin Association. Additional distributions are anticipated after a second printing is made.

B. **Dissemination**. A workshop was held to bring together scientists and policy makers in the fields of natural resources and economics to evaluate and refine the model development during this project. It is also essential that, as scientists and policy makers develop a better understanding of ways in which to manage the Mississippi River so that it is both economically and ecologically sustainable, the public must also share that understanding and support it. Concise fact sheets and other public information materials will be developed to assist the public in understanding the model and workshop outcome. A workshop with internal DNR staff is scheduled for July 14 to review AEA Phase I documents to develop a communication strategy for further dissemination and presentation of results.

V. Context:

A. Significance: The Mississippi River is profoundly important to Minnesotans, both for its economic value as a transportation artery and for its environmental values as the largest river in North America. Its environmental health is threatened and serious political conflict is brewing between environmental and economic forces. This project provides a science-driven, non-controversial method to evaluate alternative river futures if different management approaches were taken. the outcome is a way of managing the river that ensures its long-term economic and environmental sustainability.

B. Time: This project will be completed by June 30, 1997.

C. Budget Context. Program activity described in this workprogram provided for the completion of the first phase of a multi-phase adaptive approach to assessing management techniques for the Upper Mississippi River. The first phase was begun in 1995 with funding from the McKnight Foundation and the National Biological Service. Funding will be needed for subsequent phases of the project; however the exact sources of those funds is currently unknown.

Source	Prior Expenditures (9/9/95-4/23/96)	Actual Expenditures (4/24/96-6/30/97)	Balance (6/30/97)
LCMR	$ 00.00	$57,000.00	$00.00
NBS	$25,000.00	$ 00.00	$00.00
McKnight	$ 5,883.16	$12,116.84	$00.00
Davis	$ 00.00	$ 150.00	$00.00
Total Spent	$30,883.16	$69,266.84	$00.00

Phase I funding totaled $100,150.00.

VI. Cooperation: The Upper Mississippi River Adaptive Environmental Assessment Steering Committee includes representatives of National Biological Service[3], Upper Mississippi River Basin Association, Upper Mississippi River Conservation Committee, Wisconsin Department of Natural Resources, St. Mary's University, Science Museum of Minnesota, Minnesota Department of Transportation and Minnesota Department of Natural Resources

VII. Location: Ecological classification locations S,X.

VIII. Reporting Requirements: Semi-annual six month workprogram update reports were submitted in July 1996 and January 1997.

[3] National Biological Service is now part of United States Geological Survey

LEGISLATIVE COMMISSION ON MINNESOTA RESOURCES
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John Velin, Director

October 17, 1996

Steve Light
Department of Natural Resources
500 Lafayette Road
St. Paul, Minnesota 55155

Dear Mr. Light:

This is to acknowledge receipt and approval of your workprogram amendment for ML 96, Chp. 407, Sec. 8, Subd. 5 Upper Mississippi River Adaptive Environmental Assessment Project, in a memo dated October 16, 1996, for adjustments to the completion dates for the workshop from December 15, 1996, to January 18, 1997 and the evaluation report from February 1, 1997, to March 1, 1997.

We wish you continued success with this project.

Sincerely,

John R. Velin,
Director, LCMR

JRV/mlk

cc: Holly Stoerker, Exec. Director Mississippi River Basin Assoc.