

**GREAT LAKES BASIN PROGRAM FOR SOIL
EROSION AND SEDIMENT CONTROL**

ANNUAL REPORT

PROGRAM YEAR 2002

October 1, 2001 through September 30, 2002

PRESENTED TO:
U.S. DEPARTMENT OF AGRICULTURE— NATURAL RESOURCES CONSERVATION SERVICE

PREPARED BY:
GREAT LAKES COMMISSION
EISENHOWER CORPORATE PARK
2805 SOUTH INDUSTRIAL HWY., SUITE 100
ANN ARBOR, MI 48104-6791

OCTOBER 2003

**GREAT LAKES BASIN PROGRAM FOR
SOIL EROSION AND SEDIMENT CONTROL
2002 ANNUAL REPORT**

Table of Contents

I. Introduction	6
II. Program Goals and Objectives	7
III. Accomplishments	7
A. Program Grants — Institutional Arrangements and Program Coordination	8
B. Information and Education Activities	8
C. Demonstration Grants and Special Projects	9
IV. Program Benefits	9
V. Funded Projects: Project Year 2002	17

ILLINOIS

Bull Creek Restoration and Ravine Stabilization
Sediment Reduction Through Coastal Wetland Construction

INDIANA

Farmer-to-Farmer Buffer Strip Initiative
Forestry BMP Implementation in Great Lakes Basin
Grand Calumet River Lagoons Erosion Control Demonstration

MICHIGAN

Building Detroit's Capacity to Implement Soft Engineering
Erosion and Sediment Control on Non-Agricultural Property
Gratiot County Soil Erosion Control Program Development and
 Integration with County-Wide Geographic Information System
Industrial Site Erosion Control with Native Prairie Grass Plantings
Kalamazoo River Watershed Erosion/Sedimentation Control Project
Macomb Buffer Initiative
Nichols Arboretum
North Sharon Road Timber Bridge Project
Soft Engineering and Natural Methods Control Streambank Erosion
Soil Erosion and Sedimentation Reduction in the St. Joseph River Basin
Stream Channel Restoration through Dam Removal: A Huron Pilot Project
The Dirt Doctors: Lesson Plans on Soil Erosion and Sediment Pollution
Urban Erosion Control Project for Loop Park
Sediment Reduction in the South Branch of the Boardman River
Soil Erosion and Sediment Control Along Detroit's Urban Waterfront
White River's Burying Ground Point Sediment Control at Hilt's Landing

MINNESOTA

Applying Natural Restoration Techniques to Slope Restoration
Lake Superior Tall Clay Bluff Restoration
Lincoln Park Miller Creek Bed Restoration Project
Low Impact Development Demonstration Project
Low-Cost Shoreline Erosion Control Demonstration Project
Miller Creek Inventory and Functional Analysis
Western Lake Superior NEMO Project – Community Program
Environmental Guidelines for Access Roads and Water Crossings

NEW YORK

Assessment of Modeling Tools and Data Needs for Developing the
Sediment Portion of the TMDL Plan for a Mixed Land Use
Cazenovia Creek Streambank Stabilization – Joint Board 18R
Cazenovia Creek Streambank Stabilization – Joint Board 27R
Erie County Phase II Storm Water Public Education Project
Erosion and Sedimentation Education for Lake Erie Schools
Franklin-St. Lawrence Soil Protection and Stabilization Program
Natural Stream Restoration in the Seneca Lake Watershed
Owasco Lake Tributary Assessment and Management Plan Development
Prescribed Grazing Management Project
Riparian Erosion Control Education Project
Roadway Stormwater Management and Training Program Development
Scajaquada Creek Streambank Restoration for Erosion Control
Stabilizing High, Steep Stream Banks: A Natural Approach
Stormwater Phase II Initiative in the Seneca and Keuka Lake Watersheds

OHIO

A Watershed Approach to the NPDES Phase II Rule
Best Management Practices for Rural Roadside Runoff Control
Estimating TMDL BACKGROUND Loading From Existing Data
Lake Erie Buffer Program GIS Development Project
Ohio CREP, Water Quality, and Minimum Detectable Change
Ohio Naturalized Stream Channel Conference and Website
Partnership Implementation of NPDES Phase II Minimum Control Measures
Residue Management and Erosion Control Demonstration Project
Rockin' and Rollin': School & Community NE Ohio Watershed Investigations
Streamside Landowner Fact Sheets
Western Lake Erie Sediment Reduction & Environmental Restoration Project
Urban Stormwater Wetland Sampling Demonstration

PENNSYLVANIA

Cascade Creek Hydrological Modeling and Floodplain Restoration
Design and Evaluation of a Sediment Basin Dewatering Device
Design and Performance of Rootwads in Streambank Restoration
Green Roofs Can Detain and Remove Pollutants from Stormwater Runoff
Lake Erie Cliff Erosion Prevention Demonstration Project

WISCONSIN

Buffer Installation on Low Order Streams

Demonstration of Streambank Stabilization for Submerged Vanes

Great Lakes Grazing Network

LaCount Parkway Stream Corridor Restoration Demonstration Project

Plum Creek Erosion Control and Sediment Reduction Project

Stream Crossing Installation Videos and Powerpoint Presentations

Water & Sediment Control Basin in Fond du Lac County, WI

GREAT LAKES BASIN PROGRAM FOR SOIL EROSION AND SEDIMENT CONTROL ANNUAL REPORT

Program Year 2002

(Covering period from September 1, 2001 through September 30, 2002 - this time frame reflects the adjustment of the program year to coincide with the federal fiscal year)

I. INTRODUCTION

Nonpoint source pollution has been identified as a major cause of water quality degradation in the Great Lakes basin. The movement of sediment is a major pathway for the addition of nutrients and toxic chemicals that are bound to soil particles. Beyond water quality degradation, soil erosion and sedimentation reduces agricultural productivity, degrades fish and wildlife habitat, limits water-based recreation, and damages water treatment and transportation facilities.

In late 1987, a regional task force assembled by the Great Lakes Commission released a report entitled *Soil Erosion and Sedimentation in the Great Lakes Region*. The report documented the serious nature of the basin's nonpoint source pollution problems, analyzed and interpreted soil erosion and sedimentation data, and presented a series of findings and recommendations that were endorsed by the eight member states of the Commission. Recommendations addressed funding issues, program development, standards and control programs, education/coalition-building, and research and evaluation.

Principal among those recommendations was the establishment of a federal/state "Great Lakes Basin Program" for comprehensive, basin-specific soil erosion and sedimentation control. In offering the recommendation, the task force recognized the Great Lakes system as a "special and unique international resource that deserves special attention and protection." The task force also recommended that a linkage with the federal Clean Water Act, Section 319 nonpoint source pollution control program be made to ensure coordination of activities with the U.S. Environmental Protection Agency (U.S. EPA).

The task force subsequently developed the framework for the Great Lakes Basin Program and, in 1988, secured the unanimous endorsement of the member states of the Great Lakes Commission. The Basin Program became reality in late 1990, when the U.S. Congress appropriated \$1 million through the budget of U.S. EPA Region 5 to support program activities. Funding levels for fiscal years 1991 and 1992 were \$1 million. FY1993 funding was increased to \$1.2 million. In FY1994, the funding source for the Great Lakes Basin Program shifted from U.S. EPA to the U.S. Department of Agriculture-Soil Conservation Service (now Natural Resources Conservation Service). Funding levels for FY1994 and FY1995 were \$250,000. Fiscal year funding levels for 1996, 1997, 1998 were \$350,000. Funding in FY 1999 was \$500,000, \$600,000 in FY 2000, increased to \$750,000 in FY2001 and increased to \$1, 250,000 in 2002. Programmatically, the Great Lakes Basin Program has operated on a schedule slightly different from the federal fiscal year since its inception. However, this year is a transition year which will extend the program year slightly to align future annual reports with the federal fiscal year. For this 2002 program year report, the period covered is September 1, 2000 through September 30, 2001.

II. PROGRAM GOALS AND OBJECTIVES

The goal of the Great Lakes Basin Program is to protect and improve water quality in the Great Lakes by reducing soil erosion and controlling sedimentation through financial incentives, information and education, and professional assistance. The objectives are to minimize off-site damage to harbors, streams, fish and wildlife habitat, recreational facilities, and the basin's public works systems caused by sediment. Also, to reduce the on-site damages caused by soil erosion on farms, developments, streambanks and shorelines. This will be accomplished by:

1. **Recognizing sediment as an important pollutant** and improving the linkage between erosion and sediment control efforts and water quality programs;
2. **Maintaining legislative recognition** for the water quality problems associated with soil erosion and sedimentation;
3. **Providing dedicated and reliable funding** for soil erosion and sediment control projects in the Great Lakes basin supporting the implementation of urban and rural non-point source pollution management programs;
4. **Coordinating efforts, roles and initiatives** between federal, state and local soil and water conservation and pollution control agencies and groups in the Great Lakes basin;
5. **Building coalitions and networks** that support the Great Lakes Basin Program;
6. **Sharing and obtaining information** on the economic and environmental damage caused by soil erosion and sedimentation.

As designed, the Great Lakes Basin Program is comprised of three elements: 1) program and technical assistance; 2) demonstration projects; and 3) information and education.

In FY 2002, a sum of \$1,250,000 was appropriated through the budget of the U.S. Department of Agriculture-Natural Resources Conservation Service (USDA-NRCS). Of this amount, \$915,186 was applied to the competitive demonstration grants program with \$334,814 being retained by the Great Lakes Commission for regional information, education activities and program administration. Since program inception in FY 1991 through FY 2002, \$7.8 million have been applied to the program, \$3.2 million from U.S. EPA and \$4.65 million from USDA-NRCS. Program oversight is provided by a regional Soil Erosion and Sedimentation Task Force. The task force includes representation from the eight Great Lakes states (Illinois, Indiana, Michigan, Minnesota, New York, Ohio, Pennsylvania and Wisconsin), U.S. EPA, USDA-NRCS, the National Association of Conservation Districts (NACD) and the International Joint Commission (IJC).

III. ACCOMPLISHMENTS

Under the leadership and guidance of the Soil Erosion and Sedimentation Task Force, the following activities, tasks and products were completed in Program Year (PY) 2002:

A. INSTITUTIONAL ARRANGEMENTS AND PROGRAM COORDINATION

1. The Great Lakes Commission convened two meetings of the Soil Erosion and Sediment Task Force in October, 2001 and March, 2002 as well as several telephone conferences to discuss and act upon issues related to the implementation of the Great Lakes Basin Program.
2. At the October meeting, the task force received an update on Great Lakes Basin Program progress and activities; reviewed the draft 2002 request for proposal (RFP) packet; and approved the timeline for RFP mailing, application deadline and proposal review.
3. RFPs were mailed to more than 1,100 potential applicants in November, 2000. RFPs were sent to state agencies, tribal governments, municipalities, soil and water conservation districts, drain commissioners, watershed councils, resource conservation and development area councils, colleges and universities, and conservation and environmental groups.
4. The Commission facilitated the review, ranking and the selection of proposals received by January 17, 2002, in response to the RFP. The Commission received 88 small scale proposals totaling \$1.81million. At the March, 2002 meeting 34 small scale projects were chosen totaling \$715,186.
5. Because of the increased funding for PY 2002, a second round of funding was conducted to fund one large-scale project at \$200,000. Seventeen applications were received for a total funding request of \$2.3 million.
6. Commission staff worked with the project officers of previously funded projects to develop reports for this annual report and articles for the Great Lakes Basin Program newsletter, *Keeping it on the Land*. Slides, photographs, reports, manuals and other materials have been accumulated from project officers to promote and publicize the program.
7. The NACD Great Lakes Committee held its autumn meeting November 1- 2, 2001 at the National Soil Erosion Laboratory at Purdue University in West Lafayette, Ind. A discussion of the up-coming Farm Bill legislation, a presentation on the erosion laboratory, a review of the district survey findings, and committee and agency reports were the focus of the meeting. The spring meeting was held March 5- 6, 2002, at the Lake Erie Center in Oregon, Ohio. Among other items of interest, the Committee had a special afternoon session addressing water quality opportunities and the Farm Bill, because that legislation is due for reauthorization in 2003.

The NACD Great Lakes Committee held its summer meeting July 11 and 12, 2002 at Cabela's in Dundee, Mich. The distribution of the soil and water conservation district survey and brochure, the NOAA Coastal Zone Management Act and a trip to the Cross Winds Marsh were on the agenda.

B. INFORMATION AND EDUCATION ACTIVITIES

1. The Great Lakes Commission, through its staff, member states and the Soil Erosion and Sedimentation Task Force, continued to promote the Great Lakes Basin Program through its newsletter, the *Advisor*, and through various information and education activities directed at researchers, local, state and federal resource managers, state legislatures and the U.S. Congress.
2. PY 2002 marked the fourth year of publication for the regional soil erosion newsletter, *Keeping it on the Land*. During year four, four editions were published. Articles featured various erosion control and watershed management programs developed by federal, state and local partners,

updates on state and local activities related to soil erosion and sediment control, and features on Great Lakes Basin Program projects recently completed. Circulated to approximately 2,300 recipients, the newsletter continues to be a valuable tool for communicating information developed under the program.

C. DEMONSTRATION GRANTS AND SPECIAL PROJECTS

Approximately \$915,000 was available via the cooperative agreement with the USDA for demonstrations and special projects in PY2002. Thirty-four new projects were awarded grants beginning on July 1, 2002. Extended project summaries and results are provided for those projects that were ongoing as of Sept. 30, 2002. For information on completed projects, please refer to earlier Great Lakes Basin Program annual reports and to the Great Lakes Basin Program web page: www.glc.org/basin/projects.html.

IV PROGRAM BENEFITS

Between 1991 and 2002, the Great Lakes Basin Program has provided the resources to gather technical information to help evaluate soil erosion and sediment problems, demonstrate various best management practices (BMPs) for controlling in soil erosion and sedimentation, and educate the public on both the impacts of soil erosion and solutions for controlling. Over that period, 217 grants were awarded, totaling \$6.1 million. All eight Great Lakes states have received Great Lakes Basin Program support to date (See table below).

GRANTS PROGRAM: TEN-YEAR SUMMARY, 1991-2001

<u>State</u>	<u>Number of Grants</u>	<u>Total Funding</u>
Illinois	4	\$122,350
Indiana	13	\$211,203
Michigan	66	\$2,906,369 ¹
Minnesota	28	\$611,473
New York	44	\$924,824
Ohio	28	\$676,892
Pennsylvania	15	\$293,340
Wisconsin	19	\$362,465 ²
TOTAL	217	\$6,108,916

¹Includes three separate \$600,000 appropriations (FY 91-93) to the Michigan DNR for the Saginaw Bay Erosion and Sedimentation Control Program

²Includes a grant of \$21,368 to the National Association of Conservation Districts (NACD), for seven soil erosion workshops in the Great Lakes Basin

In evaluating the success of the program, four types of measures are used:

- Tons of soil and other nutrients saved (In some cases the actual pollutant load, e.g. sediment delivery, to streams has been calculated);
- Total acreage involved in some form of soil erosion and sediment control practice;
- Audiences reached; and
- Additional resources that the Great Lakes Basin Program funds have leveraged.

These tools were applied to the projects completed between 1991 and 2002.

FIGURE ONE
GREAT LAKES BASIN PROGRAM
ACTIVE PROJECTS DURING PY 2002



KEY TO FIGURE ONE

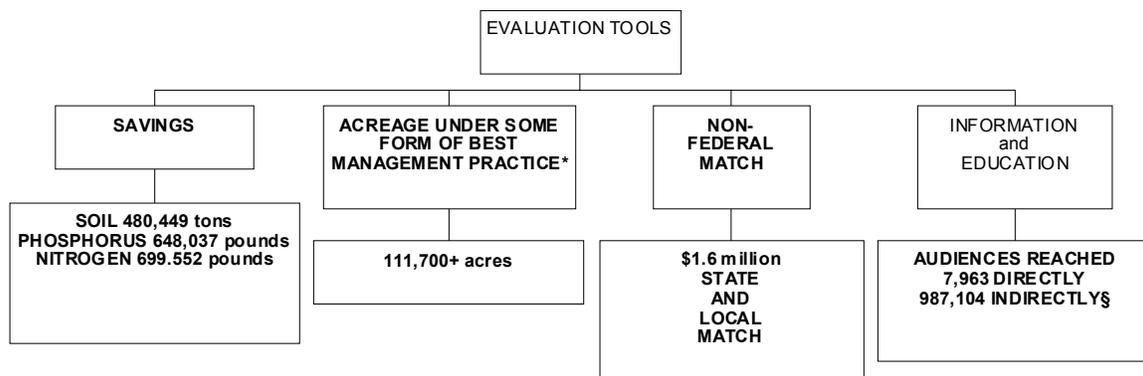
Map #	Project Title	State	Grantee
1	Bull Creek Restoration and Ravine Stabilization	IL	Lake Co Stormwater Management Commission
2	Sediment Reduction through Coastal Wetland Construction	IL	Foss Park District
3	Farmer-to-Farmer Buffer Strip Initiative	IN	St. Joseph River Watershed Initiative
4	Forestry BMP Implementation in Great Lakes Basin	IN	Indiana Department of Natural Resources — Division of Forestry
5	Grand Calumet River Lagoons Erosion Control Dem.	IN	Save the Dunes Conservation Fund
6	Building Detroit's Capacity to Implement Soft Engineering	MI	Detroit/Wayne County Port Authority
7	Erosion/Sediment Control Demo. In Nichols Arboretum	MI	University of Michigan
8	Gratiot Co Soil Erosion Control Program Development and Integration with County-Wide GIS	MI	Nichols Arboretum, University of Michigan
9	Industrial Site Erosion Control with Native Grass Plantings	MI	Kalamazoo Co. Conservation Dist.
10	Kalamazoo River Watershed Erosion/Sedimentation Control Project	MI	Calhoun Conservation District
11	Macomb Buffer Initiative	MI	Macomb Conservation District
12	North Sharon Road Timber Bridge Project	MI	Kalkaska Co. Conservation Dist.
13	Soft Engineering and Natural Methods Control Streambank Erosion	MI	Osceola-Lake Conservation Dist.
14	Soil Eros. and Sed. Reduction in the St. Joseph River Basin	MI	St. Joseph Co. Conservation Dist.
15	Stream channel restoration through dam removal: A Huron pilot project	MI	Huron River Watershed Council
16	The Dirt Doctors: Lesson Plans on Soil Eros. and Sed.	MI	Wayne Co. Dpt of the Environment
17	Urban Erosion Control Project for Loop Park	MI	Shiawasee Co. Conservation Dist.
18	Using "Soft" Engineering To Control Erosion On The Lower Boardman	MI	Grand Traverse Conservation District
19	White River's Burying Ground Point Sediment Control at Hilt's Landing	MI	Muskegon Conservation District
20	Eros. and Sed. Control on Non-Agricultural Property	MI	Clinton Co. Conservation Dist.
21	Applying Nat. Restoration Tech. to Slope Restoration	MN	Minnesota Erosion Control Assoc.
22	Lake Superior Tall Clay Bluff Restoration Demonstration	MN	Minnesota Board of Water and Soil Resources
23	Lincoln Park Miller Creek Bed Restoration Project	MN	City of Duluth
24	Low Impact Development Demonstration Project	MN	Lake Superior Association of SWCD
25	Low-Cost Shoreline Erosion Control Demonstration Project	MN	Minnesota Erosion Control Assoc.
26	Miller Creek Wetland Inventory and Functional Analysis	MN	South St. Louis Co. Conservation Dist.
27	Western Lake Superior NEMO Project – Community Program	MN	Regents of the University of Minnesota
28	Enviro. Guidelines for Access Roads and Water Crossings	MN	Minnesota Erosion Control Assoc.
29	Assessment of Modeling Tools and Data Needs for Developing Sediment Portion of TMDL Plan for Mixed Land Use Watershed	NY	SUNY College at Buffalo
30	Cazenovia Creek Streambank Stabilization – Joint Board 18R	NY	Erie County Soil and Water Conservation District
31	Cazenovia Creek Streambank Stabilization – Joint Board 27R	NY	Erie County Soil and Water Conservation District
32	Erie County Phase II Storm Water Education Program	NY	Erie County Department of Environment and Planning - Division of Environmental Compliance
33	Eros. and Sed. Education for Lake Erie Schools	NY	Chautauqua Co. Conservation Dist.
34	Franklin-St. Lawrence Soil Protection and Stabilization Program	NY	Franklin County Soil & Water Conservation District
35	Nat. Stream Restoration in the Seneca Lake Watershed	NY	Schuyler Co. Conservation Dist.
36	Owasco Lake Tributary Assessment and Management Plan Development	NY	Cayuga County Department of Planning and Development
37	Prescribed Grazing Management Project	NY	Seneca Trail Resource Conservation and Development Council, Inc.
38	Riparian Erosion Control Education Project	NY	Cornell Cooperative Extension of Cayuga County
39	Roadway Stormwater Management and Training Program Development	NY	Monroe County Health Department for the Monroe County Stormwater Coalition
40	Scajaquada Creek Streambank Restoration for Erosion Control	NY	Erie County SWCD
41	Stabilizing High, Steep Stream Banks: A Natural Approach	NY	Schuyler County SWCD
42	Stormwater Phase II Initiative in the Seneca and Keuka Lake Watersheds	NY	Yates Co. Conservation Dist
43	A Watershed Approach to the NPDES Phase II Rule	OH	Toledo Metro. Area Council of Governments
44	Best Management Practices for Rural Roadside Runoff Control	OH	Portage SWCD on behalf of the Upper Cuyahoga River Watershed Taskforce
45	Estimating TMDL BACKGROUND Loading from Existing Data	OH	Case Western Reserve University
46	Lake Erie Buffer Program GIS Development Project	OH	Erie Basin Resource Conservation and Development
47	Ohio CREP Water Quality and Minimum Detectable Change	OH	Heidelberg College
48	Ohio Naturalized Stream Channel Conf. and Website	OH	Ohio DNR and Ohio State University
49	Partnership Implementation of NPDES Phase II Minimum Control Measures	OH	Geauga Soil and Water Conservation District
50	Residue Management and Erosion Control Demonstration	OH	Toledo Metro. Area Council of Governments
51	Rockin' and Rollin': School & Community NEOhio Watershed Investigations	OH	James H. Porter Center for Science and Mathematics
52	Streamside Landowner Fact Sheets	OH	Cuyahoga Soil and Water Conservation District
53	Western Lake Erie Sediment Reduction & Environmental Restoration Project	OH	Ohio Division of Soil & Water Conservation, ODNR
54	Urban Stormwater Wetland Sampling Demonstration	OH	Summit SWCD
55	Cascade Creek Hydrological Modeling and Floodplain Restoration	PA	Erie-Western Pennsylvania Port Authority

56	Design and Eval. of a Sediment Basin Dewatering Device	PA	Penn State University
57	Design and Perf. of Rootwads in Streambank Restoration	PA	Penn State University
58	Green Roofs Can Detain and Remove Pollutants from Stormwater Runoff	PA	Department of Horticulture, The Pennsylvania State University
59	Lake Erie Cliff Erosion Prevention Demonstration Project	PA	Erie-Western Pennsylvania Port Authority
60	Buffer Installation on Low Order Streams	WI	Oconto Co. Land Conservation Department
61	Demonstration of Streambank Stabilization for Submerged Vanes	WI	Wisconsin Department of Natural Resources
62	Great Lakes Grazing Network	WI	Great Lakes Grazing Network
63	LaCount Parkway Stream Corridor Restoration Demonstration Project	WI	City of Green Bay
64	Plum Creek Erosion Control and Sediment Reduction Project	WI	Brown County Land Conservation Department
65	Stream Crossing Installation Videos and Powerpoint Presentations	WI	FISTA
66	Water & Sediment Control Basin in Fond du Lac County	WI	Fond du Lac County, Land & Water Conservation Department

RESULTS OF GRANTS COMPLETED PY 1991- PY 1998 - (SEE FIGURE 2)

As a result of grants completed between PY1991 and PY1998, the total savings from erosion control measures implemented amount to more than 480,000 tons of soil, more than 648,000 pounds of phosphorus and more than 699,000 pounds of nitrogen over the project period. These are very conservative estimates, as many of the BMPs installed will continue to prevent soil from eroding from the land many years after the project has been completed. These savings reflect Great Lakes Basin Program sites only and exclude additional acreage treated throughout the basin by other farmers/landowners influenced by the projects. Many projects funded under the Great Lakes Basin Program have provided the technical BACKGROUND information necessary, through one-on-one communication, site visits, and aerial assessments- for future soil erosion and sediment control projects. Although no soil savings can be attributed directly to this information and technical transfer activity, the potential savings from future projects is enormous.

**FIGURE TWO
GREAT LAKES BASIN PROGRAM
CUMULATIVE TOTALS
(PY 1991 THROUGH PY 1998)**



* For example, buffer strips, conservation tillage, reforestation, streambank planting, toe stabilization and construction site erosion control practices.

** Audiences are reached directly through activities such as workshops, conference presentations and site visits; indirect outreach includes tv/radio/newspaper stories, journal and newsletter articles, brochures and pamphlets.

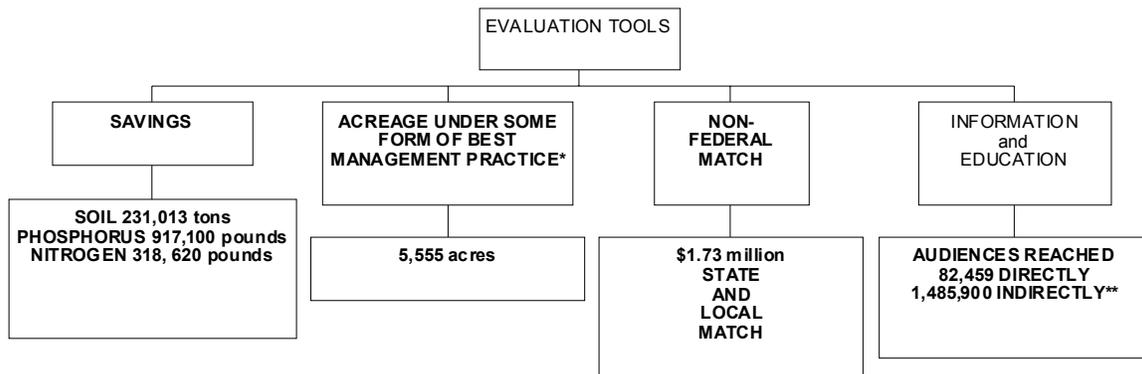
RESULTS OF GRANTS COMPLETED PY 1999 - PY 2002 - (SEE FIGURE 3)

During PY 1999, grantees began reporting savings over the estimated life of their projects. Eighteen additional projects were completed during the PY 2002 reporting period. Over the life of these projects, an estimated 45,755 tons of soil, 217,552 pounds of phosphorus and 43,510 pounds of nitrogen will be saved. As with the projects reported above, these numbers reflect only the acreage directly affected by Great Lakes Basin Program funds and exclude additional areas treated as a result of information and technology transferred from these projects (See Figure 3.)

Variations in topography among the eight Great Lakes states require varying types of BMPs to control soil erosion and sedimentation. Shoreline stabilization, conservation tillage, urban construction, streambank stabilization and filter strips are the most common types of BMPs demonstrated as a result of the program. More than 256 acres were added through projects completed during PY2002.

Through the information and education projects reporting during PY2002, more than 39,782 farmers, landowners, students, consultants and other parties had direct contact with technical professionals to solve soil erosion and sedimentation problems through site visits, workshops and tours. More than 880,000 others were informed of the benefits of soil erosion and sediment control through various outreach activities such as newsletters, brochures/flyers, billboards, displays, newspaper articles, radio, cable TV, special events such as trade shows and festivals. Many projects used several of the above methods in community outreach efforts to reduce soil erosion and sedimentation. Target audiences under this program are landowners, farmers, zoning officials, planning officials, students, teachers, developers and contractors, and agribusinesses.

**FIGURE THREE
GREAT LAKES BASIN PROGRAM
RESULTS MEASUREMENTS
1999-2002**



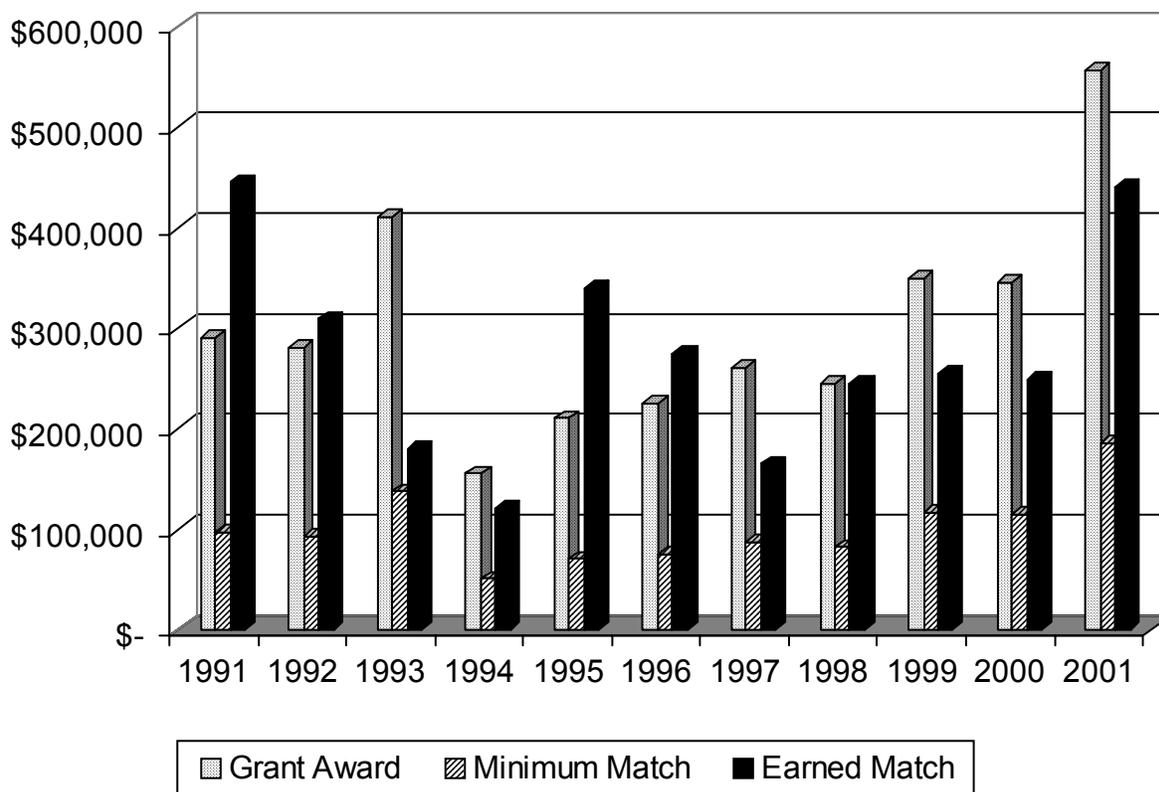
* For example, buffer strips, conservation tillage, reforestation, streambank planting, toe stabilization and construction site erosion control practices.

** Audiences are reached directly through activities such as workshops, conference presentations and site visits; indirect outreach includes tv/radio/newspaper stories, journal and newsletter articles, brochures and pamphlets.

SUMMARY COMPARISON OF GRANT AWARDS AND NON-FEDERAL MATCH FUNDS

Another indication of the program’s success are the numerous local/state contributions to the individual projects. The Basin Program is acting as a springboard for others to become involved and share their expertise. Since 1994, when the Great Lakes Commission began administering the Basin Program, an additional \$2.09 million (47 percent of total project costs) have been contributed from state and local sources. This is \$1.3 million more than the minimum nonfederal match required under the program. (See Figure 4)

FIGURE FOUR
GREAT LAKES BASIN PROGRAM SUMMARY COMPARISON
OF GRANT AWARDS AND NON-FEDERAL MATCH FUNDS
 1991 THROUGH 2001*



*Note: Basin Program expenditures for PY1991 through PY1993 do not include three \$600,000 non-competitive annual grants to the Saginaw Bay Soil Erosion and Sedimentation Control Program. The last year for which all projects are completed is 1999; some projects for PY2000 and 2001 are still open and are still earning match.

V. PROJECTS ACTIVE DURING 2002 PROGRAM YEAR

ILLINOIS

PROJECT TITLE:	BULL CREEK RESTORATION AND RAVINE STABILIZATION
GRANTEE:	LAKE CO. STORMWATER MANAGEMENT COMMISSION
BASIN PROGRAM FUNDS:	\$ 25,000 (APPROVED)
NONFEDERAL FUNDS:	\$ 50,500 (PROPOSED)
PROJECT DURATION:	JULY 1, 2001 –
PROJECT TYPE:	DEMONSTRATION
STATUS:	ONGOING

PROBLEM STATEMENT

Hydrologic changes and erosion are the most significant threats to the watershed's natural resources. Urban runoff associated with land development is the source of this impairment.

BACKGROUND

Most of the headwaters reaches have been ditched or are conveyed through storm sewers, increasing conveyance capacity and flow. The most significant impacts are occurring in the eroding downstream ravine reaches and in Illinois Beach State Park, where hydrology changes and pollutants are resulting in high quality wetlands being converted to monotypic cattail marshes. Riparian and aquatic habitat is being severely degraded and landowners are experiencing significant property loss along the downstream ravines due to downcutting and widening of the stream channel.

ACTIVITIES

The goal of this project is to remedy moderate to severe erosion and downstream sedimentation, thereby reducing related water quality and habitat impairments to Bull Creek, Illinois Beach State Park and Lake Michigan. This will be achieved by a public outreach/involvement program, removal of non-native plants in the ravine areas to allow growth of native soil-stabilizing plants, and installation of 9-12 riffles as part of a grade control program. Plus there will be the installation of bio-engineering BMPs.

INTERIM RESULTS

Project ongoing, no results.

ILLINOIS

PROJECT TITLE:	SEDIMENT REDUCTION THROUGH COASTAL WETLAND CONSTRUCTION
GRANTEE:	FOSS PARK DISTRICT
BASIN PROGRAM FUNDS:	\$ 37,850 (APPROVED)
NONFEDERAL FUNDS:	\$ 36,300 (PROPOSED)
PROJECT DURATION:	JULY 1, 2001 –
PROJECT TYPE:	DEMONSTRATION
STATUS:	ONGOING

PROBLEM STATEMENT

Urbanization along the shores of the Great Lakes has led to increased levels of nonpoint source pollutants and sediments flowing into the lakes through surface runoff. This is evidenced by extensive plumes of sediment entering Lake Michigan through washouts across beaches or directly into the lake immediately following heavy rainfall events. Washouts are seen at the base of both vegetated and actively eroding sections of Illinois coastal bluffs.

BACKGROUND

It is common knowledge that plants can be useful for stabilizing eroding banks of lakes and streams. Also plants are known for their ability to uptake nutrients and act as natural filters for some pollutants. It is known, but not well documented, that coastal dune and swale wetlands also function well as natural filters.

ACTIVITIES

The site is approximately 1,600 feet of lake frontage. The site will be mapped for topography, erosion severity, beach and dune development and existing vegetative growth. A stone-lined swale will be constructed. An overflow system will be constructed in the wetland system. Monitoring will be performed.

RESULTS

Project ongoing, no results.

INDIANA

PROJECT TITLE:	FARMER-TO-FARMER BUFFER STRIP INITIATIVE
GRANTEE:	ST. JOSEPH RIVER WATERSHED INITIATIVE
BASIN PROGRAM FUNDS:	\$25,000 (APPROVED)
NONFEDERAL FUNDS:	\$6,250 (PROPOSED)
PROJECT DURATION:	JULY 1, 2002 –
PROJECT TYPE:	DEMONSTRATION
STATUS:	ONGOING

PROBLEM STATEMENT

Ongoing water quality sampling by the St. Joseph River Watershed Initiative, Indiana Department of Environmental Management, Allen County Department of Health, and other partners has revealed high levels of at least four pesticides, E. coli, nutrients, and sediments in the St. Joseph River and at all sampling locations established in the river's tributaries. This nonpoint source pollution has reduced water quality within the system so that only isolated pockets remain of fresh water mussels once found throughout the system (The Nature Conservancy, 1998).

BACKGROUND

The St. Joseph River Watershed Initiative addresses nonpoint source pollution issues in the watershed through five primary programs:

1. Land Treatment Program – on-the-ground implementation of best management practices to mitigate nonpoint source pollution;
2. Land Use Characterization Program – a Geographic Information System detailing land use in the watershed and how that land use relates to nonpoint source pollution;
3. Water Quality Monitoring Program – water quality data is collected from early April through the end of September to monitor for pesticides, E. coli, and nutrients;
4. Technical/Scientific Program – we are currently collaborating with a biology professor at Indiana University/Purdue University at Fort Wayne to examine the sources of fecal bacteria in the St. Joseph River Watershed;
5. Education and Outreach Program – sharing of information with the public and with our partners through regular presentations at partner agencies' functions and through specially sponsored programs.

As part of its Land Treatment Program, the St. Joseph River Watershed Initiative is currently addressing pollutant transport mitigation through an existing project, funded through EPA-Great Lakes National Program Office (GLNPO), which will expire in spring 2002. This project involves contracting with two local farmers to work directly with other farmers in targeted subwatersheds to promote adoption of conservation and no-till farming methods, as well as installation of filter strips and grassed waterways.

ACTIVITIES

We have three goals with this proposed project:

1. Increase buffer strips in the St. Joseph River Watershed by 35 miles;
2. Increase the acreage of conservation tillage in the watershed by 1,000 acres;
3. Increase landowners' knowledge of nonpoint source pollution issues and conservation practices they can apply to reduce nonpoint source pollution.

INTERIM RESULTS

Project ongoing, no results.

INDIANA

PROJECT TITLE:	FORESTRY BMP IMPLEMENTATION IN GREAT LAKES BASIN
GRANTEE:	INDIANA DEPARTMENT OF NATURAL RESOURCES - DIVISION OF FORESTRY
Basin Program Funds:	\$ 24,300 (APPROVED)
Nonfederal Funds:	\$ 8,150 (PROPOSED)
PROJECT DURATION:	JUNE 1, 2000 -
PROJECT TYPE:	INFORMATION AND EDUCATION
STATUS:	ONGOING

PROBLEM STATEMENT

Forestland in Indiana is subject to timber harvesting, which often results in significant soil erosion and sedimentation if best management practices (BMPs) are not followed. There is a lack of awareness and understanding of the importance of these BMPs, particularly by landowners. Approximately 87 percent of the timberland in Indiana is in private ownership.

BACKGROUND

According to a 1975 report on *Logging Roads and Protection of Water Quality*, published by the U.S. Environmental Protection Agency, sediment was identified as the most significant pollutant resulting from timber harvesting and that logging roads were the primary source. The Federal Clean Water Act of 1987 prompted states to develop BMP guidelines to control silvicultural caused nonpoint source pollution. This project seeks to raise awareness and implement and monitoring BMPs on critical areas of forests - wetlands, stream crossings, logging roads and trails. A BMP Field Guide was developed in 1996 through a cooperative one and a half year effort of forest products, industry professionals, and forestry, environmental, university and regulatory agency interests. The guide was compiled by the Forest Practices Working Group, organized by the Indiana Woodland Steward Institute through a grant from the Indiana Department of Environmental Management. The guide was edited by the Purdue University Cooperative Extension Service and published by the Indiana Division of Forestry.

ACTIVITIES

Project staff held two workshops on BMP implementation for landowners, loggers, timber buyers, professional foresters and forest managers. Division of Forestry personnel instructed the participants about the various types of BMPs, their application, and the evaluation of harvest sites for BMP application. Personnel had previously identified harvest sites to be monitored and obtained permission from landowners. During the workshops, they divided the participants into teams and assigned each team a set of sites to monitor for BMP application and compliance. A total of 23 sites, ranging from 8 to 150 acres and with a timber harvest in the previous two years, were evaluated for the implementation of BMPs on 1) forest access roads, 2) log landings, 3) skid trails, 4) stream crossings, and 5) riparian management zones.

In addition to workshops, project staff developed a cost-share program as an incentive for loggers and producers to adopt and institutionalize BMPs. They marketed the cost-share program to loggers in the Great Lakes basin by sending a letter from Indiana's State Forester to logging professionals within the affected area, and through notices in Indiana's *Licensed Timber Buyers Guide* and Indiana's *Hardwood Lumberman's Association* newsletter.

RESULTS

Project ongoing, no results.

INDIANA

PROJECT TITLE:	GRAND CALUMET RIVER LAGOONS EROSION CONTROL DEMONSTRATION
GRANTEE:	SAVE THE DUNES CONSERVATION FUND
BASIN PROGRAM FUNDS:	\$ 25,000 (APPROVED)
NONFEDERAL FUNDS:	\$ 14,960 (PROPOSED)
PROJECT DURATION:	JULY 1, 2001 – JUNE 30, 2002
PROJECT TYPE:	DEMONSTRATION
STATUS:	COMPLETE

PROBLEM STATEMENT

The Grand Calumet River Lagoons are the eastern most waterbody in the Grand Calumet River and Indiana Harbor Ship Channel Area of Concern. The lagoons are the headwaters of the river which drains into Lake Michigan. A significant problem identified is a high sediment load to the lagoons.

BACKGROUND

At a particular site in Marquette Park, which borders the eastern basin of the lagoons, heavy foot and small boat traffic have created an erosion area. The result is uncontrolled run-off and sediment buildup in the lagoons. The contributing drainage area to the Lagoons, approximately 1127 acres, consist primarily of sandy soils including dunes and residential areas. An estimated 2600 tons of sediment enter the eastern basin of the lagoons each year.

Downstream from the lagoons contaminated sediments are the subject of a Resource Conservation Recovery Act Consent Decree. Dredging plans are underway for this section of the Grand Calumet River. It is essential to implement sediment control projects to avoid sediment buildup following restoration efforts.

In addition to the onsite problems contributing to the impairment of the Grand Calumet River Lagoons there is a need for developing public awareness of the water quality issues associated with erosion and sedimentation. This project will remediate a specific erosion and sedimentation problem within a Lake Michigan Area of Concern and use the remediation effort and an educational program to elevate awareness of erosion and sedimentation problems regionally. It is important to build the involvement and awareness of citizens before and during restoration efforts to ensure that the mistakes we have learned from are not repeated.

ACTIVITIES

A deck was constructed as an erosion control structure to enable continued and enhanced public access at the site. The deck concept involves native landscaping to provide a vegetative buffer for control of runoff. Information signage was included to educate visitors about the importance of water quality and erosion control.

Developed educational material for students on erosion, sedimentation, and their water quality impacts in our region. Conducted in-class and field trip studies with high school students to learn about the importance of clean water and the negative impacts of soil erosion and sedimentation on water quality. Students were involved in the construction of the site facility.

RESULTS

The Save the Dunes Conservation Fund consulted with its partner organizations to obtain input on how the project progressed and suggestions for improvements. Each partner felt that the project was very worthwhile and was successfully implemented. Although the education partners were unable to participate in a second season, representatives were pleased with the program and their role in it.

The erosion control deck was successfully installed. Fourth grade students planted native wildflowers and grasses around the deck. Maintenance activities included watering plants, weeding out invasive species, and cleaning up the site. Half of the brochures were distributed to the Gary Park Department and the Lake County Soil and Water Conservation District. Others have been distributed at various events. An information sign was designed and installed. The sign is made of embedded fiberglass to resist weather, wear and tear.

MICHIGAN

PROJECT TITLE:	BUILDING DETROIT'S CAPACITY TO IMPLEMENT SOFT ENGINEERING
GRANTEE:	DETROIT/WAYNE COUNTY PORT AUTHORITY
Basin Program Funds:	\$ 25,000 (APPROVED)
Nonfederal Funds:	\$15,900 (PROPOSED)
PROJECT DURATION:	JULY 1, 2002 –
PROJECT TYPE:	INFORMATION AND EDUCATION
STATUS:	ONGOING

PROBLEM STATEMENT

It is important to redevelop and redesign our shorelines for multiple objectives. Shorelines can be stabilized and achieve safety, while increasing public access, enhancing habitat, improving aesthetics, and saving money. Hard engineering of shorelines, in the form of steel sheet piling, can cost as much as \$1,400 or more per linear foot. We cannot afford to use hard engineering along the entire length of the Detroit River shoreline, nor do we want fully hard engineered shorelines because they have no habitat value and will not support the diversity of fish and wildlife that our river has blessed us with. We have also learned that hard and soft engineering are not mutually exclusive. There are places where attributes of hard and soft engineering can be used together. This makes sense in a high flow river like the Detroit River, through which the outflow from the entire upper Great Lakes passes.

BACKGROUND

It is critically important that the right people get involved upfront in redevelopment projects in order to incorporate principles of soft engineering into future waterfront designs. The design process must identify opportunities and establish partnerships early in the process in order to achieve integrated ecological, economic, and societal objectives. It is the hope of the Greater Detroit American Heritage River Initiative that the advantages of soft engineering practices will be recognized and incorporated into many shoreline projects along the Detroit River as the development standard of the future.

ACTIVITIES

This project will transfer national expertise in soft engineering to practitioners and officials in southeast Michigan. About 50 people will be trained in state-of-the-art design and implementation techniques using three different sites, with three different types of erosion challenges: 1). Detroit River shoreline exposed to ice, 2). Protected shallow embankment along the Detroit River and 3). Protected lake site using Belle Isle's Lake Muskoday. Only at the Lake Muskoday site will permits and construction materials be obtained and the final technical design used for hands-on implementation

The technical expertise of Robin Sotir & Associates (or equivalent) will provide the class with applicable strategies that could solve the problems confronted at each site. Actual work would apply strictly to Lake Muskoday, allowing for a continuation of previous work performed.

RESULTS

Project ongoing, no results.

MICHIGAN

PROJECT TITLE:	EROSION AND SEDIMENT CONTROL ON NON-AGRICULTURAL PROPERTY
GRANTEE:	CLINTON COUNTY CONSERVATION DISTRICT
Basin Program Funds:	\$ 19,760 (APPROVED)
Nonfederal Funds:	\$ 18,070 (PROPOSED)
PROJECT DURATION:	JUNE 1, 2000 –MAY 01, 2002
PROJECT TYPE:	PROGRAM AND TECHNICAL ASSISTANCE
STATUS:	COMPLETE

PROBLEM STATEMENT

Stony Creek watershed contains many developing areas that are delivering nutrients and toxic substances to the creek. These noncropland areas are ineligible for current buffer-strip programs available through federal agricultural programs and are not being addressed in local watershed protection efforts.

BACKGROUND

Stony Creek is the southern most tributary of the Maple River, a major tributary to the Grand River in Michigan. The watershed, approximately 179 square miles, has a population of about 15,000 people. The lower portion of the stream is predominately natural, while the upper portion of the stream has been gradually converted to an agricultural drain over the past 100 years. New residential, commercial and urban development in the watershed is increasing peak runoff, further stressing banks and magnifying streambank erosion and downstream sedimentation.

Best management practices such as buffers and filter strips can be used to control erosion and sediment delivery to Stony Creek in order to reduce drain maintenance and improve water quality and wildlife habitat. Forested and herbaceous buffers stabilize streambanks and filter strips control erosion and sediment delivery to surface water.

ACTIVITIES

The Clinton County Soil and Water Conservation District implemented an education and cost-share assistance program for noncropland riparian landowners who are ineligible for traditional assistance through federal programs in order to improve the water quality of Stony Creek. District staff informed riparian landowners of the streambank erosion problems, the benefits of implementing buffers and filter strips, and the availability of cost-share assistance through three subsequent newsletters.

District staff met with interested landowners to discuss remediation options and to begin developing site-specific buffer/filter strip and streambank erosion control implementation plans. Landowners will establish buffer strip plantings of trees and shrubs, filter strip seeding of native trees, shrubs and native grasses and stabilize eroding streambanks through the use of bioengineering techniques.

RESULTS

Project personnel conducted an outreach program to inform and educate riparian property owners in the Stony Creek watershed of the exceptional benefits of buffer/filter strip installation and soft engineering to replace regular maintenance practice of hard armoring. Outreach activities included news articles in local papers with a total circulation of 4,000, direct mailings to approximately 360

landowners (averaging 40 per township). The outreach and promotion resulted in more than 100 responses, which resulted in 38 applications for participation in the Great Lakes Basin Program grant and numerous referrals to U.S. Department of Agriculture Natural Resources Conservation Service (NRCS). After initial interviews, on-site assessments were conducted resulting in 15 site-specific resource plans. All in all, the outreach program was responsible for more than 280 acres of buffer strips installed within the Stony Creek watershed.

After an initial interview with the landowner and completion of a site assessment, project personnel provided technical assistance for planning and installing the BMPs. Project plans included forested riparian buffers, native warm season grass and wildflower buffers, and a combination of these latter two buffer types for installation or enhancement of existing buffers. Orders for native plants and seeds were compiled for seasonal purchases. Resource materials were provided to contacts dependent on need. Other contacts were fielded to NRCS for federal program assistance under such programs as the Conservation Reserve Program (CRP). The outreach program continued throughout the duration of the grant period.

Two education/demonstration projects were implemented in highly visible areas. The first -the Terril Project— proved to be the largest of the projects completed and marked the Drain Commissioner's first use of soft engineering practices and alternative structures to secure stream banks. This project is located in an area of high visibility and will be used for any buffer demonstration tour to be sponsored by the District, NRCS, and/or the county. The second project converted an area on the Fowler High School property, which was a drained wetland that had previously been mowed. The draining riser was plugged, creating a seasonal wetland. Native plants plugs were used to establish warm-season grasses and, as a buffer zone, several wild flowers and plant species were purchased to create grassland meadow and wet meadow areas. An approximate total of 70 tons of soil was prevented from entering Stony Creek as a result of buffer strip installation. The educational project will be continual and available for special studies for many years.

MICHIGAN

PROJECT TITLE:	GRATIOT COUNTY SOIL EROSION CONTROL PROGRAM DEVELOPMENT AND INTEGRATION WITH COUNTY-WIDE GEOGRAPHIC INFORMATION SYSTEM (GIS)
GRANTEE:	GRATIOT COUNTY
Basin Program Funds:	\$15,000 (APPROVED)
Nonfederal Funds:	\$8,500 (PROPOSED)
PROJECT DURATION:	JULY 1, 2002 –
PROJECT TYPE:	PROGRAM AND TECHNICAL ASSISTANCE
STATUS:	ONGOING

PROBLEM STATEMENT

The problem being addressed with this proposed grant application is two-fold: (1) program development to meet State of Michigan part 91 soil erosion and sedimentation control requirements and (2) coordination with other county, intercounty and state soil erosion control programs and efforts.

BACKGROUND

There are many local, county and state efforts that are being implemented within Gratiot County that are aimed at soil erosion and sedimentation control. At this time there is little coordination among the separate efforts. It is important to communicate effectively the efforts of all the agencies. To help foster this communication it is proposed that the county-wide GIS be utilized for the soil erosion control and sedimentation program.

The existing soil erosion control program within Gratiot County has been placed on probation by the Michigan Department of Environmental Quality until such a time that the county has effectively administered and enforced Part 91 of the Soil Erosion and Sedimentation Control Act of the Natural Resources and Environmental Protection Act, 1994 PA 451.

ACTIVITIES

1. Development of a county-wide ordinance for soil erosion and sedimentation control that will meet and/or exceed the requirements of part 91 of PA 451, 1994.
2. Develop a soil erosion control manual to be used within the county that will identify the proposed best management practices that are best suited to Gratiot County and design details, and will clearly outline the requirements of the adopted ordinance.
3. Develop the database and mapping process so that the county-wide geographic information system can be utilized to develop reports and documentation of the soil erosion control permits throughout the county.
4. Coordinate the above efforts with adjacent counties, local municipalities and state agencies including the Michigan Department of Agriculture's Conservation Reserve Enhancement Program.

RESULTS

Project ongoing, no results.

MICHIGAN

PROJECT TITLE:	INDUSTRIAL SITE EROSION CONTROL WITH NATIVE PRAIRIE GRASS PLANTINGS
GRANTEE:	KALAMAZOO CONSERVATION DISTRICT
BASIN PROGRAM FUNDS:	\$ 17,853 (APPROVED)
NONFEDERAL FUNDS:	\$ 113,253 (PROPOSED)
PROJECT DURATION:	JUNE 1, 2000 -
PROJECT TYPE:	DEMONSTRATION
STATUS:	ONGOING

PROBLEM STATEMENT

Severe bank erosion is occurring at an industrial site along the banks of the Kalamazoo River in southwestern Michigan.

BACKGROUND

The Kalamazoo River watershed encompasses more than 2,000 square miles in southwest Michigan and contributes 435,000 tons of sediment to Lake Michigan annually. This represents five percent of the lake's annual load.

This project will implement and monitor the efficacy of native tallgrass prairie plantings compared to conventional plantings for erosion control on a severely eroded five-acre plot next to the Kalamazoo River. The plot will be divided into three equal sections, each of which exhibit similar soil, topographic, moisture and meteorologic characteristics. One plot will be treated with topsoil and a traditional grass mix. A second plot will be treated with topsoil and planted with native prairie wildflower and grass seeds. The third plot will be treated only with native prairie wildflower and grass seeds. Tallgrass prairie plants have been shown to significantly improve soil tilth and their extensive root systems facilitate the accumulation of organic matter in the soil. The plots with native grasses will also provide aesthetically pleasing displays of color.

ACTIVITIES

To establish the plots, the contractor graded the site to minimize erosion and spread suitable topsoil on the southern two plots, implementing proper erosion control measures throughout the construction process. The contractor hydroseeded the southern plot with a traditional mix of turf grass and hand spread a cover crop of two parts annual oats and one part annual rye over the northern plots. To retain moisture and enhance seed germination, the contractor spread straw over the northern two plots. The contractors planted the northernmost plot with prairie seed mix native to Michigan and suitable to the specific climatic and soil conditions of the site, using a seed drill. Due to excessive soil moisture in the central plot which received both topsoil and prairie seed, the contractor hand-seeded this plot.

Project personnel designed an educational website detailing the project and the benefits of using native plants at industrial and commercial sites. It is periodically updated to reflect the most recent progress of the plantings. To ensure the future success of the plantings, project personnel developed a long-term maintenance plan that includes periodic monitoring of the plots and supplemental plantings as necessary.

RESULTS

Project ongoing, no results.

MICHIGAN

PROJECT TITLE:	KALAMAZOO RIVER WATERSHED EROSION/SEDIMENTATION CONTROL PROJECT
GRANTEE:	CALHOUN CONSERVATION DISTRICT
Basin Program Funds:	\$23,746 (APPROVED)
Nonfederal Funds:	\$8,575 (PROPOSED)
PROJECT DURATION:	MAY 1, 2002 –
PROJECT TYPE:	PROGRAM AND TECHNICAL ASSISTANCE
STATUS:	ONGOING

PROBLEM STATEMENT

The water quality of Lake Michigan poses a potential hazard for aquatic organisms, human health, and recreation. The Kalamazoo River is a major contributor of contaminated sediments to Lake Michigan. The river is listed by the U.S. Environmental Protection Agency as an Area of Concern and has been placed on the Michigan Department of Environmental Quality's water quality non-attainment list. Nonpoint sources of pollution, such as agricultural runoff and streambank erosion, are leading contributors of sediment and other contaminants, such as nutrients and pesticides, to surface water. Land modification such as the reduction of riparian buffer zones promotes flow instability, habitat loss, sedimentation and an overall reduction in the physical and biological processes that maintain macroinvertebrate and fish communities.

BACKGROUND

The *Remedial and Preventive Action Plan for the Kalamazoo River Watershed Area of Concern* states that one of the necessary remedial activities is "ACTION 1: Develop educational and regulatory programs to alleviate soil erosion problems (High Priority)." The first task under this action is to "Identify specific areas where soil erosion has or is causing problems." One of the targets for this Kalamazoo River Watershed Erosion and Sedimentation Control Project a pair of identified critical bank erosion sites on tributaries to the Kalamazoo River.

Another action task is to "Encourage best management practices in the agricultural community for control of non point source pollution." Another target of this project is three sites where agricultural activities occur adjacent to surface waters and have the potential for contributing sediment, nutrients and pesticides to surface waters in tributaries to the Kalamazoo River.

ACTIVITIES

Establish three demonstration conservation filter strips and two demonstration stream restoration projects using soft engineering and natural restoration techniques at critically eroding and highly visible selected sites in the Kalamazoo river watershed in Calhoun County. These sites will be used as demonstration projects to increase the awareness and understanding among local citizens, organizations, and agencies regarding erosion and sediment delivery concerns. The sites will serve as key models for the expansion of filter strips and stream channel restoration projects in this area. The demonstration sites will significantly reduce or eliminate soil erosion and subsequent sediment, pesticide, and nutrient (especially phosphorus) delivery to this impacted Great Lakes Basin tributary.

Based on the demonstration sites, information/education programs and outreach efforts will be developed to increase the awareness and understanding of soil erosion, sediment and nutrient

delivery processes, and their roles in water quality degradation. These measures will increase our citizens' knowledge and abilities to plan and implement sound conservation BMPs to improve and protect water quality. This project has the added benefit of also helping to facilitate the cooperation and coordination of roles and initiatives between federal, state, and local conservation agencies and organizations regarding water quality protection and restoration.

RESULTS

Project ongoing, no results.

MICHIGAN

PROJECT TITLE:	MACOMB BUFFER INITIATIVE
GRANTEE:	MACOMB CONSERVATION DISTRICT
BASIN PROGRAM FUNDS:	\$15,500 (APPROVED)
NONFEDERAL FUNDS:	\$30,525 (PROPOSED)
PROJECT DURATION:	JULY 1, 2002 –
PROJECT TYPE:	PROGRAM AND TECHNICAL ASSISTANCE
STATUS:	ONGOING

PROBLEM STATEMENT

Shoreline erosion is a major source of sediment into the lakes, streams and rivers of Macomb County in Southeast Michigan. Macomb County has more than 29 miles of Lake St. Clair shoreline, and contains approximately half of the Clinton River watershed and a small portion of the St. Clair River Watershed. It has a population of 1.5 million and growing rapidly making it one of highest urbanized and developing counties in Michigan. In 1988, the Clinton River was designated one of 42 Great Lakes Areas of Concern (AOCs). According to the Clinton River Watershed Remedial and Preventive Action Plan, “erosion and sedimentation contribute significantly to use impairments, thus sediments are considered a primary contaminant in the Clinton River”. Although shoreline erosion occurs naturally, erosion is accelerated by short-term high water storm events and land-use activities such as urbanization and development. The erosion problem is compounded by the absence of established vegetative riparian buffers in urban areas. The result is additional soil entering watercourses throughout Macomb County. Shoreline stabilization methods such as soft engineering and vegetative riparian buffers provide a viable alternative for controlling erosion and filtering surface runoff in high urban areas. These “green” alternatives can also improve water quality, are aesthetically attractive, provide wildlife habitat, reduce long-term maintenance costs, and are cost competitive with traditional shoreline stabilization methods.

BACKGROUND

Since most of Macomb County is urbanized, we feel urban conservation buffers will considerably reduce the amount of erosion and sediment entering any surface water in Macomb County and the Great Lakes basin. These buffers or “living filters” will be strategically placed in the urban landscape to control soil erosion, prevent air and water pollution, enhance fish and wildlife habitat, improve landscape aesthetics, conserve biodiversity and achieve other water quality objectives. These conservation buffers will require minimal amounts of land, making it possible for landowners to maintain their yard and lawn while protecting and improving water quality. When properly installed and maintained, these buffers can prevent soil erosion and remove large portions of contaminants (such as sediment, nutrients, pesticides, and pathogens) from storm runoff, subsurface flow, and lawn care practices. In addition, this program will collaborate with the USDA-NRCS “National Conservation Buffer Initiative”, but instead of being focused on agriculture, will focus on the nonagricultural residents within Macomb County.

ACTIVITIES

We propose to meet the goals of the project by creating buffers that use native plants such as wildflowers, grasses, shrubs and even some trees to create a “landscaped look”. The landscaped buffer would focus on creating aesthetically pleasing buffers, accommodating concerns of flower colors, bloom times, wildlife habitat and blocked views from plant heights. We propose to strengthen an existing program by using Basin Program funds for cost-share incentives of 70/30

match (up to \$900 per project) to cover the cost for plant materials in urban buffers. We hope that we can encourage landscapers and landowners involved in the project by offering them these incentives. We will then recommend appropriate plant material that protects water quality (e.g. blazing star and bluestem grass which have root systems up to 15 ft. deep to hold soil in place) and use the landscaper's expertise to create an aesthetically pleasing landscaped buffer for the landowner. We hope to establish ten of these urban conservation buffer sites. We also propose a small information and education plan that centers on making 150 informational packets to be distributed to local government, property owners, and landscapers; along with two conservation buffer workshops for landscapers, landowners and local government.

RESULTS

Project ongoing, no results.

MICHIGAN

PROJECT TITLE:	NICHOLS ARBORETUM
GRANTEE:	NICHOLS ARBORETUM, UNIVERSITY OF MICHIGAN
BASIN PROGRAM FUNDS:	\$ 25,000 (APPROVED)
NONFEDERAL FUNDS:	\$ 19,205 (PROPOSED)
PROJECT DURATION:	JULY 1, 2001 –
PROJECT TYPE:	DEMONSTRATION
STATUS:	ONGOING

PROBLEM STATEMENT

Uncontrolled discharges into School Girls Glen ravine are causing bank erosion and severe head cutting and down cutting in the ravine. This erosion in turn has undermined and scoured the ravine banks that have resulted in slumping and mass wasting of the ravine sides. Many large trees in the ravine have been undermined and toppled by this activity which further destabilizes the banks of the ravine.

BACKGROUND

School Girls Glen, located in the Nichols Arboretum, is a large steep ravine that drains into the Huron River. Most of the surface runoff that flows into the glen comes from the adjoining Forest Hills Cemetery that occupies the headwater area of a steep 20-acre watershed. The runoff generated from this area in a 10-year storm has been estimated at 16 cu. ft. per second. The runoff is funneled and concentrated by a series of roads that converge near the boundary fence between the cemetery and the Arboretum. Storm water runoff from Washington Heights Road and the adjacent parking lots and roofs also contribute to the problem. The water discharges at the head of the ravine without benefit of any holdup or temporary storage. A recent study indicated some 13,530 cubic yards of soil were lost over a 28-year period.

ACTIVITIES

A series of cross-channel grade stabilization structures will be installed at the head of the ravine. Both log and rock structures will be considered in addition to vegetated gabion walls. Channel armoring and bank protection will be employed along critical reaches of the ravine. Concentrated and erosive flows of water entering the ravine from the sides will be diverted, spread out by means of diversion dikes, waterbars, rolling dips, cross drains and downslope drains. Sediment barriers will be employed where runoff carries substantial sediment. Invasive woody species will be removed to permit the recovery of native ground cover. Trees removed during this process will be used in the bioengineering stabilization practices.

RESULTS

Project ongoing, no results.

MICHIGAN

PROJECT TITLE:	NORTH SHARON ROAD TIMBER BRIDGE PROJECT
GRANTEE:	KALKASKA CONSERVATION DISTRICT
BASIN PROGRAM FUNDS:	\$ 25,000 (APPROVED)
NONFEDERAL FUNDS:	\$ 284,000 (PROPOSED)
PROJECT DURATION:	JULY 1, 2001 - JUNE 30, 2002
PROJECT TYPE:	PROGRAM AND TECHNICAL ASSISTANCE
STATUS:	COMPLETE

PROBLEM STATEMENT

An undersized culvert on the North Branch/Sharon road crossing on the North Branch Tributary of the Big Manistee River is causing severe sedimentation to the river. The site consists of a single culvert channeling the river under a gravel country road. Estimated sediment loading from this site is 84 tons per year. In addition to the sediment deposition from the unpaved surface, the undersized culvert has caused the development of a plunge pool on the downstream side of the culvert with the resultant bank erosion of 7-10 tons per year. The undersized culvert has a detrimental effect on the river upstream as well. The impeded water on the upstream side of the culvert is 25-30% wider than the unimpeded flow downstream.

BACKGROUND

For more than ten years the upper reaches of Michigan's Big Manistee River have been receiving extensive streambank and road crossing repair work in efforts to abate sediment loading. Nearly \$3 million and a decade of work have been invested to date. Fish populations are on the rise, river use is as heavy as ever and the cold clear water flows downstream to the Missaukee County line. One wound that remains unhealed is the North Sharon Road crossing, which is within one quarter-mile of the main stem.

ACTIVITIES

Remove existing culvert at the N. Sharon Road Crossing on the North Branch of the Manistee River. Install a clear span timber bridge. Pave 3,800 feet of approaches to the crossing. Install asphalt ditches with water spout turnouts to direct roadway water to wetland and upland retention areas. Install heavy rock rip-rap to armor bridge footings and install treated steps to allow access to the river by river users. Produce a partnership agreement for project collaborators and set up tours of our project with local and regional decision makers demonstrating the effectiveness of the collaborative soil erosion and sediment control projects.

RESULTS

Successfully signed a nine-way agreement for the construction of the bridge. This is important because of the diverse group involved and the financial logistics. The existing culvert was removed and the new bridge constructed. The hydraulics of the river is completely changed. Stream bank scouring has stopped and the downstream plunge pool is beginning to fill. Erosion control measures are in place including heavy rip-rap channel lining, stream bank erosion protection; rock-lined downspouts are in place diverting water from the roadway; and final grading has been done for the paving.

MICHIGAN

PROJECT TITLE:	SOFT ENGINEERING AND NATURAL METHODS CONTROL STREAMBANK EROSION
GRANTEE:	OSCEOLO-LAKE CONSERVATION DISTRICT
BASIN PROGRAM FUNDS:	\$ 17,662.50 (APPROVED)
NONFEDERAL FUNDS:	\$ 5,887.50 (PROPOSED)
PROJECT DURATION:	JULY 1, 2001 -
PROJECT TYPE:	DEMONSTRATION
STATUS:	ONGOING

PROBLEM STATEMENT

The sandy streambanks of the Pere Marquette River coupled with the river's high stream flow causes sand to be deposited into the river, covering spawning beds and filling in fishing holes. Streambank erosion and sedimentation have been documented on the Middle Branch of the Pere Marquette, but inadequate funding exists to address the problem. The river is important for fishing, including trout and salmon fishing, wildlife viewing, and other forms of recreation. The overall goal of the project is to prevent streambank erosion and the resultant sedimentation of the Pere Marquette River by applying soft engineering practices and native seed and shrub plantings at 44 sites identified as having streambank erosion problems.

BACKGROUND

The Middle Branch of the Pere Marquette River begins in Chase Township, Lake County, Michigan. The river is joined by the Baldwin River about two miles southwest of Baldwin, then continues through Mason City where the Pere Marquette River outlets into Lake Michigan, just south of Ludington. In March 2000, Trout Unlimited identified the Pere Marquette as the "longest free flowing trout stream in Michigan." Streambank erosion has been documented on the Middle Branch of the Pere Marquette in sections 9 and 10 of Yates Township in Lake County. A private citizen identified 44 streambank erosion sites and those sites were verified by natural resource professionals from the NRCS and the MDNR.

ACTIVITIES

This project's primary activities will be to:

1. Secure the support, cooperation and commitment of all riparian landowners who have one or more of the 44 identified sites on their properties.
2. Obtain permits from the Michigan Department of Environmental Quality so that protective measures may be implemented;
3. Complete engineering design showing engineering practices and native plants to be used to address streambank erosion at the 44 identified sites;
4. Meet with implementation crew to discuss the work to be performed and the final completion date;
5. Install soft engineering and native plants to control streambank erosion and sedimentation at the 44 identified sites.

RESULTS

Project ongoing, no results.

MICHIGAN

PROJECT TITLE:	SOIL EROSION AND SEDIMENTATION REDUCTION IN THE ST. JOSEPH RIVER BASIN
GRANTEE:	ST. JOSEPH COUNTY CONSERVATION DISTRICT
BASIN PROGRAM FUNDS:	\$ 23,440 (APPROVED)
NONFEDERAL FUNDS:	\$ 12, 730 (PROPOSED)
PROJECT DURATION:	JULY 1, 2001 –
PROJECT TYPE:	PROGRAM AND TECHNICAL ASSISTANCE
STATUS:	ONGOING

PROBLEM STATEMENT

The average soil loss from sheet and rill erosion and wind erosion in St. Joseph County is seven tons per year and at critical riparian sites the rates often exceed ten tons per acre per year. A key concern is that soil and nutrients are easily transported by surface runoff.

BACKGROUND

The water quality of Lake Michigan continues to be a concern. A leading contributor to the problem is soil erosion with associated sediment and nutrients and pesticides. St. Joseph County has more corn acreage than any other county in western Michigan.

ACTIVITIES

Reduce soil erosion and sedimentation to St. Joseph River by implementing best management practices, especially 200 acres of riparian buffers and filter strips. Establish demonstration riparian buffer strips for education purposes. Create educational outreach to area citizens and land users through field tours, fair displays, and development of a brochure on soil erosion and sedimentation.

RESULTS

Project ongoing, no results.

MICHIGAN

PROJECT TITLE:	STREAM CHANNEL RESTORATION THROUGH DAM REMOVAL: A HURON PILOT PROJECT
GRANTEE:	HURON RIVER WATERSHED COUNCIL
BASIN PROGRAM FUNDS:	\$ 20,549 (APPROVED)
NONFEDERAL FUNDS:	\$10,543 (PROPOSED)
PROJECT DURATION:	JULY 1, 2002 –
PROJECT TYPE:	PROGRAM AND TECHNICAL ASSISTANCE
STATUS:	ONGOING

PROBLEM STATEMENT

Portions of the Huron River system are impaired by sedimentation from soil erosion upstream and the location of dams downstream, especially the area of the Mill Pond Dam and Impoundment in Dexter, Mich. River ecologists are unified in their recommendation to remove Mill Pond Dam in order to improve the water quality and ecological health of the site. The Michigan Department of Natural Resources (MDNR), Fisheries Division, recommended the removal of the dam at Dexter as a key component in the rehabilitation of Mill Creek (Fisheries Special Report, No. 16, Huron River Assessment, April 1995), as did Seelbach and Wiley in their 1996 report to the Huron River Watershed Council "An Assessment of the Potential for Ecological Rehabilitation and Restoration in Mill Creek."

BACKGROUND

Lack of financial and personnel resources have prevented the project from taking the next steps of identifying required studies and funding sources. The Huron River Watershed Council (HRWC) was approached by the village to assist in the decision making and the implementation of the recommendation. We are seeking the involvement of the Great Lakes Basin Program in order to rehabilitate the Mill Creek site and reconnect the Mill Creek watershed to the rest of the Huron River watershed.

Downstream from the confluence of Mill Creek and the Huron River is Argo Dam and Pond, which are located in the urban setting of Ann Arbor. Over the century since the dam was built, sediment has filled the impoundment and impaired the fishery and recreation uses of the river. The Michigan Department of Natural Resources has identified Argo Dam as a priority. River ecologists also recommend removal but note that the sediments need to be analyzed first. Although the Argo Dam discussion represents a younger process, it holds the possibility of generating future removals and stream channel restorations within the population corridor of Ann Arbor-Ypsilanti, where additional dams have been recommended for removal by the state.

ACTIVITIES

The Mill Pond Dam project will continue to build public support from the community through the following conducting two public meetings to obtain stakeholder input, enlisting the involvement of community groups, and gaining support of new village council members for task force recommendation.

Next, project personnel plan to set the groundwork for the project by resolving the ownership of the dam and submerged property, coordinating and facilitating 2-3 meetings of a technical team (i.e., engineering and planning consultants, and scientists) to identify necessary studies, applying for

funding of studies in the form of grants and assistance from partners, conducting baseline studies of conditions at the site, continuing community visioning processes, strengthening partnerships, and arranging a preliminary meeting with state agencies to determine the course of action required for obtaining permits.

Finally, personnel will design a project by hiring consultants and engineers, developing plans and cost estimates for dam removal, sediment handling, and stream channel restoration, and obtaining the appropriate permits.

Specific to Argo Dam, the following tasks are planned: increase public involvement in the discussion through meetings of stakeholders, identify desired outcomes and produce a timeline of tasks, responsible parties and appropriate funding sources, gain public input on possible site scenarios; generate possible scenarios using digital spatial analysis tools with the help of landscape planners and engineers; and secure funding for sediment analysis and additional studies.

INTERIM RESULTS

Project ongoing, no results.

MICHIGAN

PROJECT TITLE:	THE DIRT DOCTORS: LESSON PLANS ON SOIL EROSION AND SEDIMENT POLLUTION
GRANTEE:	WAYNE CO. DEPT. OF ENVIRONMENT LAND RESOURCES MANG. DIVISION
BASIN PROGRAM FUNDS:	\$ 22,256 (APPROVED)
NONFEDERAL FUNDS:	\$ 7,975 (PROPOSED)
PROJECT DURATION:	JULY 1, 2001 – SEPTEMBER 16, 2002
PROJECT TYPE:	DEMONSTRATION
STATUS:	COMPLETE

PROBLEM STATEMENT

There is currently a lack of educational programs regarding soil erosion and sediment pollution as an adverse impact to a watershed. Making people aware that erosion and sedimentation are major problems is the first step in the solution to the problem.

BACKGROUND

According to the Michigan Department of Environmental Quality, sediment is the number one water pollutant in the state of Michigan. The Rouge Remedial Action Plan (RAP) of 1998 identifies sediment as a Rank 2 nonpoint source pollutant and outlines public education programs as part of the RAP goals. The RAP also notes that contaminated sediments are a Rank 5 Nonpoint Source Pollutant and public education is listed as a goal. This program will be the first step in educating the public about how soil erosion and resulting sediment pollution is a major problem facing our watersheds today.

ACTIVITIES

Lesson plan kits will be developed that provide interactive presentations and demonstrations. The project staff will develop and create four lesson plans kits. The kits will be tested and revised as needed.

RESULTS

Four Dirt Doctors Lesson Plans along with teaching kits to support them were drafted and assembled. All in all, three self-contained Dirt Doctors Teaching Kits, including four lesson plans, instructions, and supplies were assembled. Lesson plans were designed to be teacher-friendly and taught as part of a four-day program or as an individual lesson. Furthermore, plans were designed to fit together with existing elementary environmental education programs currently offered by the Rouge Education Project.

A four-day Dirt Doctors series was presented to three different third grade classes in the Northville Township School District. Teachers and teaching assistants have been solicited for feedback to make improvements to the program. Other elementary teachers have contacted the Wayne County Department of Environment about presenting the program for the following year.

The kit will be provided to Friends of the Rouge and detailed on the Wayne County Department of Environment web page for further marketing.

MICHIGAN

PROJECT TITLE:	URBAN EROSION CONTROL PROJECT FOR LOOP PARK
GRANTEE:	SHIAWASSEE COUNTY SWCD
BASIN PROGRAM FUNDS:	\$ 25,000 (APPROVED)
NONFEDERAL FUNDS:	\$ 38,650 (PROPOSED)
PROJECT DURATION:	JULY 1, 2001 –
PROJECT TYPE:	PROGRAM AND TECHNICAL ASSISTANCE
STATUS:	ONGOING

PROBLEM STATEMENT

Loop Park erosion problems, similar to many residential sites, include two gullies caused by overland flow and streambank erosion due to a lack of vegetation. Destruction of vegetation caused by the unnatural concentration of hundreds of wild and domestic waterfowl, and excessive foot traffic from hundreds of park visitors is adding to the degradation by prohibiting reestablishment of vegetation.

BACKGROUND

Many concerns have emerged from the Shiawassee River watershed and are linked to urban erosion problems. These concerns, as indicated by the State's Total Maximum Daily Load list, include exceedances in phosphorus and pathogens, and poor fish and macroinvertebrate communities. In 1995, the Michigan Department of Environment conducted a biological survey, the resulting preliminary report indicated degraded habitat from sedimentation, large flow fluctuations and removal of riparian vegetation.

Urban problems such as these exist throughout the watershed.

ACTIVITIES

Stabilize 2200 feet of streambank with native woody vegetation, grasses and wildflowers. Return the concentration of waterfowl to natural levels by restoring the native vegetation. Provide a demonstration area for the entire community, especially riparian residents, on the aesthetic and environmental benefits of native plant restoration along the riverbank and flood plain. Train and utilize volunteers in the restoration effort. Decrease erosion by providing designated walkways and fishing access points. Install signage along the river for information and educational purposes. Promote the project through a website.

RESULTS

Project ongoing, no results.

MICHIGAN

PROJECT TITLE:	SEDIMENT REDUCTION ON THE SOUTH BRANCH OF THE BOARDMAN RIVER
GRANTEE:	GRAND TRAVERSE CONSERVATION DISTRICT
BASIN PROGRAM FUNDS:	\$ 21,160 (APPROVED)
NONFEDERAL FUNDS:	\$ 37,018 (PROPOSED)
PROJECT DURATION:	JUNE 1, 2000 – OCTOBER 31, 2001
PROJECT TYPE:	PROGRAM AND TECHNICAL ASSISTANCE
STATUS:	COMPLETE

PROBLEM STATEMENT

A severely eroding site along the South Branch of the Boardman River in northwestern Michigan is contributing tons of sediment to Grand Traverse Bay, part of Lake Michigan. An existing sand trap prevents much of the sediment from reaching the river, but it fills rapidly and must be cleaned periodically.

BACKGROUND

The Boardman River is a state-designated Natural River and A Blue Ribbon trout stream. The 300 square-mile watershed drains approximately 182,800 acres of land into Grand Traverse Bay at Traverse City. The river is one of Grand Traverse Bay's major tributaries. In a 1991 study, the Grand Traverse Conservation District identified more than 600 sources of sediment along the Boardman River, 85 percent of which are the direct result of human activity.

This project focuses on reducing sediment that makes its way to the South Branch sand trap, which is a mile down stream from the project site and filling at the rate of over 450 cubic yards per year. The trap has made an obvious and significant improvement in the quality of trout habitat down stream from the trap. The primary contributor of sand to the trap is the Boardman River Road crossing. Repair of severe erosion at the site will result in a slower fill rate over time.

ACTIVITIES

The Kalkaska Road Commission surveyed the site, developed a final project design and applied for and obtained a permit from the Michigan Department of Environmental Quality. Students from a local environmental institute visited the site and suggested that an open bottom culvert would be the best alternative for this site. Open bottom culverts maintain the natural bottom substrate and do not significantly alter the velocity of the river.

Road Commission staff purchased materials and began preparation for construction activities. They installed an open bottom culvert and graded and paved the road, including a raised edge to direct stormwater away from the river. District work crews installed fish habitat structure and riprap around the ends of the culvert and seeded and mulched the site.

RESULTS

By regrading and paving the existing road surface, installing an open bottom culvert, and directing stormwater away from the river, district staff effectively eliminating the introduction of sediment at this site. District work crews installed fish habitat structure and riprap around the ends of the

culvert and seeded and mulched the site. This will save the county thousands of dollars in sand trap maintenance costs and improve water quality and downstream trout habitat.

The district staff expects that over the 30 year estimated life span of this project, stabilization of the road crossing will prevent 900 tons of soil, 9,000 pounds of phosphorus and 1,800 pounds of nitrogen from entering the Boardman River. The project provided an educational experience for a total of 35 site visitors consisting of students and elected officials. The district staff estimates an additional 20 students and elected officials will visit the site in the future.

MICHIGAN

PROJECT TITLE:	SOIL EROSION AND SEDIMENT CONTROL ALONG DETROIT'S URBAN WATERFRONT
GRANTEE:	DETROIT/WAYNE COUNTY PORT AUTHORITY
BASIN PROGRAM FUNDS:	\$ 25, 000 (APPROVED)
NONFEDERAL FUNDS:	\$ 10, 300 (PROPOSED)
PROJECT DURATION:	JUNE 1, 2000 – OCTOBER 31,2001
PROJECT TYPE:	DEMONSTRATION
STATUS:	COMPLETE

PROBLEM STATEMENT

Many river shorelines have been stabilized and hardened with concrete and steel to provide passage for commercial navigation or industry, to protect developments from flooding and to control erosion. Such hard engineering techniques are expensive and provide no habitat for fish or other aquatic life. Opportunities exist along the Detroit River, an American Heritage River, to demonstrate and implement soft engineering techniques that will not only control erosion and enhance wildlife habitat, but also will also improve the aesthetics and save money.

BACKGROUND

The Detroit River is one of the most biologically diverse areas in the Great Lakes basin and provides a good opportunity to raise awareness of the need to restore and protect habitat using soft engineering techniques. Soft engineering uses native plants in combination with geotextile fabrics to stabilize the shoreline. Demonstration projects of soft engineering techniques have already been implemented at 10 locations along the Detroit River, including this most recent demonstration in Belle Isle, a 980 acre park located in the Detroit River. Project staff chose Lake Muskoday on the northeastern end of Belle Isle, as a demonstration site primarily because of its proximity to a road and the existing severe erosion problems that presented a challenge to concerned stakeholders.

Many organizations collaborated with the Detroit/Wayne County Port Authority in this demonstration and site stabilization effort, including members of the Greater Detroit American Heritage Rivers Initiative, the U.S. Department of Agriculture's Natural Resource Conservation Service (NRCS) and NTH Consultants, Ltd, who provided technical support for the design. The City of Detroit Recreation Department provided the site on Belle Isle. Project staff applied for and obtained a permit, identified locations for harvesting live and inert plant material, submitted a request for proposals and selected a contractor.

ACTIVITIES

Project staff organized a two-day workshop that included classroom instruction and hands-on experience implementing the soft engineering techniques on the shore of Lake Muskoday. More than 40 public officials, private contractors, regulators, landscape architects and city maintenance workers participated in the workshop and subsequent work day. Many of these people were already involved in soft engineering projects or interested in learning the techniques for controlling erosion.

Prior to the workshop the contractor, Cameron Contracting of Wixom, Michigan, prepared the site by removing broken concrete and trash, sloped the soil and laid down a grass matting to protect the site from further erosion. Project staff obtained live plant materials several days before the work-

shop. During the workshop, participants learned about the techniques they were going to be employing in the field and shared insights from previous projects.

The contractor cut back the eroded banks with a backhoe and excavated to provide a place for the geotextile fabric. Volunteers then installed live fascines, brush mattresses and vegetative geogrids above the rock toe to further stabilize the shoreline.

Fascines are bundled branches, usually willow or dogwood, that are tied together with twine. Inert fascines were used along the shoreline, while live fascines were used further up slope. Brush mattresses are made from live willow and/or dogwood branches and are used in a similar fashion as erosion control netting. The mattresses are secured to the slope with dead stout stakes. The vegetated geogrid process involves placing rock riprap at the edge of the shoreline and then creating steps up the slope of the shoreline using a geotextile mattress. Live cuttings are placed in between each step.

RESULTS

Project staff and volunteers stabilized more than 300 feet of shoreline along Lake Muskoday, enhancing the environment for waterfowl and fish populations and reducing soil erosion, keeping an estimated 15 pounds of soil, 160 pounds of phosphorus and 32 pounds of nitrogen from eroding into the Detroit River. The volunteers gained a great deal of knowledge and first-hand experience about the benefits and challenges of stabilizing shorelines using soft engineering techniques. This information will prove useful as they are faced with similar problems in the future. Beyond the one-and-a-half year grant period, project staff expect to reach an additional 200 elected officials and public agencies with this demonstration project.

Project staff, in partnership with many organizations, agencies and private consultants, succeeded in demonstrating innovative soft engineering techniques along the Detroit River. Through this process, Belle Isle visitors will learn about the alternatives to hard engineering, as they are exposed to the aesthetically pleasing shoreline of Lake Muskoday. The stabilization of Lake Muskoday has also enhanced the wildlife habitat along the lake. The Port Authority's long-term hope is that this project will inspire large-scale and more efficient and cost-effective shoreline erosion control methods along Detroit's Belle Isle and the Detroit River as a whole.

MICHIGAN

PROJECT TITLE:	WHITE RIVER'S BURYING GROUND POINT SEDIMENT CONTROL AT HILT'S LANDING
GRANTEE:	MUSKEGON CONSERVATION DISTRICT
Basin Program Funds:	\$25,000 (APPROVED)
Nonfederal Funds:	\$12,170 (PROPOSED)
PROJECT DURATION:	JUNE 30, 2002 –
PROJECT TYPE:	DEMONSTRATION PROJECT
STATUS:	ONGOING

PROBLEM STATEMENT

The 1995 White Lake Remedial Action Plan (RAP) recommends a nutrient and organic loading model to answer questions related to eutrophication or undesirable algae. Although eutrophication of White Lake has been reduced in the last 20 years, oxygen levels in deep water remain depleted, making these areas uninhabitable for some fish and the species they eat. It is not known if additional reductions in nutrients and organic loadings from nonpoint sources would improve this condition. However, the RAP recommends a strategy to control existing sources of sediments and nutrients through the development of a comprehensive soil erosion and sedimentation-control strategy for the White River watershed to address the loss of the lake's littoral zone at the river mouth and critical fish and wildlife habitat. The recommended strategy includes stream bank erosion-control measures and BMPs to slow the rate at which solids are deposited in White Lake, improve aesthetics and improve the habitat for aquatic organisms in both the lake and tributaries. The BMPs proposed to address soil erosion and sedimentation in this proposal will fulfill these RAP recommendations by reducing the excessive sediment load that disturbs aquatic habitats and by decreasing the input of nutrients associated with the sediment.

BACKGROUND

The following major threats to the White Lake area of concern's natural resources have been documented in the 1987 and 1995 White Lake (RAP) and in the 2000 Lake Michigan Lakewide Management Plan.

1. Shoreline alterations through public access and new developments continue to exacerbate the historic loss of shoreline fish and wildlife habitat. This resulted from historical filling and dredging of White Lake's shoreline for industrial expansion, marina development and the encroachment of housing/agriculture/recreational uses in the watershed (river and tributaries).
2. Sedimentation from immediate tributaries and the White River continues to degrade aquatic habitat. White River provides over 95% of the lake's water and the 1994 RAP identifies sediment as a major problem. This impact degrades aquatic habitat and water quality by destroying fish habitat; decreasing the amount of aquatic habitat; providing excess nutrients; increasing the need for maintenance dredging and causing thermal pollution. The quantity of sediment deposited in White Lake has not been identified to date, however this problem plagues White Lake.

ACTIVITIES

This project's goal is to fulfill RAP recommendations toward delisting of two (2) beneficial use impairments (BUIs): 1) Loss of fish and wildlife habitat and 2) eutrophication and undesirable algae.

This project will result in improved water quality by decreasing the volume of sediment entering White River/Lake and the loss of fish and wildlife habitat in the near shore fish spawning areas of the White Lake.

It will demonstrate the use of soft engineering/natural restoration techniques and set an example to watershed residents on proper access to this valuable resource, one of Michigan's Natural Rivers (Scenic river designation).

RESULTS

Project ongoing, no results.

MINNESOTA

PROJECT TITLE:	APPLYING NATURAL RESTORATION TECHNIQUES TO SLOPE RESTORATION
GRANTEE:	MINNESOTA EROSION CONTROL ASSOCIATION
BASIN PROGRAM FUNDS:	\$ 25,000 (APPROVED)
NONFEDERAL FUNDS:	\$ 35,000 (PROPOSED)
PROJECT DURATION:	JULY 1, 2001 – JUNE 30, 2002
PROJECT TYPE:	DEMONSTRATION
STATUS:	ONGOING

PROBLEM STATEMENT

Sedimentation into Lake Superior is of particular concern along the north shore of Lake Superior. Erosion from road construction is a particular challenge for state and local governments because of steep topography, shallow soils and limited construction season. Soil exposure may exist for several months to years before the traditional final permanent erosion control measures are applied.

BACKGROUND

The transportation corridor along the north shore of Lake Superior is vital to commerce in Minnesota and the adjacent province of Ontario. Continual road safety upgrading exposes soil and causes aesthetics departures from established ecotourism ideals during the construction process. The goal will be to incorporate ecotype landscape architecture design elements to soften and even mask erosion control projects constructed on Minnesota's North Shore, a highly visible transportation corridor.

Minnesota Department of Transportation will supervise an planning and construction of the "erosion control landscape context sensitive design". The University of Minnesota School of Landscape Architecture will be consulted for planning and design techniques.

ACTIVITIES

Identify and target eroding areas along the North Shore to include in the project. Consult with landscape architects, project engineers, project inspectors and final design. Construct project, applying landscape architectural techniques. Document soil savings and natural amenities of the projects.

RESULTS

Project ongoing, no results.

MINNESOTA

PROJECT TITLE:	LAKE SUPERIOR TALL CLAY BLUFF RESTORATION
GRANTEE:	MINNESOTA BOARD OF WATER AND SOIL RESOURCES
BASIN PROGRAM FUNDS:	\$ 18,100 (APPROVED)
NONFEDERAL FUNDS:	\$ 10,440 (PROPOSED)
PROJECT DURATION:	JULY 1, 2001 – JUNE 30, 2002
PROJECT TYPE:	DEMONSTRATION
STATUS:	COMPLETED

PROBLEM STATEMENT

Thirty-six miles of the Minnesota Lake Superior shoreline are unstable tall clay bluffs. In Sucker Bay, 1,050 feet of failing clay bluffs have been successfully stabilized along the toe of the bluff but the revegetation and re-shaping of the upper clay slope remain to be completed.

BACKGROUND

Nonpoint source pollution of Lake Superior is occurring all along the shoreline and throughout the watershed. Typically, the clay bank shorelines are quite high and the erosion and subsequent bluff instability have an extremely negative impact on the nearshore aquatic zone. It is estimated that the clay bluffs produce an estimated 70,000 tons of sediment annually, with 3,000 tons for Sucker Bay alone. One of the reasons why the final revegetation and bluff reshaping of the Sucker Bay project has not been completed is that specific guidance on vegetative species which will grow well in the conditions along the shoreline have not been compiled.

The site will provide a demonstration site and a visual example that all of the Lake Superior Association soil and water conservation districts can use to provide valuable information to local governments and private property owners.

ACTIVITIES

Final selection of demonstration site and preparation for plantings and bluff reshaping including site survey, design layout and plant species selection. Develop construction documents and select a contractor. Install the plants and reshape the bluffs.

RESULTS

Two properties were selected for restoration. A total of nine different treatments were applied to the area to compare many options side by side. The different treatments were: Two types of vegetation (more than 700 hybrid poplars and dogwoods) with tree shelters and mulch, major earthwork with erosion control blankets, hydraulically applied bonded fiber matrix, coconut wattle fascines and fiber-reinforced earth. The project allowed the team to demonstrate several slope restoration techniques and revegetation schemes on tall clay bluff shorelines. The project is being monitored and the lessons learned will provide valuable cost and erosion reduction benefits for the Minnesota Lake Superior shoreline property owners. The two sites will save an estimated 1,690 tons of sediment per year, 16,900 pounds of phosphorus, and 3,380 pounds of nitrogen.

MINNESOTA

PROJECT TITLE:	LINCOLN PARK MILLER CREEK BED RESTORATION PROJECT
GRANTEE:	CITY OF DULUTH
Basin Program Funds:	\$24,000 (APPROVED)
Nonfederal Funds:	\$8,000 (PROPOSED)
PROJECT DURATION:	JULY 1, 2002 –
PROJECT TYPE:	DEMONSTRATION PROJECTS
STATUS:	ONGOING

PROBLEM STATEMENT

While most of the attention to the stream has been given to the portion above Skyline Boulevard, this project deals with the creek erosion problems in the portion within Lincoln Park City Park, which affect the creek's mouth at Lake Superior. This project will address sedimentation issues related to erosion from the development of commercial and residential areas as well as from chronic stormwater runoff and storm generated high flow rates in the area of Miller Creek in the Lincoln Park city park.

BACKGROUND

Over the last 30 years, commercial and residential development above this area has greatly increased in both Hermantown and Duluth, which has in turn increased water runoff, erosion and water flow rates of Miller Creek below Skyline Parkway. Coupled with high rainfall, torrid storm activity and snow accumulation annually in this region, the resulting effects have been the destruction of the creek walls, and the widening and deepening of the creek's bed. Increased erosion levels and debris from highway runoff result in larger amounts of sediment being deposited at the mouth of the creek in the St. Louis River. Recreational water activities and fishing have also been impacted by these anthropological and naturally occurring activities surrounding this watershed.

ACTIVITIES

The main goal of this project is to decrease the water flow rate to control erosion and sedimentation of Miller Creek in the lower part of Lincoln Park city park. Miller Creek has long been identified as one of the tributaries in the Lake Superior basin, which has been severely impacted over the last sixty years. In 1999, it was identified in the Lincoln Park Restoration and Rehabilitation Improvement Framework, a plan developed through a partnering of neighborhood residents, businesses, school staff, environmentalists, and the City of Duluth. This project identifies a component of a solution to one of the project's ten short-term goals.

The work to be done will be restoration of the creek bed. Installation of swails and other remedies, using best management practices will be used to restore the creek bed in order to help slow the creek flow, which will in turn minimize erosion and sedimentation flow. The walls of the creek and the bridges, built by Civilian Conservation Corps during the Works Progress Administration will be restored using additional Storm Water Utility and Coastal Management Grant funds to complement this project. Work will be started in spring 2002 and completed in fall 2002. The creek flow will be monitored throughout the project to detect the results of the work being performed for meeting the project objectives.

RESULTS

Project ongoing, no results.

MINNESOTA

PROJECT TITLE:	LOW IMPACT DEVELOPMENT DEMONSTRATION PROJECT
GRANTEE:	LAKE SUPERIOR ASSOCIATION OF SOIL & WATER CONSERVATION DISTRICTS
BASIN PROGRAM FUNDS:	\$ 25,000 (APPROVED)
NONFEDERAL FUNDS:	\$ 11,845 (PROPOSED)
PROJECT DURATION:	JULY 1, 2002 –
PROJECT TYPE:	DEMONSTRATION PROJECT
STATUS:	ONGOING

PROBLEM STATEMENT

Tourism, recreational development and the turnover of Minnesota's Lake Superior shoreline property are increasing at a rapid rate. While wave action causes natural erosion, it is the increased erosion and other nonpoint source pollution associated with human activity that causes the majority of correctable problems along Minnesota's Lake Superior shoreline. Development of the lakefront in many areas has accelerated shoreline erosion and other nonpoint source pollution typically by removal of vegetation and the increase and concentration of storm water runoff.

BACKGROUND

Development typically causes an imbalance in the natural hydrology of a watershed. As the amount of impervious surfaces increases (e.g. addition of rooftops, parking lots, roads, etc.), more water runs off the land directly into Lake Superior and storm sewers discharging to the lake instead of infiltrating into the groundwater. These increased flows typically intensify erosion and contain significant amounts of pollutants that move directly into Lake Superior.

In an ongoing effort to reduce nonpoint source pollution and soil erosion along the shore of Lake Superior, the Lake Superior Association of Soil and Water Conservation Districts (LSA), together with the Board of Water and Soil Resources (BWSR) and the Soil and Water Conservation District (SWCD) Joint Powers Board (JPB) Area 3, have worked to educate developers, new shoreline property owners and local government units about shoreland erosion and other nonpoint pollution issues. This includes both the accelerated shoreland nonpoint pollution due to human activities (e.g. construction and runoff issues, septic system issues, vegetation management issues, etc.) and natural shoreline erosion that together create critical water quality concerns such as water supply contamination and critical aquatic habitat impacts. In addition, the project team has completed approximately 29 shoreline erosion control projects since 1994 and many more nonpoint pollution control projects within the coastal region of Lake Superior. Shoreline BMPs have been developed and are actively promoted to address these issues and concerns.

Demonstration projects have been highly successful in promoting shoreline BMPs. The project team has completed several low-cost erosion control projects, several vegetative slope restoration projects and several large-scale conventional shoreline erosion control projects, all of which have been used extensively to educate and promote shoreline BMPs. Much more can be done with respect to development issues along the Minnesota Lake Superior shoreline. Innovative storm water management is becoming increasingly important. Recently completed storm water management plans in Two Harbors and Grand Marais, Minn. identified the need for low impact development in response to current storm water runoff issues related to impervious surfaces. The extent of devel-

opment along our Lake Superior shoreline continues to increase while the available land for development is becoming increasingly scarce.

ACTIVITIES

The goal of this project is to provide the LSA/JPB/BWSR technical team, shoreline landowners, developers, contractors and local government units with practical information on selecting and installing low impact development methods and products in our region. This project will first focus on reviewing current literature on low impact development methods and products and guidelines for their selection. Then, the project team will evaluate several potential demonstration sites and select one or more for the installation of one or more low impact development methods. After installation, the site will be periodically monitored to assess the effectiveness of the installed practices. A post-construction workshop will be held to share valuable information learned by the demonstration project(s). Many future project sites will benefit from the information gathered as part of this investigation.

RESULTS

Project ongoing, no results.

MINNESOTA

PROJECT TITLE:	LOW-COST SHORELINE EROSION CONTROL DEMONSTRATION PROJECT
GRANTEE:	MINNESOTA BOARD OF WATER & SOIL RESOURCES
BASIN PROGRAM FUNDS:	\$25,000 (APPROVED)
NONFEDERAL FUNDS:	\$8,350 (PROPOSED)
PROJECT DURATION:	JULY 1, 2002 –
PROJECT TYPE:	DEMONSTRATION PROJECT
STATUS:	ONGOING

PROBLEM STATEMENT

Conventional Lake Superior shoreline erosion control projects are typically very expensive due to the long fetches and severe wave climate of the lake. Most projects cannot be funded entirely by the landowners themselves. Often the high costs are also associated with the requirement (grant-assisted projects) that the project have a project lifetime of 10 years minimum, and the landowner objective for minimum maintenance requirements. Two of the highest priority large scale projects, Sucker Bay and Two Harbors Campground, have been completed with average costs to stabilize the shoreline on the order of \$250 to \$300 per lineal foot.

BACKGROUND

Potential low-cost solutions may include the use of pinned rock instead of conventional concrete seawalls, use of widely-graded, less expensive stone for revetments, more efficient use of vegetation along the upper portions of projects for wave overtopping protection, the use of rock filled gabions in lesser wave impact areas, the use of manufactured devices such as cable concrete instead of riprap, etc.

Several conventional and nonconventional shoreline erosion control projects have recently been completed in this region as the result of previous Great Lakes Commission grants and the Minnesota Board of Water & Soil Resources cost-share grants. The information gained was shared throughout the watershed. The results of this low-cost demonstration project proposal, and the information gained concerning its effectiveness in reducing shoreline erosion, will assist other potential shoreline property owners in providing lower cost solutions to their erosion problems.

ACTIVITIES

This project will first focus on reviewing the lessons learned from our previous Great Lakes Commission grant that helped to install five separate, smaller scale low-cost methods. Then, the project team will evaluate several potential full-scale demonstration sites and select one or more for installation of one or more low-cost methods. Project site surveys, engineering designs, and project plans and construction documents will then be prepared. After installation, the site will be periodically monitored to assess the effectiveness of the installed practices. If the results of the demonstrations are positive, many future project sites will benefit from the information gathered as part of this demonstration. Typical results are expected to be lower overall project costs and greater contractor and owner acceptability.

When this project is completed, it has the potential to enable better utilization of existing state and federal cost-share program funds and grants as well as private property owner contributions by detailing how to choose alternative, lower-cost erosion control methods. Potentially hundreds of

private property owners as well as local and state of Minnesota erosion control project sites will benefit from the information gathered as part of this project and the resulting lower overall project costs.

RESULTS

Project ongoing, no results.

MINNESOTA

PROJECT TITLE:	MILLER CREEK INVENTORY AND FUNCTIONAL ANALYSIS
GRANTEE:	SOUTH ST. LOUIS COUNTY SOIL AND WATER CONSERVATION DISTRICT
Basin Program Funds:	\$ 9,675 (APPROVED)
Nonfederal Funds:	\$ 3,225 (PROPOSED)
PROJECT DURATION:	JUNE 1, 2000 – MAY 31, 2002
PROJECT TYPE:	DEMONSTRATION
STATUS:	COMPLETE

PROBLEM STATEMENT

The Miller Creek Watershed near Duluth, Minn., is experiencing increased urbanization, leading to enhanced erosion and sedimentation in the watershed. The many wetlands in the watershed play an important role in filtering and storing polluted runoff, but to different degrees. Wetlands need to be prioritized for protection and restoration efforts.

BACKGROUND

The Miller Creek watershed is an urban watershed undergoing heavy development pressure. Unique to an urban watershed is Miller Creek, an urban stream that supports a naturally reproducing brook trout population.

Miller Creek delivers sediment and sand to the St. Louis Bay and ultimately Lake Superior, degrading aquatic habitat at the mouth of the stream and negatively impacting brook trout populations. In 1999, the Minnesota Pollution Control Agency placed Miller Creek on the Total Maximum Daily Load list for exceeding temperature standards. This is partially caused by increasing urbanization in the watershed and the resulting sediment-laden runoff.

Wetlands improve water quality by slowing and storing water, removing or retaining nutrients such as nitrogen and phosphorus, and reducing sediment in the water that would otherwise clog waterways and affect fish and amphibian egg development. In order to prioritize wetlands to be protected and, if necessary, restored, the South St. Louis Soil and Water Conservation District will identify all wetlands in the watershed and assess their functionality for filtering pollutants and sediments.

ACTIVITIES

In the initial stages of the inventory, Community GIS Service, Inc. laid much of the groundwork, by preparing a base map, digitizing delineated wetlands and developing a table and coverage that included functional analysis determinations. The conservation district inventoried wetlands using aerial photos, topographic maps, National Wetland Inventory maps and soil maps. The project team conducted field visits to verify the interpretation of difficult sites. They assigned each wetland an overall functionality rating, based on scores for the following: flood flow alteration, sediment stabilization, groundwater recharge, groundwater discharge, sediment/toxicant retention, wildlife habitat, and aquatic habitat. Using the St. Louis County Wetland Assessment Guide (SWAG), the conservation district performed an office assessment of functional analysis for many of the wetlands.

RESULTS

The project team inventoried a total of 188 wetlands in the Miller Creek Watershed and completed an office assessment of functional analysis on all inventoried wetlands. The office assessment will facilitate improved implementation of the state Wetland Conservation Act and assist the conservation district in prioritizing cost-share assistance and informing local zoning authorities about the potential impacts of development on wetlands.

The following is a summary of tasks completed at the final reporting period:

- 1) Determined functional rating for each wetland in the Miller Creek Watershed using the SWAG.
- 2) Completed detailed report that includes GIS maps and wetland data. Compiled information into a binder format for distribution.
- 3) Posted report and maps to web site. (<http://www.southstlouisswcd.org>)
- 4) Presented information to the city of Hermantown Wetland Technical Evaluation Panel, City of Duluth Wetland Technical Evaluation Panel, and Miller Creek Joint Powers Board.

The project is complete. The report will continue to be used as a conservation tool, and publicized through our website, and by other methods.

MINNESOTA

PROJECT TITLE:	WESTERN LAKE SUPERIOR NEMO PROJECT – COMMUNITY
PROGRAM GRANTEE:	REGENTS OF THE UNIVERSITY OF MINNESOTA
BASIN PROGRAM FUNDS:	\$22,500 (APPROVED)
NONFEDERAL FUNDS:	\$7,500 (PROPOSED)
PROJECT DURATION:	JULY 1, 2002 –
PROJECT TYPE:	INFORMATION AND EDUCATION
STATUS:	ONGOING

PROBLEM STATEMENT

Development pressures within the Western Lake Superior watershed have been increasing rapidly over the past decade, particularly within coastal communities and townships. Communities accustomed to welcoming any and all development to improve their tax bases are suddenly experiencing the pressures and potential impacts to fragile ecosystems and community aesthetics that come with unplanned development.

BACKGROUND

Lake Superior basin communities, strapped for resources and facing potential development pressures, are struggling to be proactive and take on the authority to provide comprehensive local land use and stormwater planning and implementation. In fact, many Lake Superior basin communities are now in the process of developing comprehensive plans, but they are finding it to be a formidable task to achieve a balance between preserving the unique natural resources that characterize this region while ensuring a sustainable economic base, particularly when there is strong and active development pressure. At the same time, Smart Growth legislation in Wisconsin, community based planning in Minnesota, and federally mandated total maximum daily loads (TMDLs) are actively encouraging citizen involvement in the planning process. Communities, recognizing this challenge, are actively seeking guidance and training in land use planning technologies. These local communities should be provided with Ongoing education programs about their local areas so they can make informed decisions that will improve or protect water quality, control soil erosion, and implement sediment control measures. Nonpoint source control guidance and training currently available to these communities either is above their financial reach or is inappropriate for the relatively low density, nonagricultural setting of this region. There is a need to develop new tools and/or modify existing tools to meet the needs of western Lake Superior communities, and to train communities in the use of those tools.

ACTIVITIES

The project will identify and work closely with one community to integrate local and regional issues into project presentation materials and tools. As a result, the community will have tools available to help it take a proactive approach in making land use decisions that affect water quality in their area. This project is consistent with the goals and objectives of the Great Lakes Basin Program for Soil Erosion and Sediment Control because the community's local officials will gain the ability to answer questions by gaining access to the information and tools necessary to improve management of soil erosion and sedimentation and other nonpoint source pollutants in their local watersheds:

RESULTS

Project ongoing, no results.

MINNESOTA

PROJECT TITLE:	ENVIRONMENTAL GUIDELINES FOR ACCESS ROADS AND WATER CROSSINGS
GRANTEE:	MINNESOTA EROSION CONTROL ASSOCIATION
BASIN PROGRAM FUNDS:	\$ 7,500 (APPROVED)
NONFEDERAL FUNDS:	\$ 2,500 (PROPOSED)
PROJECT DURATION:	JUNE 1, 2000 – JANUARY 3, 2002
PROJECT TYPE:	INFORMATION AND EDUCATION
STATUS:	COMPLETE

PROBLEM STATEMENT

Construction activities near streams, rivers and lakes can introduce sediment to water bodies. Building access roads, driveways and water crossings, in particular, can prove especially harmful to fish habitat and water quality if good environmental practices are not followed. As recreational development in the Lake Superior watershed intensifies, many new stream crossings are being constructed. Improper stream crossings, such as perched culverts and culverts with excessive velocity, can create a barrier to or damage the habitat of fish and other aquatic life, as well as cause increased sedimentation in the Lake Superior watershed.

BACKGROUND

There is a strong need to inform those who construct and regulate water crossings about the potential impacts of stream crossings and best management practices for designing and installing stream crossings. Water crossings can be designed to minimize impact on fish migration and habitat.

ACTIVITIES

The Minnesota Erosion Control Association (MECA) planned and held three workshops to help developers, planners, designers, regulators, contractors and equipment operators learn how to plan, construct and maintain access roads to minimize the impact on the environment. Project staff decided to hold workshops in Colquet, Grand Marais and Two Harbors in the fall of 2000. They promoted the workshops by compiling a mailing list of practitioners and others with a potential interest in attending. They distributed flyers to highway departments, public works, forestry, hydrology, conservation and planning organizations as well as practitioners and others located in the workshop areas.

Each workshop included one day of classroom training and one-half to a full day of field site visits. Several local and state agencies provided field sites and facilities support. During the classroom session, participants learned about the various erosion and sediment control techniques available, the impact of sediment transport on the aquatic ecosystem and the importance of planning, timing and technique selection for in-stream sediment control. Attendees also received a study booklet and field guide checklist to help them with site assessment.

For the site visits, participants were separated into work groups and were given the task of designing a stream crossing. The work groups were comprised of individuals from diverse fields with a variety of interests. Members of the highway department, soil and water conservation districts, zoning and regulatory boards and those interested in fisheries were combined in a group to facilitate a high level of learning from one another.

Bruce Adamson, a consulting civil engineer, led participants during the site visits. Each group visited at least two stream crossings, viewing good and bad examples, examining them for their impact on fish habitat and then recommending solutions for any problems noted. For example, a culvert perched one foot or more above the streambed is a potential barrier to upstream fish migration and should be avoided and/or restored. One way of restoring these perched culverts is to install a riffle structure to raise the water level downstream of the culvert.

RESULTS

A total of 108 people attended the three workshops. The participants gained an understanding of fish sensitive designs for the construction of stream crossings and were encouraged to implement these designs in future projects. A follow-up survey was sent to participants of the Grand Marais and Two Harbors workshops asking if they had installed best management practices to protect fish migration, enhance soil loss savings and reduce nutrient loading. Instead of conducting a winter “one-day” session, MECA opted to do an additional fall session. The one day session combined both classroom training with a brief field session of 2.5 hours.

NEW YORK

PROJECT TITLE:	ASSESSMENT OF MODELING TOOLS AND DATA NEEDS FOR DEVELOPING THE SEDIMENT PORTION OF THE TMDL PLAN FOR A MIXED LAND USE WATERSHED
GRANTEE:	DR. SHREERAM P. INAMDAR
Basin Program Funds:	\$ 25,028 (APPROVED)
Nonfederal Funds:	\$ 19,922 (PROPOSED)
PROJECT DURATION:	JULY 1, 2002 –
PROJECT TYPE:	INFORMATION AND EDUCATION
STATUS:	ONGOING

PROBLEM STATEMENT

In 1998, the New York Department of Environmental Conservation (NYDEC) placed Buffalo River on the state's 303(d) list and designated it as a priority for Total Maximum Daily Load (TMDL) development. Thirty-six miles of the Buffalo River were classified as impaired with respect to water quality. The Buffalo River has also been identified as one of the 43 Areas of Concern in the Great Lakes region by the International Joint Commission. Although "organics in contaminated sediments" were identified as the primary pollutants on the DEC 303(d) list, sediment pollution in the river and its tributaries is a continuous and increasing concern.

BACKGROUND

The goal of this study is to evaluate the use of field-collected data and U. S. Environmental Protection Agency recommended (TMDL) models in developing the sediment portion of the TMDL plan for the Buffalo River watershed.

ACTIVITIES

This study will be conducted in the 135 square mile Cazenovia Creek basin, a subwatershed of the Buffalo River watershed. The Cazenovia Creek watershed is located in some of the prime agricultural districts of Erie County, NY. Land use in the watershed is mixed with 42 percent % in agriculture, 47 percent in forests, and the remaining 11 percent distributed between urban areas and water bodies. The relief is moderate with steep slopes (8-15 percent) adjacent to the stream drainages at some locations

RESULTS

Project ongoing, no results.

NEW YORK

PROJECT TITLE:	CAZENOVIA CREEK STREAMBANK STABILIZATION – JOINT BOARD 18R GRANTEE: ERIE COUNTY SOIL AND WATER CONSERVATION DISTRICT
BASIN PROGRAM FUNDS:	\$ 25,000 (APPROVED)
NONFEDERAL FUNDS:	\$ 17,305 (PROPOSED)
PROJECT DURATION:	JULY 1, 2002 –
PROJECT TYPE:	PROGRAM AND TECHNICAL ASSISTANCE
STATUS:	ONGOING

PROBLEM STATEMENT

The project site is located on the West Branch of Cazenovia Creek, off of NY240 in the Town of Colden. Approximately 300 feet of streambank at the outside bend of a meander is severely eroding. This erosion is occurring at the upstream end of the Erie and Wyoming County Joint Board project site 18R. A large gravel bar has accumulated on the opposite bank that directs water towards the eroding bank. If the erosion is allowed to continue, the remaining portion of the project is in jeopardy of being undermined and subsequently failing.

BACKGROUND

The New York State Department of Environmental Conservation 1996 Priority Waterbodies List (segment ID 0103-0009) designates the West Branch of Cazenovia Creek as a class B stream and identifies the primary use impairment as fish propagation. The primary pollutant is sediment. The primary source of sediment is streambank erosion. A resolvability strategy exists but funding is needed. Cazenovia Creek has a drainage area of 135 square miles and joins the Buffalo River within the designated Area of Concern identified in the Lake Erie Management Plan. The Buffalo River joins Lake Erie near the mouth of the Niagara River. The Buffalo River Remedial Action Plan strategy has been developed with goals of remediating bottom sediments, continue Ongoing programs to manage nonpoint source pollution and improve fish and wildlife habitat. The Lake Erie Management Plan acknowledges that sediment is impairing 5 of 14 beneficial uses of the stream, including restrictions on fish and wildlife consumption and dredging activities. Cazenovia Creek is listed as a high-priority stream in the Erie County Water Quality Coordinating Committee's Water Quality Strategy.

ACTIVITIES

Plantings are an integral portion of every project but this particular location and design classification will allow us the unique opportunity to stabilize the streambank using strictly bioengineering techniques. We feel the project location is excellent for a demonstration project utilizing these techniques. The ability to educate local municipalities and other conservation partner agencies is an important principle at this agency. The successful project will incorporate shaping a new trapezoidal channel with 1V: 2H side slopes within a large gravel bar. The stream thalweg will be relocated through the 3,000 cubic yard gravel bar for a distance of 600 linear feet. The new channel will be placed 60 feet west of the existing thalweg. The side slopes will be planted with live fascines and live stakes of streamco willows and red osier dogwoods. The top portions of the bank will be planted with a rye/fescue seed mix which will serve as a filter to the stream.

RESULTS

Project ongoing, no results.

NEW YORK

PROJECT TITLE:	CAZENOVIA CREEK STREAMBANK STABILIZATION – JOINT BOARD 27R GRANTEE: ERIE COUNTY SOIL AND WATER CONSERVATION DISTRICT
Basin Program Funds:	\$ 25,000 (APPROVED)
Nonfederal Funds:	\$ 19,805 (PROPOSED)
PROJECT DURATION:	JULY 1, 2002 –
PROJECT TYPE:	PROGRAM AND TECHNICAL ASSISTANCE
STATUS:	ONGOING

PROBLEM STATEMENT

The project site is located on the East Branch of Cazenovia Creek, off of NY16 in the Town of Holland. Approximately 200 feet of streambank at the outside bend of a meander is severely eroding. This erosion is occurring at the upstream end of the Erie and Wyoming County Joint Board project site 27R. A large gravel bar has accumulated on the opposite bank that directs water towards the eroding bank. If the erosion is allowed to continue the remaining portion of the project is in jeopardy of being undermined and subsequently failing. Larger Joint Board sites and a highway bridge are located within 2,000 feet downstream. Annual trout stocking takes place 4,000 feet downstream and this stream has excellent angling opportunities. The continued increase of sediments due to streambank erosion severely hinders the angling opportunities. Equally important, the continued erosion is jeopardizing active farmland and prime farm soils. The streambank material is silt/loams and the Erie County Soil & Water Conservation District has a history of maintenance (snag removals) in this area.

BACKGROUND

The New York State Department of Environmental Conservation 1996 Priority Waterbodies List (segment ID 0103-0009) designates the East Branch of Cazenovia Creek as a C(I) class stream and identifies the primary use impairment as fish propagation. The primary pollutant is sediment. The primary source of sediment is streambank erosion. A resolvability strategy exists but funding is needed. Cazenovia Creek has a drainage area of 135 square miles and joins the Buffalo River within a designated Area of Concern, as identified in the Lake Erie Management Plan. The Buffalo River joins Lake Erie near the mouth of the Niagara River. The Buffalo River Remedial Action Plan strategy has been developed with goals of remediating bottom sediments, and continue Ongoing programs to manage nonpoint source pollution and to improve fish and wildlife habitat. The Lake Erie Management Plan acknowledges that sediment is impairing 5 of 14 beneficial uses of the stream including restrictions on fish and wildlife consumption and dredging activities. Cazenovia Creek is listed as a high priority stream in the Erie County Water Quality Coordinating Committee's Water Quality Strategy.

ACTIVITIES

Plantings are an integral portion of every project but this particular location and design classification will allow us the unique opportunity to stabilize the streambank using strictly bioengineering techniques. We feel the project location is excellent for a project utilizing these techniques. The ability to educate local municipalities and other Conservation Districts is an important principle at this agency. The successful project will incorporate a heavy rock toe with 1V: 2H side slopes. A 100 cubic-yard gravel bar will be removed and the stream thalweg will be relocated within a defined "V" at the middle of the stream over a distance of 200 linear feet. The new channel will be placed 20

feet south of the existing thalweg which is at the toe of slope. The side slopes will be planted with live stakes and rooted cuttings of streamco willows and red osier dogwoods. The top portions of the bank will be planted with a rye/fescue seed mix as a filter to the stream.

RESULTS

Project ongoing, no results.

NEW YORK

PROJECT TITLE:	ERIE COUNTY PHASE II STORM WATER PUBLIC EDUCATION PROJECT
GRANTEE:	ERIE COUNTY DEPARTMENT OF ENVIRONMENT AND PLANNING - DIVISION OF ENVIRONMENTAL COMPLIANCE SERVICES
BASIN PROGRAM FUNDS:	\$ 18,000 (APPROVED)
NONFEDERAL FUNDS:	\$ 12,000 (PROPOSED)
PROJECT DURATION:	JULY 1, 2002 -
PROJECT TYPE:	INFORMATION AND EDUCATION
STATUS:	ONGOING

PROBLEM STATEMENT

Phase I of the National Pollutant Discharge Elimination System (NPDES) Storm Water Program targets nonagricultural storm water discharges to surface water bodies. The requirements of Phase I apply to municipal separate storm sewer systems (MS4s) serving populations greater than 100,000, construction sites larger than 5 acres and industrial activities. Recent federal legislation originating from the United States Environmental Protection Agency (USEPA) advances existing storm water regulations essentially by broadening the scope. Phase II requires an NPDES permit and implementation of a storm water management program for MS4s servicing populations under 100,000 in an urbanized area (more than 1,000 people per square mile). Phase II also requires an NPDES permit for construction sites ranging from 1-5 acres in size. In addition, industrial facilities are eligible for incentives to protect their operations from storm water exposure. There are 23 municipalities in Erie County which are subject to the requirements of the Phase II Storm Water Rule. The county itself operates a number of municipal separate storm sewer systems that must comply with the Phase II regulations.

BACKGROUND

To address the upcoming requirements, the Erie County Department of Environment and Planning (ECDEP) and the Erie County Soil and Water Conservation District (ECSWCD) held an information and planning session in January 2000. Representatives from the affected municipalities attended the meeting, which was designed to familiarize them with the requirements, the importance of planning and the types of assistance available. Following the initial meeting, ECDEP created a listserv and fax information network to disseminate updated information and provide a communication link between the regulated municipalities. Beginning in February 2002, ECDEP, ECSWCD, and the towns of Amherst and Parsons will host meetings every other month with representatives of the affected municipalities to examine the six minimum controls, identify existing programs that apply to the requirement, address the controls that require further action or development, and determine the measurable outcomes.

ACTIVITIES

The Erie County Phase II Storm Water Public Education Program will address the Public Education and Outreach and Public Participation/Involvement minimum control measures as set forth in the Storm Water Phase II Final Rule. The proposed work will fulfill the requirements of the aforementioned minimum controls and in doing so, allow Erie County municipalities to focus their

efforts on the remaining four minimum controls when preparing their storm water management plan(s). The project encompasses a one year time period and the requested funds will be used to offset printing, postage, distribution, supplies and public participation expenses.

RESULTS

Project ongoing, no results.

NEW YORK

PROJECT TITLE:	EROSION AND SEDIMENTATION EDUCATION FOR LAKE ERIE SCHOOLS GRANTEE: CHAUTAUGUA COUNTY SWCD
BASIN PROGRAM FUNDS:	\$ 17,475 (APPROVED)
NONFEDERAL FUNDS:	\$ 11,350 (PROPOSED)
PROJECT DURATION:	JULY 1, 2001 – JUNE 30, 2002
PROJECT TYPE:	INFORMATION/ EDUCATION
STATUS:	COMPLETE

PROBLEM STATEMENT

Students do not always fully comprehend the impacts of land use upon the streams they are accustomed to seeing each day, and merely reading about them in textbooks or newspapers does not always illustrate the causes and impacts of erosion and sedimentation upon surface water.

BACKGROUND

By dedicating a portion of the science curriculum in the Lake Erie Basin in Chautauqua County schools to study the effects of erosion and sedimentation on surface waters tributary to Lake Erie, it is hoped that students and possibly their parents will attain a heightened awareness of activities which may adversely affect the basin as a whole if best management practices are not followed and take a more active role in protecting the watershed in which they live. The program will introduce students to the idea of thinking in a watershed context by introducing them to the relationship between human activity and water quality. It is hoped through hands-on involvement with stream monitoring, knowledge gained through this program will be carried with the students throughout their lives, promulgating a clearer understanding and respect of their surroundings and the impact that their daily lives can have on surface waters.

ACTIVITIES

Temporary staff will be hired for project coordination and public relations. At least seven teacher participants will be recruited from local schools. One teacher will register with GLOBE and attend a five-day workshop. GLOBE is a worldwide network of teachers, students and scientists working together and will be used as a major tool for dissemination through reporting on the GLOBE website. A Watershed Unit Curriculum and a two-day training workshop for teachers will be developed. Have students get into the field to collect water quality data and monitor stream flow.

RESULTS

A series of press releases were distributed to local newspapers and radio stations during the course of this project to provide information to the public and highlight student activities. An informational meeting was held to introduce school district representatives to this program. Ten teachers from the seven school districts ultimately chose to participate in the program. A two-day teacher training workshop was held on July 31 and August 1. All ten teachers participated. During this workshop the *Stream Monitoring Guidance Manuals*, Water Water Everywhere education laboratories, macroinvertebrate monitoring equipment, and laminated topographic maps of the areas around their schools were distributed to the teachers. A Health Department employee met with each teacher to select an appropriate stream monitoring location near their school. Eight sites were selected on six streams.

Watersheds for each monitoring location were delineated and digitized into ArcView GIS. These digitized watersheds were combined with USDA digital ortho-photographs and large format (3'x 4') watershed maps were printed, laminated and provided to each school for determining land use in their watersheds. The end-of-year student workshop was held at the Herbert C. Mackie College Lodge in Brocton, NY. Approximately 70 people attended including 50 students, eight teachers, eight members of the County Water Quality Task Force (WQTF), the Chairman of the County Legislature, several interested citizens and members of the press. Seven groups of students made presentations about what they had learned from studying their streams. This was followed by a panel discussion by WQTF that compared and contrasted monitoring results and land uses between watersheds.

NEW YORK

PROJECT TITLE:	FRANKLIN-ST. LAWRENCE SOIL PROTECTION AND STABILIZATION PROGRAM
GRANTEE:	FRANKLIN COUNTY SOIL & WATER CONSERVATION DISTRICT
BASIN PROGRAM FUNDS:	\$ 31,150 (APPROVED)
NONFEDERAL FUNDS:	\$ 9,500 (PROPOSED)
PROJECT DURATION:	JULY 1, 2002 –
PROJECT TYPE:	PROGRAM AND TECHNICAL ASSISTANCE
STATUS:	ONGOING

PROBLEM STATEMENT

Soil erosion and sedimentation are major concerns within the St. Lawrence River watersheds of Franklin County and neighboring St. Lawrence County of Northern New York State. The climates of these counties are identical with short growing and construction seasons, often lasting six months or less. The narrow window of opportunity to accomplish numerous ground-disturbing projects can also mean an extremely limited ground cover re-establishment time. Reduction of soil erosion with many of our current and forthcoming projects rests on adequate soil stabilization through ground cover.

BACKGROUND

See above

ACTIVITIES

Obtain funding for the purchase of mechanical assistance to achieve greater, more efficient soil stabilization through ground cover on construction projects. Conduct an education program to promote the awareness of the effectiveness and importance of utilizing a swift method for soil retention on ground disturbing projects. Work cooperatively with regional organizations. Allow the availability of proposed equipment throughout more than 2.5 million acres of St. Lawrence River watershed. Substantially reduce the amounts of sediment loads reaching approximately 80 miles of the St. Lawrence River corridor including the Lake St. Lawrence and Lake St. Francis segments.

RESULTS

Project ongoing, no results.

NEW YORK

PROJECT TITLE:	NATURAL STREAM RESTORATION IN THE SENECA LAKE WATERSHED
GRANTEE:	SCHUYLER COUNTY SWCD
Basin Program Funds:	\$ 19,755 (APPROVED)
Nonfederal Funds:	\$ 12,050 (PROPOSED)
PROJECT DURATION:	JULY 1, 2001 – JUNE 30, 2002
PROJECT TYPE:	DEMONSTRATION
STATUS:	COMPLETE

PROBLEM STATEMENT

Streambank erosion is a primary source of sediment loading in Seneca Lake according to the 1999 publication, *Setting a Course for Seneca Lake*.

BACKGROUND

The *Schuyler County Water Quality Strategy* and the *New York State Department of Environmental Conservation Priority Waterbody List* indicates that streambank erosion in the tributaries of Seneca Lake is a major contributor of sediments to the lake. The Glen Creek watershed is approximately 14,500 acres in size and is a subwatershed of the Catharine Creek watershed – the largest subwatershed of Seneca Lake. The Catharine Creek watershed lies at the southern end of Seneca Lake. Glen Creek flows east through Watkins Glen, joining Catharine Creek to flow into Seneca Lake. Dams were built in the upper area of Glen Creek gorge and watershed in the 1940's and 1950's for flood protection after a devastating flood in 1935. The ponds and lakes behind the dams are filling with sediment due to streambank erosion and stream headcutting. Unstable streambanks already exist along Glen Creek, some caused by natural forces and others by human impacts. Increased development will result in more rapid runoff that will destabilize the stream further, increasing the sediment load in the stream.

ACTIVITIES

Reference reach data will be collected to include bankfull width, mean depth, channel cross section, width of flood-prone area, channel materials and channel sinuosity. The research reach data will be used to do further analysis of the Glen Creek watershed. Willow wattles, stream barbs and/or weirs will be used to stabilize a section of Glen Creek. Designs of remediation techniques will be done by soil and water conservation district (SWCD) project personnel based on fluvial geomorphic techniques.

RESULTS

Two cross vanes, one J hook and six rootwads were installed to control erosion and headcutting. The project stabilized approximately 39 feet of eroding streambank. The total length of the stream project was 350 feet. After construction, disturbed areas and the streambanks were seeded, mulched and planted with willows to protect against further erosion. A total of one acre was seeded and one-half acre mulched. Cross vanes and J-hooks are intended to control the direction of stream flow away from eroding banks. Root wads help protect the streambank, create aquatic habitat and slow the velocity of the stream flow. A demonstration workshop was held after the completion of the project to showcase the accomplishments. A technical report was written that describes the methods of data collection as well as the demonstration project itself.

NEW YORK

PROJECT TITLE:	OWASCO LAKE TRIBUTARY ASSESSMENT AND MANAGEMENT PLAN DEVELOPMENT
GRANTEE:	CAYUGA COUNTY DEPARTMENT OF PLANNING AND DEVELOPMENT
BASIN PROGRAM FUNDS:	\$15,015 (APPROVED)
NONFEDERAL FUNDS:	\$5,025 (PROPOSED)
PROJECT DURATION:	JULY 1, 2002 –
PROJECT TYPE:	PROGRAM AND TECHNICAL ASSISTANCE
STATUS:	ONGOING

PROBLEM STATEMENT

Owasco Lake's use is impaired by excessive loadings of sediments and nutrients. It is listed in New York State's *1996 Priority Waterbodies List for the Oswego-Seneca-Oneida River Basin*. This document states that the "Owasco Inlet, Dutch Hollow Brook, Sucker Brook and Veness Brook contribute sediments, nutrients and pesticides from streambank erosion and row crop agriculture" to Owasco Lake. This "sediment deposition results in turbidity problems for water supply and excessive weed growth" in Owasco Lake, a major source of drinking water in Cayuga County. This document lists the lower stretches of Sucker and Veness Brooks as being impaired primarily with silt (sediment) from streambank erosion. Dutch Hollow Brook is listed as being impaired primarily with silt (sediment) from hydromodification for five miles upstream from the mouth. Also, this document lists the resolution potentials for Owasco Lake and Dutch Hollow, Sucker and Veness Brooks as being high. This means that the "water quality problems are deemed worthy of the expenditures of available resources (time and dollar) because of the level of public interest and expectation that the commitment of these resources will result in a measurable impact in the situation."

BACKGROUND

The "*1996 Priority Waterbodies List for the Oswego-Seneca-Oneida River Basin*" also states that Owasco Lake, Dutch Hollow Brook, and Sucker Brook need study and management plans to resolve the impairments to their water quality. Owasco Lake has a watershed management plan that was developed from the issues of concern identified by stakeholders in the "*State of the Owasco Lake Watershed Report*," and this plan was approved in 2001 to address potential impacts to the water quality of Owasco Lake. This plan was developed through the collaboration, cooperation, and work of agency staff; local, state and federal officials; and the public to allow the communities in the watershed to take control of the health of Owasco Lake and protect its quality. This plan recognizes the vital importance of stream corridor protection and health for the long-term protection of water quality in Owasco Lake through its goal of "stabilizing streambanks to reduce the delivery of sediment and nutrients to Owasco Lake."

ACTIVITIES

A Cayuga County Planner and soil and water conservation district (SWCD) seasonal employee will utilize County tax maps to identify property owners along Dutch Hollow, Sucker and Veness Brooks.

A SWCD seasonal employee will walk Dutch Hollow, Sucker and Veness Brooks and identify areas of streambank erosion, downed trees, and other problem areas. The employee will GPS the sites

and record adequate information on the sites, including the cause of the problem, to allow the development of management plans. The consultant hired to develop a management plan on a section of Dutch Hollow Brook utilizing fluvial geomorphology will accompany the SWCD seasonal employee on part of the assessment of Dutch Hollow Brook to collect data to develop the management plan.

GIS Analysts will take the GPS information from the SWCD seasonal employee and map areas of streambank erosion, downed trees, or other problem areas. (November 2002-December 2002).

SWCD seasonal employee will organize the stream assessment data collected in the field. From this data, management plans will be developed and written for Dutch Hollow, Veness and Sucker Brooks that include recommendations and estimated costs. Recommendations will include soft engineering and natural restoration techniques where possible. A Cayuga County Planner will assist in the publication of these plans.

GIS Analysts will analyze elevation data to highlight areas of steep slope and analyze satellite imagery and aerial photographs to identify areas of highly erodible landcover and areas of streambank erosion

A consultant will develop a management plan on a section of Dutch Hollow Brook utilizing fluvial geomorphology. The management plans for the three tributaries will be disseminated to the Cayuga County Water Quality Management Agency and its members, the Owasco Watershed Lake Association, Onondaga County SWCD, and the towns through which the streams flow.

The comparison of methodologies to identify areas of streambank erosion will be disseminated to the Cayuga County Water Quality Management Agency and its members, and other interested parties.

RESULTS

Project ongoing, no results.

NEW YORK

PROJECT TITLE:	PRESCRIBED GRAZING MANAGEMENT PROJECT
GRANTEE:	SENECA TRAIL RESOURCE CONSERVATION AND DEVELOPMENT COUNCIL, INC.
Basin Program Funds:	\$ 24,976 (APPROVED)
Nonfederal Funds:	\$ 12,069 (PROPOSED)
PROJECT DURATION:	JULY 1, 2002 –
PROJECT TYPE:	PROGRAM AND TECHNICAL ASSISTANCE
STATUS:	ONGOING

PROBLEM STATEMENT

Sources of agricultural nonpoint pollution continue to be a major contributor to degradation of water quality in the Great Lakes basin. These sources include sediment pollution from erosion and soil loss on active cropland, loss of riparian vegetation in pastures and associated stream bank erosion, nutrient loading from the application of agricultural wastes, the spread of pathogens, and runoff containing pesticides. Prescribed grazing management has been shown to control and reduce all of the above-mentioned sources of agricultural pollution.

BACKGROUND

The technology exists, along with a growing interest among farmers to implement grazing systems in western New York. However, the demand for planning and technical assistance far exceeds the current available advisory personnel to assist producers with new startup systems or the acceleration of existing grazing systems. The waiting list for assistance has more than 50 livestock operators, with a waiting time of approximately 12 months. There is only one Natural Resources Conservation Service (NRCS) specialist that has been assigned to work with landowners in the 15 counties of western New York. A limited amount of assistance from Cornell Cooperative Extension and district personnel is also available. The agricultural community, due to the limited assistance currently available, is under-utilizing the potential for agricultural pollution abatement using grazing practices. Three grazing advocates are needed to implement grazing practices that will reduce soil loss up to 6,000 tons and eliminate 7,444 pounds of pesticides from being applied in the Great Lakes basin. Grazing advocates, technicians that have experience in planning and implementing grazing systems, have been used in the past to inform landowners about grazing systems. The Advocates provide one-on-one assistance to interested landowners and have a proven track record to practice implementation.

ACTIVITIES

Under the direction of the project administrator, the three grazing advocates will work with producers from a contact list supplied from the cooperating agencies. The advocates will provide technical assessment, planning and implementation assistance to the interested producers from these lists. The end products expected are that the Grazing Advocates will meet with a minimum of 75 agricultural producers and complete a minimum of 45 grazing plans within the project time frame. Of the 45 plans developed, it is expected that 27 landowners will start implementation within the current grazing season. At least 10 pasture walks and/or demonstrations will be attended by the Advocates to educate and foster collaboration between producers and agencies. The advocates will utilize existing grazing groups and individuals to develop a peer-to-peer relationship with the new partici-

pants. Technology transfer between these peers will be used to promote information on techniques, equipment, and materials available for implementation of system and livestock management.

RESULTS

Project ongoing, no results.

NEW YORK

PROJECT TITLE:	RIPARIAN EROSION CONTROL EDUCATION PROJECT
GRANTEE:	CORNELL COOPERATIVE EXTENSION OF CAYUGA COUNTY
BASIN PROGRAM FUNDS:	\$16,725 (APPROVED)
NONFEDERAL FUNDS:	\$5,575 (PROPOSED)
PROJECT DURATION:	JULY 1, 2002 –
PROJECT TYPE:	INFORMATION AND EDUCATION
STATUS:	ONGOING

PROBLEM STATEMENT

Owasco and Cayuga lakes are impaired by excessive loadings of sediment and nutrients. The lakes are listed in the New York State's "1996 Priority Waterbodies List for the Oswego-Seneca-Oneida River Basin" which states that several of the major tributaries to both lakes contribute sediments, nutrients and pesticides from streambank erosion to Owasco and Cayuga Lake. Sediment deposition creates turbidity and excessive weed growth in the lakes, which are major sources of drinking water for residents of Cayuga County.

The *Water Quality Study of the Finger Lakes*, published in 2001 by the New York State Department of Environmental Conservation, also examines the water quality of Owasco and Cayuga lakes. The report lists sediments and nutrients as major pollutants of the lakes. The importance of protecting riparian areas in the Owasco Lake Watershed has also been identified as a priority with the addition of the Owasco Lake Watershed Stream and Lakeshore Buffer Initiative to New York State's Open Space Plan Supplemental List.

BACKGROUND

Riparian landowners may not understand how their activities directly impact water quality conditions, or how their actions affect the larger picture. A property owner adjacent to a minor tributary of Cayuga Lake may not realize that his or her actions can affect the health of the entire Great Lakes Basin. Individuals may perceive their actions as insignificant because they do not understand cumulative impacts.

Public education campaigns on erosion control have been conducted in the past in neighboring areas of the Finger Lakes. Past educational efforts addressed remediation techniques for accelerated erosion, but failed to give much needed attention to protecting the quality of the water that still inevitably runs off the land and into surface water bodies.

ACTIVITIES

Toolbox development will be a major task of the work team. The team will identify existing resources that address residential and riparian erosion control techniques, focusing on those that address vegetative and soft engineering methods. The variety and depth of resources that currently exist on this subject are extensive and an effort will be made to utilize existing resources. However, if the work team determines that existing resources are inadequate, new publications will be developed to fill gaps.

The work team will develop and implement several workshops that will be tailored to meet the needs of the audience. The workshops will present background information on the Great Lakes

basin watershed and its subwatersheds, including the Cayuga and Owasco lake watersheds. The workshops will focus on landscaping techniques for erosion control and integrated pest management (IPM) methods for maintaining new and existing riparian landscapes. Toolboxes will be distributed to all attendees. A website will be developed to supplement and expand upon the information included in the toolboxes and presented at the workshops. The website will also function as a stand-alone learning tool for riparian property owners who wish to learn more about local watersheds and landscaping for erosion control, but do not have physical access to the workshops or a toolbox. The website will enable the proposed education project to be disseminated to the Great Lakes basin at large.

RESULTS

Project ongoing, no results.

NEW YORK

PROJECT TITLE:	ROADWAY STORMWATER MANAGEMENT AND TRAINING PROGRAM DEVELOPMENT
GRANTEE:	MONROE COUNTY HEALTH DEPARTMENT FOR THE MONROE COUNTY STORMWATER COALITION
BASIN PROGRAM FUNDS:	\$ 36,050 (APPROVED)
NONFEDERAL FUNDS:	\$ 24,300 (PROPOSED)
PROJECT DURATION:	JULY 1, 2002 –
PROJECT TYPE:	PROGRAM AND TECHNICAL ASSISTANCE
STATUS:	ONGOING

PROBLEM STATEMENT

Twelve use impairments exist in the Rochester Embayment, including degradation of aesthetics from sediment and algae, beach closings caused by turbidity, algae, and bacteria, and eutrophication caused by phosphorus. The RAP identified stormwater as the largest source of selected pollutants (including phosphorus and sediment) to the watershed of the Rochester Embayment of Lake Ontario.

BACKGROUND

A major source of polluted stormwater runoff is from the 1474 lane miles of impervious roadway surface maintained by local governments in the county, which collect pollutants from atmospheric deposition, winter roadway maintenance activities, vehicle leaks, and summer drainage system maintenance and vegetation control activities. The Monroe County Department of Health is coordinating the effort to implement recommended actions from the Stage II RAP. One high priority RAP recommendation is to involve state, county, and municipal departments of transportation and public works in water quality protection. Another RAP recommendation is to prepare watershed plans, several which have been prepared or completed and which establish stormwater quality goals for several watersheds. Another monitoring recommendation of the RAP is to monitor road salt usage.

ACTIVITIES

- Develop a roadway operation and maintenance program that, when implemented, reduces the pollutant loadings of sediment, phosphorus, and chlorides in stormwater runoff generated by roadways to the Rochester Embayment of Lake Ontario (see problem statement for significance of Rochester Embayment.)
- Identify priority roadway operation and maintenance Best Management Practices (BMPs) that protect water quality and facilitate adoption of these BMPs by municipalities.
- Train existing staff of municipalities to use roadway system operation and maintenance BMPs that protect water quality.
- Assist municipalities to meet the requirements of the Phase II regulations.

RESULTS

Project ongoing, no results.

NEW YORK

PROJECT TITLE:	SCAJAQUADA CREEK STREAMBANK RESTORATION FOR EROSION CONTROL
GRANTEE:	ERIE COUNTY SOIL AND WATER CONSERVATION DISTRICT
BASIN PROGRAM FUNDS:	\$24,829 (APPROVED)
NONFEDERAL FUNDS:	\$8,972 (PROPOSED)
PROJECT DURATION:	JULY 1, 2002 –
PROJECT TYPE:	DEMONSTRATION PROJECT
STATUS:	ONGOING

PROBLEM STATEMENT

Increased development in the upper Scajaquada Creek watershed in recent years has led to decreased base flow in the stream with the expansion of sewer districts and increased extent of impervious surfaces. These changes have also brought about higher peak storm flow discharge and subsequently, higher rates of streambank erosion and downstream sedimentation.

BACKGROUND

The narrow riparian corridor on Scajaquada Creek is one of the few naturally green areas in this densely developed urban watershed. Its value to the quality of life of the residents can be gauged by the efforts of numerous community groups that have shown interest in this natural resource and are utilizing it recreationally through the creation of bike paths and caring for it through locally led cleanup efforts.

In response to citizen concerns about litter and odor problems in the lower reach of Scajaquada Creek, the Erie County Soil and Water Conservation District (the District) received funding from the Erie County Legislature for a two-year project to form the Scajaquada Creek Watershed Advisory Council (SCWAC) and develop a watershed management plan. The District conducted a physical inspection of the entire creek and its major tributaries in summer 2000. Key concerns identified in the inspection are sewer overflows, sediment erosion and deposition, water quality and wildlife habitat

ACTIVITIES

- Design a successful biotechnical erosion control method using a combination of rock riprap and vegetative critical area plantings to reduce streambank erosion
- Install the sediment management practices described above on priority sites identified in the District stream inspection
- Educate project site owners on proper streambank maintenance techniques to maintain the installed erosion control practices
- Improve aquatic and riparian habitat

RESULTS

Project ongoing, no results.

NEW YORK

PROJECT TITLE:	STABILIZING HIGH, STEEP STREAM BANKS: A NATURAL APPROACH
GRANTEE:	SCHUYLER COUNTY SOIL AND WATER CONSERVATION DISTRICT
BASIN PROGRAM FUNDS:	\$ 24,200 (APPROVED)
NONFEDERAL FUNDS:	\$ 15,750 (PROPOSED)
PROJECT DURATION:	JULY 1, 2002 –
PROJECT TYPE:	DEMONSTRATION PROJECT
STATUS:	ONGOING

PROBLEM STATEMENT

According to the 1999 publication, *Setting a Course for Seneca Lake*, streambank erosion is a primary source of sediment loading in Seneca Lake.

BACKGROUND

Approximately 60 percent of Schuyler County's 221,000 acres are in the Seneca Lake watershed. Seneca Lake provides 'AA' quality drinking water to 70,000 residents and 2,000 lakeshore residents have direct water intakes from the lake. Tug Hollow Creek is a classified trout stream. It is rural in character, approximately 60 percent forested and 30 percent agricultural. In the 1890's a dam was built on Tug Hollow Creek as a reservoir for use by steam engines on the nearby railroad. The dam was washed out in the 1935 flood but was rebuilt with two spillways rather than one. During the 1972 flood, the dam cracked, eventually broke apart and was not rebuilt. Without the flood regulation of the dam, the subsequent floods in 1996 may have caused the destabilization and erosion of streambanks as well as the redirection of flow in the creek. Downstream from the dam site there is a large, eroding cut bank. The bank is approximately 25 feet high and 200 feet long. Another significant area of concern in Schuyler County is the presence of ochrepts and orthents along some county streams. The Soil Survey of Schuyler County New York describes the ochrept-orthent complex as: "consist[ing] of deep, somewhat excessively drained, unconsolidated soil material in areas dissected by deep, steep-sided streams. Slopes are commonly near 100 percent but range from 35-100 percent. The soil has a tendency to slip or slump downslope, especially where the stream undercuts the soil deposit.

ACTIVITIES

A remediation project using fluvial geomorphic techniques such as J-hooks and/or cross-vanes and bankfull benches will be designed and implemented on a large cut bank in Tug Hollow Creek. The landowners have agreed to the use of this site. The project will serve as a demonstration area and the morphology techniques can be taught to others as the preferred method of stream reclamation. The implementation of a reclamation project using fluvial geomorphic techniques will have a positive effect on water quality by reducing erosion, sedimentation, and nutrient loading within the Great Lakes Basin as well as creating an awareness of alternative, cost effective, environmentally sensitive methods.

RESULTS

Project ongoing, no results.

NEW YORK

PROJECT TITLE:	STORMWATER PHASE II INITIATIVE IN THE SENECA AND KEUKA LAKE WATERSHEDS
GRANTEE:	YATES Co. SWCD
BASIN PROGRAM FUNDS:	\$17,000 (APPROVED)
NONFEDERAL FUNDS:	\$6,000 (PROPOSED)
PROJECT DURATION:	JULY 1, 2001 –
PROJECT TYPE:	INFORMATION/ EDUCATION
STATUS:	ONGOING

PROBLEM STATEMENT

Keuka and Seneca lake's watershed projects have prioritized stormwater management for soil erosion and sediment control. A comprehensive watershed management plan has been developed and adopted for the Keuka Lake Watershed outlining 100 actions to improve or maintain water quality. An implementing committee has prioritized the actions and identified stormwater management for erosion control as a top priority.

BACKGROUND

The Seneca and Keuka lake watersheds are addressing potential impacts to water quality through a consistent watershed management process and the development of sound action strategies to preserve water quality through an understanding of the current health of these significant natural resources. Keuka Lake watershed initiatives stem from the completion of a comprehensive management plan, while work in the Seneca Lake watershed is premised on the completion of a watershed analysis and progression toward a management plan. Both watersheds have active participation and endorsement from a combined 46 municipalities.

Effective stormwater initiatives will require collaboration with municipal governments to develop uniform standards or ordinances, to initiate an ongoing educational process to address this pollution source. Each watershed proposes to work collaboratively to initiate the pending Stormwater Phase II regulations by utilizing existing linkages to municipal governments to streamline the education and capacity building process to enforce Phase II.

ACTIVITIES

An information packet will be developed to provide uniform education materials to the public on stormwater considerations for new construction projects that cover all municipalities in the watershed. An education packet will also be developed on the impacts of stormwater on watershed, the permitting process and inspection guidelines for municipal official. A packet will also be developed for contractors and developers. The project will provide a mechanism to inform citizens about stormwater impacts on water quality in the Seneca and Keuka lake watersheds while continuing to build citizen-based support for the ongoing watershed management process. The project embodies a watershed perspective and promotes partnerships, alliances and creative collaboration.

RESULTS

Project ongoing, no results.

OHIO

PROJECT TITLE:	A WATERSHED APPROACH TO THE NPDES PHASE II RULE
GRANTEE:	TOLEDO METROPOLITAN AREAS COUNCIL OF GOVERNMENTS
BASIN PROGRAM FUNDS:	\$ 23,000 (APPROVED)
NONFEDERAL FUNDS:	\$ 38,526 (PROPOSED)
PROJECT DURATION:	JULY 1, 2001 –
PROJECT TYPE:	INFORMATION/ EDUCATION
STATUS:	ONGOING

PROBLEM STATEMENT

Storm water runoff from the urbanizing portions of northwest Ohio poses a significant water quality threat to Lake Erie and its tributaries. The need for smaller communities in northwest Ohio to improve storm water controls has shifted from a growing problem to a mandate with the introduction of the NPDES Phase II rule. Neither the U.S. Environmental Protection Agency (EPA) nor the Ohio Environmental Protection Agency (OEPA) have been forthcoming with financial assistance to help communities comply with these programs.

BACKGROUND

The problem of storm water runoff is not just confirmed to the well-defined urban areas. As urban sprawl continues the amount of land being paved grows, limiting the area for storm water to infiltrate into the ground and increasing the amount of runoff. Increased storm water volumes and velocities have greater erosive power and carry larger loads of sediment, nutrients, and other pollutants.

The pollution associated with storm water runoff has not been addressed for a number of reasons. Primarily among them is the fact that storm water does not attract the same amount of attention that more obvious point sources such as municipal wastewater treatment plants have. In the past, the legal responsibility for storm water quality has been that of larger cities. These larger cities are required under NPDES Phase I permits to monitor their discharges and eliminate significant water quality threats. The smaller municipalities and townships in northwest Ohio have no specific funding devoted to the operation, maintenance, or capital improvement costs of their storm water systems.

ACTIVITIES

Conduct an education and outreach program in northwest Ohio on urban storm water issues. Assist communities in meeting the requirements of the NPDES Phase II rule. Organize and coordinate a storm water action group for urban areas within the Portage and Sandusky River watersheds and direct Lake Erie tributaries. Develop PowerPoint presentation and fact sheets for urban storm water management workshops. Publicize and present two public storm water management workshops. Create an inventory for northwest Ohio that identifies by political jurisdiction and watershed.

RESULTS

Project ongoing, no results.

OHIO

PROJECT TITLE:	BEST MANAGEMENT PRACTICES FOR RURAL ROADSIDE RUNOFF CONTROL
GRANTEE:	PORTAGE SOIL AND WATER CONSERVATION DISTRICT ON BEHALF OF THE UPPER CUYAHOGA RIVER WATERSHED TASKFORCE
BASIN PROGRAM FUNDS:	\$15,000 (APPROVED)
NONFEDERAL FUNDS:	\$5,000 (PROPOSED)
PROJECT DURATION:	JULY 1, 2002 –
PROJECT TYPE:	INFORMATION AND EDUCATION
STATUS:	ONGOING

PROBLEM STATEMENT

Water quality suffers in rural streams and rivers feeding Lake Erie when roadside ditches are poorly maintained for water flow in such a way that leaves bare soil exposed through much of the year. Hence, sedimentation becomes a major pollutant, as it is in most streams in Ohio.

BACKGROUND

County and township workers charged with the task of ditch maintenance typically rely on historical methods (dipping out and scraping the sides) of cleaning and maintaining ditches for water flow. These workers and supervisors and the local officials who hire them have had little opportunity to explore or learn about best management practices (BMP's) that would maintain water flow without contributing to the sediment load of the watercourses that accept the drainage.

ACTIVITIES

Hold four BMP workshops in the Upper Cuyahoga River watershed: two at the beginning of the grant to introduce the topic and explain the demonstration sites to be installed, and two towards the end of the grant to provide further training and discover the soil savings and water quality enhancement of the demonstration sites. Demonstration sites will also be located in the Upper Cuyahoga River watershed along at least four 100 - 200 foot lengths of ditch strategically placed within the project area for viewing by our target audience. Although our goal is to provide information to a broader area, the workshops and demonstration sites will be located in the Upper Cuyahoga because the Upper Cuyahoga River Watershed Task Force's Rural Road Runoff Committee has previous experience working with communities in the area and it's location is central and easy to access from the larger target area.

RESULTS

Project ongoing, no results.

OHIO

PROJECT TITLE:	ESTIMATING TMDL BACKGROUND LOADING FROM EXISTING DATA
GRANTEE:	CASE WESTERN RESERVE UNIVERSITY
BASIN PROGRAM FUNDS:	\$ 22,374 (APPROVED)
NONFEDERAL FUNDS:	\$ 7,472 (PROPOSED)
PROJECT DURATION:	JULY 1, 2001 –
PROJECT TYPE:	PROG/ TECHNICAL ASSIST
STATUS:	ONGOING

PROBLEM STATEMENT

In Ohio, 3563 miles of stream are impaired by sediment according to the USEPA. This is the eighth highest reported total of the 50 states. For reaches impaired by sediment, the state of Ohio and other states in the basin are currently developing total maximum daily loads (TMDLs) for this parameter. The estimation of the BACKGROUND or natural loading of sediment to waterways in the TMDL process is critical. Yet there are not universally accepted approaches for such estimations.

BACKGROUND

The TMDL for sediment is the maximum quantity of suspended sediment that can enter the waterway without affecting the beneficial uses of the waterway. It is calculated as the sum of all allotments of point source suspended sediment, all allotments of nonpoint sources, BACKGROUND or natural sources of sediment and a margin of safety. There are several methods that could be used to calculate the BACKGROUND levels. Determining the loading from a pristine site could be used but there exist few large basins that are suitable for such a comparison. Scaling up from smaller basins to large basins is possible but the delivery ratio varies from near 1.0 for certain small basins to 0.1 for large basins. Such field studies also can be prohibitively expensive and time intensive. Calculations of expected BACKGROUND loading of sediment based upon the Universal Soil Loss Equation assume an undisturbed basin but this model is used for determining erosion on the land surface, not determining fluxes of sediment through waterways.

One approach that has merit is to use extant data to determine suspended sediment yields from basins in Ohio and other Great Lakes states and data on Landuse in these basins to derive a relationship for sediment loading as a function of the level of disturbance and basin size.

ACTIVITIES

Develop suspended sediment rating curves for a 104 drainage areas with USGS gauging stations. Calculate the amount of forest cover in each of the 104 watersheds. Develop the relationships between sediment loading, drainage area and percent forest cover. Develop the relationship between forest cover percent and sediment loads. Complete the model.

RESULTS

Project ongoing, no results.

OHIO

PROJECT TITLE:	LAKE ERIE BUFFER PROGRAM GIS DEVELOPMENT PROJECT
GRANTEE:	ERIE BASIN RESOURCE CONSERVATION AND DEVELOPMENT
BASIN PROGRAM FUNDS:	\$12,080 (APPROVED)
NONFEDERAL FUNDS:	\$11,920 (PROPOSED)
PROJECT DURATION:	JULY 1, 2002 –
PROJECT TYPE:	PROGRAM AND TECHNICAL ASSISTANCE
STATUS:	ONGOING

PROBLEM STATEMENT

Agriculture is the dominant land use within the western Ohio Lake Erie watershed (Lorain County and west). Consequently, sediment is largely responsible for degradation of Lake Erie. The Maumee River basin has specifically been identified as the Lake Erie's greatest source of sediment loading, and consequently is an Area of Concern within the Great Lakes basin. Specifically, goal setting, targeting, tracking and evaluation of buffer practices could be dramatically improved with effective use of Geographic Information Systems (GIS).

BACKGROUND

Buffer practices such as filter strips, wetland restoration, wildlife habitat, windbreaks, and others have been identified as effective Best Management Practices (BMPs) to alleviate these impacts. The Lake Erie Buffer Team, an interagency work group, has been instrumental in initiating, promoting, and implementing several education/outreach and voluntary/incentive based implementation programs to encourage landowners and farm operators to adopt these BMPs.

As a result, state and federal incentive programs, particularly Conservation Reserve (CRP) and Conservation Reserve Enhancement programs (CREP) as well as Clean Water Act Section 319 projects in individual watersheds have been highly successful. Through 1997 to June 2001, 28,036 acres of buffers have been installed.

ACTIVITIES

The goal of this project is to enhance buffer practice delivery programs by providing soil and water conservation districts (SWCDs) technical support in the development and use of GIS. The following objectives will be achieved:

1. Develop uniform standards and protocols for creation of buffer layers for SWCD GIS systems throughout the Lake Erie CREP area.
2. Increase the general level of familiarity and expertise with GIS software and capabilities among SWCD staff within the Ohio Lake Erie CREP area.
3. Increase the use of GIS within the Lake Erie CREP area to improve goal setting, targeting, tracking, and evaluation of buffer practice delivery programs.

RESULTS

Project ongoing, no results.

OHIO

PROJECT TITLE:	OHIO CREP, WATER QUALITY, AND MINIMUM DETECTABLE
CHANGEGRANTEE:	WATER QUALITY LAB HEIDELBERG COLLEGE
BASIN PROGRAM FUNDS:	\$ 25,750 (APPROVED)
NONFEDERAL FUNDS:	\$ 12,000 (PROPOSED)
PROJECT DURATION:	JULY 1, 2001 –
PROJECT TYPE:	PROG/ TECHNICAL ASSIST
STATUS:	ONGOING

PROBLEM STATEMENT

The Ohio Conservation Reserve Enhancement Program (CREP) has a stated goal of reducing sediment loading to the western Lake Erie Basin by 10 percent over ten years. However, a ten percent reduction is small and such subtle changes cannot be easily measured statistically given the wide variation of the year-to-year data.

BACKGROUND

One of the major goals of the Ohio CREP program is to improve water quality in a watershed dominated by agricultural land use by intercepting overland flow from agricultural lands, using Best Management Practices such as in-field grassed waterways, edge-of-field riparian corridors, and constructed wetlands. These structural practices slow the movement of storm runoff, allowing sediment and associated nutrients to settle out and remain on the land rather than entering the stream network. The establishment of water quality goals and a monitoring program to document success in meeting these goals was a requirement of the program.

Data available for evaluation of the success of the Ohio CREP program will be much more detailed than typically available and the historical duration of the baseline data is much longer than typical. Nonetheless, the high levels of temporal variability that are characteristic of water quality data make subtle but systematic changes difficult to detect with statistical certainty. A statistical technique called Minimal Detectable Change Analysis (MDCA) is available and allows the direct calculation of systematic change.

ACTIVITIES

The existing data for the Raisin, Maumee and Sandusky rivers will be prepared for use in the formats needed by the MDCA and an analysis conducted. The results will be used to see if a 10 percent change in sediment loads is large enough to be detected with statistical certainty and if not how large a change would be required to achieve statistical significance.

RESULTS

Project ongoing, no results.

OHIO

PROJECT TITLE:	OHIO NATURALIZED STREAM CHANNEL CONFERENCE AND WEBSITE
GRANTEE:	DIVISION OF SOIL AND WATER CONSERVATION, ODNR
BASIN PROGRAM FUNDS:	\$ 24,250 (APPROVED)
NONFEDERAL FUNDS:	\$ 20,477 (PROPOSED)
PROJECT DURATION:	JULY 1, 2001 – SEPTEMBER 12, 2002
PROJECT TYPE:	INFORMATION/ EDUCATION
STATUS:	COMPLETE

PROBLEM STATEMENT

Sediment concentrations in some rivers of the Great Lakes Watershed have decreased, however sedimentation at river mouths remains a primary cause of lake degradation. A 1981 study indicates that 26% of sedimentary input to the Great Lakes originates from rivers. Numerous studies show that channel degradation and bank erosion can be a significant or major source of river-transported sediment. The following human impacts are key causes of channel degradation and bank erosion in the Great Lakes Region: channel modification, change inflow regime, and removal of riparian vegetation.

BACKGROUND

The adverse effects of excessive erosion on downstream flooding, habitat quality, and water quality are well documented. As open systems, natural channel form and process evolve in harmony. New understandings of fluvial processes acknowledge the dynamic nature of streams. Techniques for the application of natural channel design principals are more accessible than ever before. However, the benefits of these techniques will be slowly realized without adequate outreach to planners and consulting engineers.

ACTIVITIES

This project will provide a conference and website as fora for professionals and others interested in the theory and application of natural channel design within the Great Lakes basin. The resulting network will serve as the basis for the exchange and advancement of natural channel design, linking interested parties throughout the basin.

RESULTS

An extensive website has been developed www.ag.ohio-state.edu/~streams/ to provide information and education access to natural stream design techniques. A literature review was conducted on natural fluvial concepts and was made available on the website. A conference, The Emerging Science of Natural Channel Design, was held with over 300 people attending.

OHIO

PROJECT TITLE:	PARTNERSHIP IMPLEMENTATION OF NPDES PHASE II MINIMUM CONTROL MEASURES
GRANTEE:	GEAUGA SOIL AND WATER CONSERVATION DISTRICT
Basin Program Funds:	\$14,747 (APPROVED)
Nonfederal Funds:	\$ 9,597 (PROPOSED)
PROJECT DURATION:	JULY 1, 2002 –
PROJECT TYPE:	INFORMATION AND EDUCATION
STATUS:	ONGOING

PROBLEM STATEMENT

Geauga County serves as the headwaters for these four major river systems making the need for proper implementation of the upcoming National Pollutant Discharge Elimination System (NPDES) Phase II regulations a necessity to ensure the health of the rivers within the county and for many downstream communities.

BACKGROUND

With the upcoming NPDES Phase II regulations, all sites greater than one acre will be required to submit an erosion and sediment control plan and abide by all regulations. Zoning in Geauga County allows for very few building sites of less than one acre due to septic system requirements. This means there will be a substantial increase in the amount of regulated construction sites within the county. Upon implementation the number of site plans and inspections for construction sites are expected to increase from the current 50 new sites per year to more than 500 new sites per year. This number includes residential lots (which are not currently monitored) as well as the already monitored commercial sites and subdivisions.

Along with the significant increase in construction sites will come the inventory of the approximately 350 stormwater basins in the county. All basins will be given a coordinate using the Global Positioning System (GPS), cataloged, and entered as data into the county's Geographical Information System (GIS). Once the inventory is complete the basins will be monitored on a regular basis.

ACTIVITIES

The overall goal of this project is to be part of a cooperative effort within the county working to meet the Minimum Control Measures of NPDES Phase II, therefore effectively reducing the amount of sediment as a form of nonpoint source pollution contributed to water resources by construction in Geauga County. This will be achieved by revising the *Geauga County WMSC* to include monitoring sites between one and five acres. This will allow the Geauga SWCD to monitor nearly all sites in the county to ensure sediment remains on site. The inventory of all stormwater basins will ease the process of future maintenance and inspection and is a requirement of NPDES Phase II. The number of violations sent will be tracked, and the goal is for these violations to reduce in number each year.

RESULTS

Project Ongoing, no results.

OHIO

PROJECT TITLE:	RESIDUE MANAGEMENT AND EROSION CONTROL DEMONSTRATION PROJECT
GRANTEE:	TOLEDO METROPOLITAN AREAS COUNCIL OF GOVERNMENTS
Basin Program Funds:	\$ 25,000 (APPROVED)
Nonfederal Funds:	\$ 11,410 (PROPOSED)
PROJECT DURATION:	JULY 1, 2001 –
PROJECT TYPE:	DEMONSTRATION
STATUS:	ONGOING

PROBLEM STATEMENT

Although no-till and conservation tillage have been heavily promoted in Northwest Ohio many farmers still choose to conventionally till their fields.

BACKGROUND

The retention of crop residue to prevent erosion is a major concern in northwest Ohio. Based on soil loss equations, on the average Wood County loses three tons per acre per year. Some of this enters the rivers and streams and ultimately the Great Lakes as sediment. These sediments are detrimental because they fill in lakebeds, riverbeds and harbors. Many farmers in the region still practice conventional tillage. After harvest in the fall the old crop is plowed under. During the winter and early spring, the fields are subject to erosion. However, there is a new innovative piece of tillage equipment that would provide a middle ground. This new approach consists of a rolling blade, a rotary hoe, and a leveling board. It prepares the top inch of topsoil for planting. Testing of this equipment on Hoytville Clay soils is essential before adoption of this technology can occur.

ACTIVITIES

A technologically advanced piece of tillage equipment will be purchased. This unit will be purchased by the Wood County Soil and Water Conservation District. It will be used on test plots at the Ag Incubator in Bowling Green, Ohio to scientifically test its effectiveness. The Ag Incubator is a private agricultural education center that specializes in agricultural research. Test plots will be created and farmed for two growing seasons. The Bowling Green High School land lab will also use this equipment in their research studies. A demonstration day will be held and the equipment will be featured at the Wood County Fair.

RESULTS

Project Ongoing, no results.

OHIO

PROJECT TITLE:	ROCKIN' AND ROLLIN': SCHOOL & COMMUNITY NE OHIO WATERSHED INVESTIGATIONS
GRANTEE:	THE JAMES H. PORTER CENTER FOR SCIENCE AND MATHEMATICS
BASIN PROGRAM FUNDS:	\$ 6,500 (APPROVED)
NONFEDERAL FUNDS:	\$ 8,600 (PROPOSED)
PROJECT DURATION:	JULY 1, 2002 –
PROJECT TYPE:	INFORMATION AND EDUCATION
STATUS:	ONGOING

PROBLEM STATEMENT

We need to link the topics of erosion and water, and provide a complete education program for all our community. The program must include teachers (with in-service training), students (including a conservation project), classes (to gather, report, share and use data from several school sites across the counties), and families (outreach education and activities).

BACKGROUND

In order for an educational program to be effective, it must be taken back and used at the school or in the home. Part of the problem and much of the challenge is to create a user-friendly and fun program that imparts information as well as providing motivation for conservation and other good environmental practices. We believe that this project will do that.

We believe that while erosion and sedimentation are not unique problems, our area has a great need for education about pollution from runoff, drainage patterns and transportation of materials throughout our part of the Great Lakes basin. With the growth and building in the communities and with the beachfront, we believe that the key to effective management is information, beginning with students. Information and education may even be more effective than regulation. Students need to be exposed to real life problems and methods of control. Teachers also, need to be more aware of these issues and the materials and methods to teach about them. Classes need to recognize relationships among many locations within our geographic area and the domino effect of landform occurrences. Families need encouragement to help prevent sedimentation and erosion in their own properties and in their communities.

ACTIVITIES

1. Provide education for students, teachers and families relating land use practices and water quality
 - a. Develop an interactive exploration for students in two counties to trace nonpoint pollution through a water cycle relief map and through internet activities.
 - b. Improve existing experiments for students to test erosion and sedimentation controls.
 - c. Link water quality explorations to nonpoint pollution and sedimentation and storm drains.
2. Collect and share information and educate students, teachers and families about types and effects of erosion, and control practices.
 - a. Create and maintain an interactive website and conservation packet for classes which focus on observing and mapping the interdependence of their parts of the watershed (Watershed Conservation Project).

- b. Provide in-service training for teachers in both counties to extend the mandatory lessons on erosion at the Porter Center into the Watershed Conservation Project.
 - c. Encourage the families of the 12000 students we reach to become more familiar with erosion, sedimentation, watershed interdependence and water quality through Family Science Nights.
 3. Collaborate with several area soil and water conservation and pollution control agencies and groups, including the Lake County Soil and Water Conservancy District, Holden Arboretum, Lake Metroparks and the Geauga Farm Bureau.
 - a. Produce a training videotape and materials for in-service that includes real-life examples and solutions.
 - b. Use expert consultants and materials from these organizations for both teacher training and family science outreach.

RESULTS

Project ongoing, no results.

OHIO

PROJECT TITLE:	STREAMSIDE LANDOWNER FACT SHEETS
GRANTEE:	CUYAHOGA SOIL AND WATER CONSERVATION DISTRICT
BASIN PROGRAM FUNDS:	\$ 22,500 (APPROVED)
NONFEDERAL FUNDS:	\$12,888.88 (PROPOSED)
PROJECT DURATION:	JULY 1, 2002 –
PROJECT TYPE:	INFORMATION AND EDUCATION
STATUS:	ONGOING

PROBLEM STATEMENT

The problem of excessive sediment in our waterways is often due to the mismanagement of streams. Many landowners and municipalities have serious misconceptions on how streams function and how they should be managed. Statements often encountered from the public include “streams should be straight” and “how can soil be a pollutant, it’s natural”. These misconceptions often lead to poor decision making on the part of the landowner. The resulting streambank erosion often occurs due to the elimination of a riparian buffer, excessive mowing, improper plantings and dumping of yard waste. More severe impacts to streams include straightening stream channels, haphazard armoring of the streambanks, and the piping of headwater streams.

BACKGROUND

Many studies have revealed the importance of intact headwater streams to the overall health of a river system. We are learning all too well the significant costs, both in time and money, of restoring streams as opposed to protecting them from the beginning. An accurate understanding by the public of how streams function and proper stream management are critical to stabilizing eroding streambanks, reducing nonpoint source pollution, protecting floodplains, preserving storm water capacity and enhancing habitat, both aquatic and terrestrial. Because Cuyahoga County represents some of the most densely populated areas in Ohio, a more efficient method of public education is necessary. Therefore, this project will utilize an innovative method of public education to preserve and improve streams channels, thereby reducing nonpoint source pollution in rivers draining to Lake Erie.

ACTIVITIES

This project will entail the creation of a series of six fact sheets reflecting proper stream management techniques.

1. Compose six fact sheets: The fact sheets will include information presented in the *Life at the Water's Edge* brochure, as well as information provided by the technical advisory committee. The six topics to be covered in depth include: “How streams function,” “Don’t mow in the buffer zone,” “Do plant cuttings in your buffer zones,” “Don’t Dump,” “Don’t change the path of your stream,” and, a final summary of the most important points found in each fact sheet. Graphic layout of six fact sheets; a professional graphic artist will develop the layout for each sheet.
2. Print fact sheets: The fact sheets will be printed on 8.5" x 11" paper stock, with a perforation for the postcard on the first and last fact sheet. For economy, the fact sheets will be printed in two color utilizing artwork presented in the *Life at the Water's Edge* brochure. The remaining fact sheets (5,000 of each) will be used for displays, teacher packets and mailing requests.
3. Bulk mailing of fact sheets: 15,000 fact sheets will be mailed to riparian landowners and municipalities every month for six months.

4. Compile feedback mechanism data from final mailing: A brief report will be prepared compiling the answers to the questions posed on the postcard from the first and last mailing.

RESULTS

Project Ongoing, no results.

OHIO

PROJECT TITLE:	WESTERN LAKE ERIE SEDIMENT REDUCTION & ENVIRONMENTAL RESTORATION PROJECT
GRANTEE:	OHIO DIVISION OF SOIL & WATER CONSERVATION, ODNR
Basin Program Funds:	\$ 200,000 (APPROVED)
Nonfederal Funds:	\$ 90,000 (PROPOSED)
PROJECT DURATION:	SEPTEMBER 1, 2002 – AUGUST 31, 2002
PROJECT TYPE:	DEMONSTRATION
STATUS:	ONGOING

PROBLEM STATEMENT

The Lake Erie basin covers approximately 16,000 square miles and includes nearly 20,000 miles of streams, ditches and river mainstem. Nearly 80 percent of the basin is intensively farmed, accounting for most of the annual sediment load to Lake Erie. The Maumee River, the largest single source of sediment, discharges over 600 lbs/acre annually. Primary sediment sources are agricultural cropland (72 percent) and urban and gully erosion (27 percent)¹. The two principal best management practices (BMPs) currently used in the basin to reduce erosion and sedimentation are conservation tillage and buffer strips. Ohio's new Conservation Reserve Enhancement Program (CREP) will add 67,000 miles of buffer in 26 of the basin's counties over the next ten years. The 1998 *State of the Lake Report* (Ohio Lake Erie Office) gave a "Poor" rating for suspended solids because of sediment loading to the lake. The same office's 2000 *Lake Erie Protection & Restoration Plan* called for reducing sediment loading by 67 percent. Additional improvement in water quality and reduction in costs associated with sedimentation is contingent upon maintaining existing sediment BMPs and developing new programs and techniques to reduce erosion and sediment transport.

BACKGROUND

Although investment in technical and financial assistance targeted to agricultural sources of sediment have resulted in quantifiable improvements in sediment delivery, it is unlikely that there will be significant expansion of conservation acreage. Buffer strips will help reduce sediment, but are projected to be installed on only 2-5 percent of the stream and ditch miles. Lastly, urbanization in many portions of the watershed is threatening to obliterate the successes achieved through agricultural BMPs. Construction in the Cleveland and Toledo Standard Statistical Metropolitan Areas has resulted in large increases in stormwater runoff and sediment. Helping the Ohio EPA implement additional sediment controls through the Phase II stormwater management program and increasing sediment retention within headwater ditches, which comprise over 80 percent of the Maumee River's drainage network, represents the best opportunity to reduce sediment loads.

ACTIVITIES

- 1) Stormwater Specialists: The Ohio Division of Soil & Water Conservation (DSWC) will establish a new program with Soil & Water Conservation Districts (SWCDs) to employ local Stormwater Specialists (SSs) to reduce sediment loading and restore stream channel integrity. The DSWC will initiate a competitive grants program using state funds to provide four years of personnel support for new SS's positions in SWCDs throughout Ohio. DSWC will use Great Lakes Commission (GLC) funds for the first two years of two positions, while picking up 3rd and 4th year costs. GLC funds will enable DSWC to expand the program by adding two additional positions for Lake Erie SWCDs, thereby increasing the program's overall impact. The SS's program is designed to institutionalize stormwater expertise in SWCDs and to encourage the

- adoption of recommended state stormwater detention and stream protection guidelines through training and education of local officials, and infusion of improved stormwater design criteria in the state and local stormwater management programs.
- 2) Fluvial Geomorphology Ditch Demo: The second portion of this grant proposal will involve the construction of the second two-stage demonstration channel using natural channel design principles developed by DSWC and The Ohio State University on a drainage ditch in the southwestern portion of Wood County in the Maumee River watershed (see map). The two-stage channel, founded on fluvial geomorphologic (FGM) principles, lessens the need for frequent maintenance (dip-out), allows for retention of delivered sediments by creating in-channel floodplain entrapment, and restores stream structure to increase biological integrity. This approach is particularly appropriate to northwestern Ohio because the region is extensively ditched, and its flat topography generally eliminates the ability to raise streambeds or employ other measures to increase over-bank flow. DSWC will develop design concepts, collect physical data needed to develop engineering specifications and provide technical assistance to The Wood County Engineer's Office, which will develop engineering designs and supervise construction. The ditch to be restored is approximately 1,200 feet in length with a drainage area of approximately six square miles.

RESULTS

Project Ongoing, no results.

OHIO

PROJECT TITLE:	URBAN STORMWATER WETLAND SAMPLING DEMONSTRATION
GRANTEE:	SUMMIT COUNTY SOIL AND WATER CONSERVATION DISTRICT
BASIN PROGRAM FUNDS:	\$ 21,225 (APPROVED)
NONFEDERAL FUNDS:	\$ 9,380 (PROPOSED)
PROJECT DURATION:	JUNE 1, 2000 –
PROJECT TYPE:	DEMONSTRATION
STATUS:	ONGOING

PROBLEM STATEMENT

Nonpoint source pollution from urban areas threatens the water resources of northeastern Ohio and the entire Great Lakes basin. Opportunities and technologies exist to reduce pollutant loads, such as installing constructed wetlands in new developments or modifying existing stormwater detention basins. However, no data exists in northeastern Ohio that demonstrates the effectiveness of stormwater wetlands.

BACKGROUND

This project will build upon a previous project in which two stormwater detention basins were converted into stormwater quality improvement wetlands. The basins are located in an industrial park in different subwatersheds of the Cayuga River in Summit County, Ohio. They were originally designed as dry detention basins, which only store water immediately following a storm and release it at a slower rate to prevent downstream flooding. Many of the smaller storm events flow through these basins without being retained. Research has shown that many of these smaller but more frequent storm events are responsible for flushing many pollutants such as oils and grease, fertilizers, pesticides, and heavy metals into our waterways.

In order to help remove pollutants from stormwater runoff, the detention basins were modified in the previous project. The project team performed a low cost retrofit on Basin #1, by adding a water level control device to the outlet pipe, which allows various water levels to be achieved in the basin. They also brought in soil to create a longer flow path within the basin. Basin # 2 was retrofitted by adding many new wetland features recommended by the Center for Watershed Protection, such as sediment forebays, wetland cells of varying depths, long flow paths and a micropool at the outlet.

ACTIVITIES

The Summit County Conservation District will sample the inflow and outflow of the two wetlands. To oversee the wetlands sampling and to offer comments and technical assistance, the district formed a Technical Advisory Committee made up of private consultants, university professors, and federal and local employees. The district constructed two temporary weirs on each of the wetlands, to be used in combination with automated samplers and flow monitors to measure inflow and outflow of the wetlands. The samples will be analyzed by a professional laboratory for suspended solids, total phosphorus, total nitrogen, biological oxygen demand, total organic, copper, lead, zinc, oil/grease, and fecal coliform bacteria.

RESULTS

Project Ongoing, no results.

PENNSYLVANIA

PROJECT TITLE:	CASCADE CREEK HYDROLOGICAL MODELING AND FLOODPLAIN RESTORATION
GRANTEE:	ERIE-WESTERN PENNSYLVANIA PORT AUTHORITY (EWPPA)
BASIN PROGRAM FUNDS:	\$ 25,000 (APPROVED)
NONFEDERAL FUNDS:	\$ 27,000 (PROPOSED)
PROJECT DURATION:	JULY 1, 2001 –
PROJECT TYPE:	DEMONSTRATION
STATUS:	ONGOING

PROBLEM STATEMENT

Cascade Creek drains approximately nine square miles on the City of Erie's west side. In rain events, the stream is forced to handle a torrent of stormwater that passes from an average stream width of 20 feet to a narrow channel of shale only ten feet wide. As a result, the stream floods its banks and causes damage to the riparian corridor along its last mile before entering Presque Isle Bay. This area, known as Cascade Creek Wetlands, has been subject to years of sediment deposition. In addition, other debris, such as large rocks and trees has been carried down stream causing the stream to alter direction. In other locations where the stream has changed course the stream caused significant erosion.

BACKGROUND

The heavily urbanized nature of the watershed, increasing impervious surfaces, and the channelization of some sections has created severe volumes and speeds of stormwater runoff at Frontier Park and the transitional wetland area found near the creek's confluence with Presque Isle Bay. Although much of the industry discharging into Cascade Creek has left the city, the waterway still experiences degradation from remaining point source pollution, nonpoint source pollution, and soil erosion. Over the years, solutions to problems such as cut banks and erosion have been employed in small sections of Cascade Creek. Manmade materials have been used to create short-term solutions that have lead to negative effects downstream by accelerating water flow. It is imperative that Cascade Creek be studied as a watershed and all outfall pipes and storm drains be inventoried and monitored to determine the strategy and location for possible solutions, such as stormwater retention ponds or basins.

ACTIVITIES

The Port Authority will announce the project through the media, its public meetings and its internet site. A Cascade Creek Advisory Committee will be formed to discuss the project and future of the watershed and will continue to monitor the watershed's progress after the project is completed. An experienced team of consultants will be selected to conduct the appropriate testing and modeling. The EWPPA will also document the process to use in the development of a report that can be used in other Great Lake watersheds. A computer model will be created to delineate the floodplain and illustrate the problem areas in the stream. A landscape architect will draw up a plan to reforest and revegetate key areas, in addition to any channel restoration per consultant's recommendation.

RESULTS

Project Ongoing, no results.

PENNSYLVANIA

PROJECT TITLE:	DESIGN AND EVALUATION OF A SEDIMENT BASIN DEWATERING DEVICE
GRANTEE:	ALBERT R. JARRETT/PENNSYLVANIA STATE UNIVERSITY
BASIN PROGRAM FUNDS:	\$ 27,734 (APPROVED)
NONFEDERAL FUNDS:	\$ 19,879 (PROPOSED)
PROJECT DURATION:	SEPTEMBER 1, 2000 – DECEMBER 31, 2001
PROJECT TYPE:	DEMONSTRATION
STATUS:	COMPLETE

PROBLEM STATEMENT

Sedimentation basins receive sediment laden runoff from earth disturbance sites and provide an opportunity for settling suspended sediment before the water is discharged to environment. The amount of sediment released to the environment is controlled by the basin's outlet control structures. Opportunities exist to modify outlet control structures to increase the amount of sediment captured, but the effectiveness of such modifications is unknown.

BACKGROUND

Construction sites produce a significant amount of erosion, especially urban and highway construction, which can have sediment yields as high as 50,000 tons per square kilometer per year. This sediment negatively affects aquatic communities and wildlife habitat, increases navigational obstructions in downstream lakes and reservoirs, and decreases aesthetic value. Constructing sedimentation basins on site is one method of reducing sediment in the runoff.

Sedimentation basins are structures designed to capture sediment laden runoff and provide an opportunity for settling suspended sediment while the water is slowly released into the receiving stream. The standard device for controlling the outflow is a perforated riser, a vertical pipe with holes. Recently, a newer and more effective device, the Faircloth skimmer, has been approved of for use in sedimentation basins. The skimmer is a device that floats on the water surface and has a outlet pipe that extends just below the surface. The skimmer releases water more slowly to the receiving stream than the perforated riser and also releases the highest quality water. The goal of this project is to improve the sediment retention capabilities of Pennsylvania sedimentation basins beyond what can be expected from the skimmer.

ACTIVITIES

Dr. Albert R. Jarret, Professor of Agricultural Engineering at Pennsylvania State University, and his research team modified the existing skimmer. They designed and built two dewatering control devices with characteristics that cause the majority of the basin's sediment-laden water to be retained in the basin for a longer period, before being discharged from the basin. The research team evaluated the effectiveness of both dewatering control devices. Preliminary results indicate that both of the new dewatering control devices are slightly more effective than the unmodified skimmer in causing the sediment basin to retain sediment. Both devices reduced sediment losses to the environment by about three percent more than the skimmer alone.

RESULTS

The research team was able to slightly improve the sediment retention capabilities of the skimmer by modifying it. In 2000, if each of the roughly 9,000 construction sites (50,327 acres) in Pennsylvania were to use a sedimentation basin with one of the dewatering control devices developed by this project were, there would be 1,510 more total tons of sediment captured in the basins if Faircloth skimmers had been used to control dewatering (based on an average of 20 important runoff events each year).

The project team presented a technical paper to 40 professional engineers, raising their awareness of the increased effectiveness of the new dewatering control devices. Beyond the grant period, the project staff estimate reaching an additional 200 engineers.

PENNSYLVANIA

PROJECT TITLE:	DESIGN AND PERFORMANCE OF ROOTWADS IN STREAMBANK RESTORATION
GRANTEE:	PENNSYLVANIA STATE UNIVERSITY
Basin Program Funds:	\$ 23,479 (APPROVED)
Nonfederal Funds:	\$ 7,902 (PROPOSED)
PROJECT DURATION:	JULY 1, 2001 –
PROJECT TYPE:	DEMONSTRATION
STATUS:	ONGOING

PROBLEM STATEMENT

Stream restoration manuals by several conservation agencies recommend rootwads as a natural stream design method but do not offer any construction guidance other than trial and error experience.

BACKGROUND

Ballasted rootwads are a natural restoration technique that utilizes two natural materials, rock and large woody debris to stabilize streambanks in a manner that is consistent with the geomorphic time-scale of riverine environments. Like many other natural stream design techniques that were developed by non-engineers primarily to address habitat, rootwads have not been designed for structural stability based on proven physical principals.

This streambank stabilization technique is particularly applicable to two types of streams feeding the Great Lakes; a) low-gradient streams in fine-grain soils with limited sources of rock for ballast, and b) steep outwashes with glacial deposits available for ballast. Without design criteria and trained, professional designers, there is a reluctance of watershed planners and permit agencies to consider rootwads as a viable soft-engineering solution to streambank erosion.

ACTIVITIES

Recommend scientifically-based, factors of safety that can be used as criteria for designing ballasted, rootwads that are to be used in streambanks. Develop a design methodology for use as a computer spreadsheet and/or a family of empirical curves that can quantify the amount of ballast required to stabilize a rootwad for a variety of load conditions. Install several sites with rootwads for field validation of the criteria. Offer several workshops that explain rootwad technology including field trips to one or more of these on-the-land demonstrations.

A stability theory will be developed to account for all hydrodynamic, frictional, and gravitational forces acting on the rootwad. Fifteen sites are planned to be studied. Dimensions of each rootwad component, log diameter and length and rock dimensions will be measured. The spatial relationship of all components will be measured, orientation to the bank, location of the cables, and location and location of the rocks and logs. Also, along with the depths of the soil strata in the vicinity of the rootwad will be obtained.

Development of the theory and field portion of this study into the desired design tool will proceed via a statistical comparison of the theoretically predicted stability with the actual field stability.

RESULTS

Project ongoing, no results.

PENNSYLVANIA

PROJECT TITLE:	GREENROOFS CAN DETAIN AND REMOVE POLLUTANTS FROM STORMWATER RUNOFF
GRANTEE:	DEPARTMENT OF HORTICULTURE, THE PENNSYLVANIA STATE UNIVERSITY
BASIN PROGRAM FUNDS:	\$16,563 (APPROVED)
NONFEDERAL FUNDS:	\$11,380 (PROPOSED)
PROJECT DURATION:	JULY 1, 2002 –
PROJECT TYPE:	INFORMATION AND EDUCATION
STATUS:	ONGOING

PROBLEM STATEMENT

The Penn State Greenroof research facility is currently focusing on developing rainfall runoff retention and energy use models for greenroofs. These models and resulting design tools will greatly aid architects and developers in providing their clients, and planning and zoning boards, with accurate descriptions of the stormwater management benefits of their greenroof projects. This facility could at the same time be used to quantify water quality affects of the greenroofs. Sampling and analyzing collected runoff for various water quality parameters including nitrate and ammonia-N, pH, TDS and turbidity, would allow the development of additional models and design tools. The information generated would be of great use in evaluating the environmental impact of new greenroof developments by both governmental and non-governmental agencies tasked with watershed improvement and management. The models and tools would provide a real and replicated basis for evaluating and promoting the use of this green technology in developments in impacted watersheds.

BACKGROUND

Greenroof technology is not new. After decades of practice, space-cramped and environmentally-conscious Germans have honed the practice to a fine art. Industry figures suggest that 10 percent, or nearly 600 million square feet, of German roofs are greened. Between 1989 and 1999, German roofing companies installed nearly 350 million square feet of green roofs, and the rate of use is increasing. Although general information about green roofs is available, installation specifics, especially as they relate to roof hydrology and runoff, are mostly patented or proprietary, and performance data related to the cleansing action of Green Roofs are largely anecdotal. In either case, there is little actual quality information available to architects, developers, and builders in this country. Much of the popular semi-technical literature is written only in German, which effectively slows its adoption by Americans. However, there Green Roofs have been installed in the United States in places such as Chicago City Hall, and the Philadelphia Fencing Academy and more are planned, like the Ford Motor Company's River Rouge renovation in Detroit. Adoption of European information and techniques are further limited because our roof conditions are substantially different from those in Germany. So, while principles can be applied, Americans need information about our specific conditions. Pennsylvanians also need to see demonstration roofs so they can be confident about installing them on their own commercial and farm buildings, or homes.

ACTIVITIES

To accomplish these goals we will analyze stormwater runoff samples from the Penn State greenroof research buildings. These samples will be analyzed for nitrate and ammonia-N using electro-

chemistry and/or colorimetric assay procedures. PH, and TDS will be measured with appropriate meters, and turbidity will be determined with a portable turbidity meter. Samples will be collected from rainfall events to represent rain collected in a rain gauge, first runoff flush, and subsequent bulk runoff. Samples will be analyzed in the field as quickly as possible to reduce the potential for microbial contamination to affect results. Data from typical events will be compared and statistical analysis will be performed to evaluate differences between runoff from greened and nongreened roofs. Data will also be evaluated to determine variation in runoff water quality parameters between similar rainfall events.

RESULTS

Project Ongoing, no results.

PENNSYLVANIA

PROJECT TITLE:	LAKE ERIE CLIFF EROSION PREVENTION DEMONSTRATION PROJECT
GRANTEE:	ERIE-WESTERN PENNSYLVANIA PORT AUTHORITY
BASIN PROGRAM FUNDS:	\$25,000 (APPROVED)
NONFEDERAL FUNDS:	\$52,000 (PROPOSED)
PROJECT DURATION:	JULY 1, 2002 –
PROJECT TYPE:	DEMONSTRATION
STATUS:	ONGOING

PROBLEM STATEMENT

In 1998, a severe landslide occurred on Erie's west bayfront causing more than \$60,000 in damage to waterfront structures and public infrastructure. The area has a geological composition found along much of the Great Lakes shoreline. This precarious layering of sandy loams, clay and slate makes for an unstable situation, worsened by rainwater and the removal or destruction of trees along cliff and ravine banks. Slumps such as the 1998 event introduce hundreds of cubic yards of soil into Presque Isle Bay, from which it takes the ecosystem years to recover. Erie County, Pa. has approximately 60 miles of Lake Erie coastline in addition to a multitude of stream banks of similar composition, all of which share the potential for erosion. While most lake cliffs are subject to damaging wave action, the project area is not. Instead, the cliff's problems have roots in its geological composition as well as in man-made ones.

BACKGROUND

In terms of human activity, one of the problems along the Great Lakes coasts and within the watershed (not unique to Erie) has been the removal of trees and other vegetation in an attempt to improve waterfront views. Often done illegally and with little regard for future consequences, tree removal has been a major problem along Lake Erie cliff banks, causing substantial harm. Another problem is amount of impervious surfaces in the city of Erie and Pennsylvania's Lake Erie Basin. Paved surfaces and the failure of the stormwater sewer system and drinking water delivery system have also contributed to the unstable nature of the cliffs and stream corridors by introducing more water into the soils or at an accelerated rate.

In May 2001, an official from the Department of Environmental Protection's (DEP's) Coastal Zone Management Program convened a meeting with the DEP, Port Authority, Erie County Soil Conservation District, and concerned residents and property owners. As a result of the meeting, the Port Authority did a preliminary investigation into the erosion problem with the help of the Erie County Soil Conservation District and an arborist from the Cooperative Extension Office. Following their recommendations, the Port Authority will conduct an investigation into the source of the groundwater.

ACTIVITIES

- The Port Authority will announce the project at its biweekly public meetings, and through other outlets such as its private and public partners and the media. The Pennsylvania Lake Erie Watershed Association represents an important forum for the project to be discussed and developed.

- Urban Engineers of Erie will conduct a subsoil investigation to determine the source of groundwater south of the project area. The investigation will involve working with the local water and sewer authorities and the city of Erie.
- Once the source is determined a design strategy will be completed by Dahlkemper Landscape Architects, which has previously designed a successful Great Lakes Commission-funded project with similar goals.
- To capture the estimated volume of natural occurring groundwater, the Port Authority projects that 400 linear feet of solid drain outlets need to be installed to capture and divert the groundwater.
- An 800-linear-foot interceptor drain will be installed beneath the topsoil to carry groundwater to an appropriate location. Eight hundred linear feet of cliff bank will be re-seeded.
- Dahlkemper will lead a series of field workshops to illustrate this technology. The process will be recorded on video and through photographs and slides to present to other interested property owners and public agencies.

RESULTS

Project Ongoing, no RESULTS.

WISCONSIN

PROJECT TITLE:	BUFFER INSTALLATION ON LOW ORDER STREAMS
GRANTEE:	OCONTO COUNTY LAND CONSERVATION DEPARTMENT
BASIN PROGRAM FUNDS:	\$ 25 000 (APPROVED)
NONFEDERAL FUNDS:	\$ 9,000 (PROPOSED)
PROJECT DURATION:	JULY 1, 2001 –
PROJECT TYPE:	PROG/ TECHNICAL ASSISTANCE
STATUS:	ONGOING

PROBLEM STATEMENT

Fish assessment surveys and other studies have demonstrated that nonpoint source pollution, subsurface drainage, and stream channelization have destroyed the biological utility of many acres of streams and wetlands within the Pensaukee River watershed. As a result of stream re-channeling, installing subsurface drainage, and loss of vegetation in low order streams, most streams are extremely flashy and water retention periods have decreased.

BACKGROUND

Three watersheds will be impacted by this project. They are the Little River Watershed, the Lower Oconto Watershed, the Pensaukee River Watershed, and the Suamico/Little Suamico River Watershed. Within these watersheds there are 552 miles of intermittent streams, 235 miles of perennial streams, and a large but underdetermined number of miles of low-order streams that are usually classified as non-navigable. These watersheds encompass approximately 592 square miles. High nutrient loading causes algae blooms that directly interfere with fish and invertebrate reproduction by encouraging the growth of epiphytic and filamentous algae. This algae covers spawning substrate thereby making it unusable. High sediment loading also interferes with fish and invertebrate reproduction by covering otherwise suitable substrate. Stream hydrology has also been negatively affected.

ACTIVITIES

The intent of this project is to protect and restore northern pike spawning and rearing habitat through the installation of riparian vegetative buffer strips in low-order streams. The Oconto County Land Conservation Department will contract with landowners to establish 20–25 acres of vegetative buffers on low-order streams and some larger intermittent and perennial streams. Buffers will also be established on connected wetlands. The per acre rate would be \$1,000 per acre for grass buffers and \$1500 for buffers planted with trees.

RESULTS

Project Ongoing, no RESULTS.

WISCONSIN

PROJECT TITLE:	DEMONSTRATION OF STREAMBANK STABILIZATION FOR SUBMERGED VANES
GRANTEE:	WISCONSIN DEPARTMENT OF NATURAL RESOURCES
BASIN PROGRAM FUNDS:	\$ 25,000 (APPROVED)
NONFEDERAL FUNDS:	\$ 37,900 (PROPOSED)
PROJECT DURATION:	JULY 1, 2001 –
PROJECT TYPE:	DEMONSTRATION
STATUS:	ONGOING

PROBLEM STATEMENT

Seventeen clay bluffs along the upper main stem of the North Fish Creek are contributing 15000 metric tons of sediment to Lake Superior per year. Past efforts to stabilize the bluffs on North Fish Creek with bioengineering have failed.

BACKGROUND

North fish Creek is similar to many northern Wisconsin tributaries of Lake Superior in providing some of the highest sediment loads observed in the Great Lakes watersheds. Increased runoff from agricultural areas has increased the erosion potential of the stream. The presence of clay soils magnifies the effects of agricultural land on the size of flood and subsequent erosion potential. North Fish Creek is an important recreational fisherie that is potentially limited by the loss aquatic habitat caused by accelerated flooding and sedimentation. Tributaries of Lake Superior are typically hard to access due to steep topography, lack of roads, and forested and swampy land. Techniques for stabilizing bluffs and reducing erosion for these types of streams need to be appropriate for remote areas and for minimal disturbance of the channel. Submerged vanes can be a cost-effective alternative to traditional structural measures. Submerged vanes are environmentally less intrusive because the banks are left in their natural state and they are installed by hand.

ACTIVITIES

Reduce erosion and subsequent sedimentation problems in North Fish Creek and demonstrate the ability of in-stream restoration technique to reduce bluff erosion along a flashy, high-energy stream. Install the submerged vanes at one site the first year. The vane layout includes 11 vane arrays, with two arrays upstream of the bend and bluff and nine arrays through the entire bend. Bluff and channel surveys were done prior to vane installation. A stream-flow gauging station will be used to help identify the flow conditions experienced after vane installation. A 3-dimensional flow field around a single vane is being simulated using FLUENT. Tests in a laboratory flume of vanes in a rigid and moveable bed channel have been designed and are being established.

RESULTS

Project Ongoing, no RESULTS.

WISCONSIN

PROJECT TITLE:	GREAT LAKES GRAZING NETWORK (GLGN)
GRANTEE:	RIVER COUNTRY RC&D
BASIN PROGRAM FUNDS:	\$ 15,000 (APPROVED)
NONFEDERAL FUNDS:	\$ 80,000 (PROPOSED)
PROJECT DURATION:	JULY 1, 2001 – SEPTEMBER 12, 2002
PROJECT TYPE:	INFORMATION/ EDUCATION
STATUS:	COMPLETE

PROBLEM STATEMENT

High livestock concentrations, in one area for extended periods of time, result in the removal of vegetation and subject the area to high rates of erosion.

BACKGROUND

Livestock is a major agricultural enterprise in the Great Lakes basin. Over 16 percent of the cattle in the U. S. and 17 percent of the cattle in Canada are located in the basin. However, livestock practices that confine animals to feedlots or bare ground exercise lots, without controlling sediment/nutrient runoff, are liable to contribute large amounts of pollutants to our surface waters that drain into the Great Lakes.

Management Intensive Grazing (MIG) systems offer opportunities to be managed in a way that is environmentally sound by keeping our land in grass as a natural filter. MIG is a low-cost conservation system that intensively uses pastures as a major source of feed for livestock. With intensive management, animals are allowed to eat the grass and are then moved off to another area. Farmers provide enough areas so that after grazing for a period of time the animals are moved to another area and the animals do not return to the original area for several weeks. Farmers adopting this method convert cropland to grassland and therefore provide more cover against erosion. The problem in reaching farmers is a lack of funds to promote and enhance this system of management. Because of the low-cost nature of the system, there is little support from agribusiness. There is also little money to conduct research.

ACTIVITIES

Assist in funding of ongoing activities, including promoting the awareness of grazing in the Great Lakes basin, printing and mailing the newsletter, hosting workshops, creating/enhancing policy initiatives, documenting the use of MIGs in the Great Lakes region, and developing and disseminating economic information about MIG systems for use by farmers.

RESULTS

Newsletter published and mailed for July and September editions. Coordination of the October GLCI State steering committee meeting in Eau Claire, Wisconsin. GLGN featured in National GLCI newsletter in July/August edition.

WISCONSIN

PROJECT TITLE:	LACOUNT PARKWAY STREAM CORRIDOR RESTORATION DEMONSTRATION PROJECT FOR STREAMBANK STABILIZATION EROSION CONTROL AND WATER QUALITY MANAGEMENT LOCATED WITHIN A RAVINE
GRANTEE:	CITY OF GREEN BAY
BASIN PROGRAM FUNDS:	\$ 25,000 (APPROVED)
NONFEDERAL FUNDS:	\$ 28,252 (PROPOSED)
PROJECT DURATION:	JULY 1, 2002 –
PROJECT TYPE:	DEMONSTRATION
STATUS:	ONGOING

PROBLEM STATEMENT

A streambank stabilization erosion analysis report completed in November 2001, of the LaCount ravine riparian corridor, included erosion classification, basic vegetation, and aquatic habitat assessments. The report concluded a ranking priority of five streams reaches experiencing severe, moderate and slight erosion problems, which contribute tononpoint source pollution to the Great Lakes basin.

BACKGROUND

The LaCount corridor is within the Lower Fox and Duck Creek watersheds with 417 acres emptying into the LaCount Ravine. The overall assessment of the Lower Fox watershed provided by the EPA is “More Serious Water Quality Problems and has Higher Vulnerability to Stressors.” The Duck Creek watershed (97,280 acres) is an active high rank priority watershed and drains to Green Bay, which is listed as a Section 303 (d). The 7,690 acres of the Duck Creek watershed are located within the city of Green Bay. The characterization of the current intermittent stream channel is typical for residential/commercial land use pattern. The intermittent stream is a strongly to moderately confined entrenched ravine channel. Topographic and fluvial characteristics of the project area indicate a valley that is experiencing an accelerated erosion process. Scouring of the stream channel and banks are contributing to nonpoint source water quality problems within the project area. The dominant sediment sources are from hill slopes and debris flows accelerated by increased velocity that result from storm sewers outlets. There are few scour pools and riffles that have a distribution of fishes and invertebrate diversity. However, the existing poor conditions throughout the project area affect the overall biological health of the stream as well. Reducing the sources of sedimentation and velocity using a combination of soft bioengineering techniques, where appropriate, will greatly enhance the biological health of the stream and reduce sedimentation load. Bank failure, mass wasting, sediment transportation will continue to cause severe to moderate degradation and aggradation of aquatic and woodland ecological communities if no action is taken.

ACTIVITIES

Conduct a geotechnical investigation of the demonstration site to reflect any changes in stream morphology since the “LaCount Parkway Streambank Erosion Analysis Report.”

Determine the soft engineering technique, exact placement, cost and effectiveness for the demonstration site with an interdisciplinary team of professionals, so the demonstration site is analyzed and designed appropriately.

Create vegetative buffer strips adjacent to the stream channel to recreate and enhance native population for forb, herbaceous, grass and shrub communities to trap sedimentation and decrease flow within the demonstration site.

Establish a project manager who is knowledgeable about the structure, function and condition of the existing conditions of the stream corridor and is in tune with the various practices of the stream corridor restoration plan in order to secure commitments and responsibilities.

Establish protocols for monitoring benthic invertebrate and fisheries communities and utilize the RESULTS as a gauge for measuring success of the demonstration project.

Research and secure funding sources for at least two years so various bioengineering practices will be implemented for the two stream reaches of high priority.

Generate a strategy to oversee coalition building for entire LaCount stream corridor restoration design plan and for other related projects within the Great Lake basins of the city of Green Bay. This includes meetings to encourage private landowners to implement restoration measures on their property within the watershed and establishing regulatory approaches with incentives for controlling nonpoint pollution. This will serve as an educational tool to convey to the broader community that water quality and soil erosion are problems that need to be addressed.

RESULTS

Project Ongoing, no RESULTS.

WISCONSIN

PROJECT TITLE:	PLUM CREEK EROSION CONTROL AND SEDIMENT REDUCTION PROJECT
GRANTEE:	BROWN COUNTY LAND CONSERVATION DEPARTMENT
BASIN PROGRAM FUNDS:	\$ 25,000 (APPROVED)
NONFEDERAL FUNDS:	\$ 8,900 (PROPOSED)
PROJECT DURATION:	JULY 1, 2002 –
PROJECT TYPE:	PROGRAM AND TECHNICAL ASSISTANCE
STATUS:	ONGOING

PROBLEM STATEMENT

Plum Creek, a tributary of the Fox River, is the third largest contributor of suspended solids to the Fox River and the inlet of Green Bay. Land use in the 13-square-mile Brown County portion of the Plum Creek watershed is comprised mostly of rural land use practices (78 percent, of which 77 percent is cropland). Although Plum Creek is listed as having impaired waters from nonpoint sources on the Wisconsin Department of Natural Resources 303(d) list, cost sharing has not been made available through the Wisconsin Nonpoint Source Pollution Abatement Program.

BACKGROUND

The lower reaches of the watershed, specifically the Fox River and lower Green Bay, which have been identified as an Area of Concern (AOC) by the International Joint Commission under the Great Lakes Water Quality Agreement, are plagued with both conventional and toxic pollutant problems. The primary causes of most of the AOC's 11 impaired beneficial uses are nonpoint sources of phosphorus and suspended solids to the Fox River and Green Bay. Each year an estimated 1.5 million pounds of phosphorus are delivered to the Fox River, 80 percent of which originate from nonpoint sources throughout the Fox-Wolf basin. Similarly, the 1993 Remedial Action Plan (RAP) update concluded that the vast majority of the estimated 200 million pounds of suspended solids delivered to the AOC each year are related to nonpoint sources. Progress in improving water clarity and restoring the quality of the Fox River and lower Green Bay depends upon activities to reduce the flow of nutrients and suspended solids.

ACTIVITIES

Inventory existing field conditions within the watershed and calculate sediment delivery rates to determine key fields to target. USLE, RUSLE if available, will be used to calculate sediment delivery rates for existing and planned situations.

Identify fields with high delivery rates and contact landowners to inform them of the project.

Create maps showing field information, streams, potential buffers, and wetlands. The buffer and wetland information will be used in conjunction with the Conservation Reserve Enhancement Program.

One-on-one contact with eligible landowners/renters to promote the project and offer technical and financial assistance.

Continue the Water Quality Monitoring project through Wrightstown High School at the confluence of Plum Creek with the Fox River.

RESULTS

Project Ongoing, no RESULTS.

WISCONSIN

PROJECT TITLE:	STREAM CROSSING INSTALLATION VIDEOS AND POWERPOINT PRESENTATIONS
GRANTEE:	FISTA
BASIN PROGRAM FUNDS:	\$24,200 (APPROVED)
NONFEDERAL FUNDS:	\$8,103 (PROPOSED)
PROJECT DURATION:	JULY 1, 2002 –
PROJECT TYPE:	PROGRAM AND TECHNICAL ASSISTANCE
STATUS:	ONGOING

PROBLEM STATEMENT

The #1 cause of nonpoint source pollution where forestry and logging are concerned is stream crossings by logging roads. The permitting process is often in-depth with regard to planning stream crossings, but the actual installation of these crossings is not often done correctly and they can become a serious source of nonpoint source pollution.

BACKGROUND

Forest Industry Safety & Training Alliance (FISTA) is a nationally recognized training organization which has provided training since 1996 for the Sustainable Forestry Initiative in Wisconsin. This training is targeted at landowners, loggers and foresters. The training has included "Best Management Practices for Water Quality" workshops and roadbuilding workshops. FISTA has also had six safety training videotapes produced in the past, and have found them to be an effective training tool.

ACTIVITIES

Providing a "how to" video/ powerpoint presentation on stream crossings for all agencies and companies to use.

Specifically target the #1 nonpoint source pollution problem (stream crossings) involved in logging. The amount of, and the sediment damage it does that can enter a stream at these crossing have been stressed throughout the last six years of best management practice (BMP) training. Now there will be a way to show the correct method of crossing streams and limiting erosion.

By providing the videos/powerpoint presentations to agencies and companies throughout the watershed area, an existing network of organizations that worked together to establish Wisconsin's BMP program can be reinforced. This project is designed to share information and provide education to the people involved in planning and constructing logging roads. Water quality will be protected through the information and education provided by this project.

RESULTS

Project Ongoing, no RESULTS.

WISCONSIN

PROJECT TITLE: WATER & SEDIMENT CONTROL BASIN IN FOND DU LAC COUNTY, WI

GRANTEE: FOND DU LAC COUNTY LAND & WATER CONSERVATION DEPARTMENT

BASIN PROGRAM FUNDS: \$ 4,542 (APPROVED)

NONFEDERAL FUNDS: \$ 10,598 (PROPOSED)

PROJECT DURATION: JULY 1, 2002 –

PROJECT TYPE: DEMONSTRATION

STATUS: ONGOING

PROBLEM STATEMENT

Adjacent to Lake Winnebago is the Lake Winnebago East Priority Watershed from which nonpoint source pollution is still being delivered to Lake Winnebago at unrestricted rates due to the sloping topography. In our continuing effort to reduce the sediment and nutrients that reach the lake, we have found a site that is in need of a water and sediment control basin.

BACKGROUND

Our state cost-share dollars for the much needed Best Management Practice only covers a portion of the installation cost, leaving the remaining installation cost solely up to the landowner to cover, with no help from others downslope. The potential participating landowners have seen the demonstration water and sediment control basin which was installed during the summer of 1998 due in part to a grant from the Great Lakes Basin Program, and understand the long-term benefit to the environment. In these uncertain economic times the remaining fractional cost outweighs the immediate benefit to them and their property.

ACTIVITIES

The installation of the water and sediment control basin will be on private land owned by a participating landowner of the Lake Winnebago East Watershed. A Land & Water Conservation Department (LWCD) technician using Natural Resource Conservation Service standards and specifications will survey and design the project. When the design is finished it will be sent to the Department of Agriculture-Trade and Consumer Protection's area engineer for approval. Any permits needed from other agencies, municipalities, etc., will be obtained. The project will be bid out to area contractors and the lowest bid from a qualified contractor will be accepted.

Note:

LWCD personnel will lay out the basin plan prior to the initial start of the project.

LWCD personnel will be on site to supervise construction and make sure all portions of the project are completed to the planned specifications.

RESULTS

Project Ongoing, no RESULTS.

VI. PROGRAM YEAR 2003 APPROVED PROJECTS

SMALL SCALE PROJECTS 2003

ILLINOIS

Construction of Vegetated Settling Ponds to Reduce Sediment Loading and Non-Point Source Pollution in Lake Michigan 23 months \$33,550

Northeastern Illinois University, Chicago, Illinois

The Great Lakes Shore and Beach Preservation Association, Northeastern Illinois University, and students from New Trier High School will collaborate to construct vegetated settling basins in a Glencoe, Illinois ravine and monitor the technology's effectiveness for reducing nonpoint source sediment loading from urbanized areas into Lake Michigan. Contact: Jason Meshburg; 847-446-1436; jason@shabica.com

INDIANA

Promoting Naturalized Drainage Channel Design 24 months \$27,176

The Nature Conservancy, Indianapolis, Indiana

This project will demonstrate how naturalized fluvial features can be used to enhance stream integrity while maintaining or improving drainage capacity through the creation of a channel naturalization demonstration site on Laird Creek in the Upper St. Joseph River Watershed. Contact: Joe Draper; 260-665-914; jdraper@tnc.org

Turkey Creek Corridor Enhancement Project 12 months \$28,215

Lake County Parks Department Planning Division, Crown Point, Indiana

This project will increase flood control, improve water quality, and decrease sedimentation in Turkey Creek in Lake County, Indiana by enhancing existing swales, buffers, and detention basins with native plants and providing informational kiosks about the benefits of wetlands, bioengineering techniques, and buffers. Contact: Craig Zandstra; 219-945-0543; lcparcs@jorsm.com

MICHIGAN

Red Cedar River Urban Buffer Project 24 months \$22,800

Ingham Conservation District, Mason, Michigan

The goal of this project is to reduce soil erosion and sedimentation into the Red Cedar River in Ingham County, Michigan by establishing urban buffers, designating recreational access points, and educating the public about the benefits of the project through outdoor displays and workshops. Contact: Susan Tangora; 517-676-2290; stangora@cac.net

SESC Procedures for Drain Commissioners 7 months \$30,000

Michigan Association of County Drain Commissioners, St. Johns, Michigan

This project will develop a model template and hold three workshops to assist drain commissioners in the development of a SESC procedure manual for their respective offices that meets

state regulations and includes preventative drain maintenance measures. Contact: Hope M. Croskey; 989-224-2355; hope@spicergroup.com

Eastern Alger County Watershed Erosion Control Project 24 months \$27,025

Alger Conservation District, Munising, Michigan

This project will establish demonstration sites on two critically eroding areas within the lower Sucker River corridor in Alger County, Michigan, create a hands-on educational stewardship program for school groups and volunteers at the sites, and continue outreach through presentations, community forums, and a newsletter. Contact: Danita Rask; 906-387-2222; rask@mi.nacdnet.org

Berry Lake Inlet Watershed Soil Erosion/Sediment Control Project 12 months \$23,528

Hillsdale Conservation District, Jonesville, Michigan

This project seeks to plan and implement best management practices, including conservation streambank stabilization and stream channel restoration, at a critical site next to Berry Lake in Hillsdale County, Michigan and to create an educational outreach program for the area's citizens, land users, and interested agencies or organizations. Contact: Dee Miller; 517-849-9890 x101; dee-miller@mi.nacdnet.org

Promoting Private Land Protection in the Saginaw Bay Watershed 12 months \$19,507

Saginaw Basin Land Conservancy, Bay City, Michigan

With the goal of providing private landowners with conservation and water protection tools, this project will specifically identify all riparian owners on the Kawkawlin, Cass, and Au Gres rivers and provide information and assistance to those who indicate an interest in a property or conservation easement donation. Contact: Sally Wallace; 989-686-0220; tschfam@aol.com

Shiawassee River Conservation Tillage Project 24 months \$32,114

The Nature Conservancy, Lansing, Michigan

This project seeks to reduce soil erosion and surface runoff in the Shiawassee River watershed through the promotion of conservation tillage practices on corn production. Corn producers will be offered incentives that include expert advice and financial risk protection. Contact: Kenneth Algozin; 989-723-9062; kalgozin@tnc.org

Erosion Control for Construction Sites - Education Program 12 months \$7,910

St. Joseph County Conservation District, Centreville, Michigan

The goal of this project is to create an annual education program that will provide organized training to builders, contractors, local officials, and homeowners in the proper use of best management practices, site planning, and project scheduling to minimize soil erosion and sedimentation. Contact: Jon Eggen; 269-467-6336 x5; jon-eggen@mi.nacdnet.org

Reducing Soil Erosion and Runoff From Livestock Farms with a Modified No-Till System 12 months \$28,938

Timothy Harrigan, Michigan State University, East Lansing, Michigan

The goal of this project is to develop guidelines for using low-intensity tillage to prevent soil erosion and the runoff of sediment and contaminants from crop land into waterways. Potential research RESULTS are reduced soil erosion, improved soil quality, and a more efficient use of manure as a nutrient source. Contact: Timothy Harrigan; 517-353-0767; harrigan@msue.msu.edu

MINNESOTA

- Enhancing the Lower St. Louis River*** 18 months \$26,822
St. Louis River Citizens Action Committee, Duluth, Minnesota
This project has four components that will educate the surrounding community about its role in protecting the Lower St. Louis River watershed: meetings with members of the seven watershed communities, a strategies implementation planning worksheet for restoration efforts, an educational brochure/poster, and an interactive web site. Contact: Lynelle Hanson; 218-733-9520; slrcac@stlouisriver.org
- Portable Logging Bridges*** 24 months \$29,500
Logging Educational and Resource Center, Britt, Minnesota
The goal of this project is to provide loggers with an affordable and environmentally friendly method of crossing streams through the construction and provision of three portable logging bridges to be made available by contract. Contact: Tink Birchem; (218) 741-4224; rrs@netnet.net

NEW YORK

- Stormwater Phase II Initiative in the Seneca and Keuka Lake Watersheds*** 12 months \$30,000
Yates County Soil and Water Conservation District, Penn Yan, New York
This project will foster continued collaboration by communities in the Seneca and Keuka lake watersheds in finalizing a comprehensive program for stormwater management that uses a proactive approach and provides a planning advantage for all communities. Contact: Lester M. Travis; (315) 536-5188; yceswcd@linkny.com
- Improving Water Quality Through Erosion and Stormwater Education*** 12 months \$20,225
Central New York Regional Planning and Development Board, Syracuse, New York
This project will educate residents in the three-county Syracuse urban area about water quality issues and the management practices available to mitigate the impacts of development through a media program, two workshops for the public, and one-full day of training for municipal employees. Contact: Pamela O'Malley; (315) 422-8276; pomalley@cnyrpdb.org
- Phase I and II SPDES Construction Inspection Program*** 12 months \$30,000
Monroe County Soil and Water Conservation District, Rochester, New York
This project will improve compliance with New York State's new stormwater regulations for construction sites in Monroe County by creating a user-friendly inspection form for use onsite, holding workshops for code enforcement officers and the development community, completing inspections and reinspections of construction sites, and compiling the inspection data for local municipalities. Contact: Paula Smith; 585-473-2120 x3; psmith@nyrocheste.fsc.usda.gov
- Dutch Hollow Brook Streambank Stabilization Project*** 24 months \$28,485
Cayuga County Soil and Water Conservation District, Auburn, New York
This project will demonstrate various best management practices for streambank stabilization and evaluate their effectiveness for addressing particular erosion problems on the Dutch Hollow Brook, a tributary to Oswasco Lake in Cayuga County, New York. Contact: Jim Hotaling; (315)255-3740; cayugaswcd@ny.nacdnet.org

Seneca Lake Watershed Forestland BMP Outreach Project 12 months \$13,000
 Finger Lakes RC&D Council, Inc., Bath, New York
 This project will implement a multifaceted outreach program which will educate the general public, municipal officials, and timber harvesters about the proper installation and use of best management practices to protect the environment while encouraging economic sustainability of the forest industry. Contact: Richard Winnett; 607-776-7398 x5; sultrrcd@linkny.com

Models Linking Sediment Concentrations and Benthic Macroinvertebrate Assemblages: Addressing a Critical Gap in the Development of Sediment TMDLs 12 months \$30,610
 Dr. Shreeram P. Inamdar, SUNY College at Buffalo, Buffalo, New York
 This project will assess the use of water quality and benthic habitat relationships in the development of the sediment-TMDL plan for the Buffalo River watershed to develop a more comprehensive sediment-TMDL plan and to construct models that link water quality and pollution control measures with the biological condition of the waters. Contact: Dr. Shreeram Inamdar; 716-878-6229; inamdasp@buffalostate.edu

Identification of Unstable Reaches and Stream Channel Design Parameter Calculations in a Human-Impacted Watershed 18 months \$26,052
 Research Foundation of SUNY/Buffalo State College, Buffalo, New York
 This project will collect regional reference data from the Cazenovia Creek watershed, compile the data into a GIS-based inventory, and use the data to calculate stream channel design parameters that will be used to recommend engineering techniques for erosion control in specific stream reaches. Contact: Dr. Kelly Frothingham; 716-878-6736; frothikm@buffalostate.edu

Cazenovia Creek Streambank Stabilization 12 months \$15,000
 Erie County Soil and Water Conservation District, East Aurora, New York
 With the goals of sediment reduction and improved fish and wildlife habitat and stream aesthetics, this project will exclusively use bioengineering techniques to stabilize a portion of the Cazenovia Creek in Erie County, New York, a tributary to the Buffalo River. Contact: Brian Andrzejewski; 716-652-8480; brian-andrzejewski@ny.nacdnet.org

OHIO

Primary Headwater Stream Initiative 6 months \$29,803
 Lake County Soil and Water Conservation District, Painesville, Ohio
 This project will conduct 180 primary headwater stream assessments within Lake County, Ohio to identify sediment discharges, assist in the review of erosion and sediment control plans, evaluate the effectiveness of erosion control best management practices, and monitor points of degradation. Contact: Matt Scharver; 440-350-2031; mscharver@lakecountyohio.org

Reducing Soil and Nutrient Loss By Cutting Nitrogen Rates 24 months \$29,500
 Conservation Action Project, Napoleon, Ohio
 This project will support nutrient and soil loss prevention demonstrations at 25 Ohio farms. Data from each plot will be collected, analyzed, published in a summary of findings, and shared through two educational events and a quarterly newsletter. Contact: William Rohrs; 419-592-9692; bill@capofohio.org

Streamside Vegetation for Education 12 months \$30,000
 Ohio Lake Management Society, Kent, Ohio
 This project will initiate environmentally friendly land-use practices, raise citizen awareness about nonpoint source pollution prevention, and increase Pond Brook watershed citizen involvement by installing two vegetation exhibits for streambank stabilization, conducting education and publicity events, and recruiting new members to the Pond Brook Watershed Initiative. Contact: Matthew Smith; 330-672-5475; smith@olms.org

PENNSYLVANIA

Keeping Scott Run in Daylight 12 months \$30,000
 Pennsylvania Department of Conservation and Natural Resources, Erie, Pennsylvania
 This project will assess current erosion issues at Scott Run ravine in Millcreek Township, Pennsylvania and develop a strategy that includes a combination of best management practices to reduce the sedimentation entering Presque Isle Bay. Contact: Harry Z. Leslie, 814-833-7424, hleslie@state.pa.us

WISCONSIN

Forest Roads and Stream Crossing Workshop 24 months \$22,800
 Wisconsin Department of Natural Resources, Division of Forestry, Madison, Wisconsin
 To protect the Lake Superior Drainage Basin from erosion associated with forest management ACTIVITIES, the Wisconsin DNR will hold one erosion control workshop for loggers and foresters at which they will demonstrate forest road planning, water control methods, and various temporary stream crossings. Contact: Dale Gasser; 608-266-1667; dale.gasser@dnr.state.wi.us

Rain Garden Demonstration 24 months \$29,531
 Wastewater Division, Public Works Department, Superior, Wisconsin
 This project will construct two in-house rain gardens, a technology that slows runoff and reduces erosion, at the City of Superior wastewater treatment plant and use a variety of educational methods, including tours and brochures, to expose at least 1,000 citizens annually to the benefits and practicality of rain gardens. Contact: Diane Thompson; 715-394-0392 x135; thompsond@ci.superior.wi

Fish Habitat Restoration by Buffer Strip Installation 24 months \$28,989
 Outagamie County Land Conservation Department, Appleton, Wisconsin
 This project will protect and restore northern pike spawning and rearing habitat through the continuation of an incentive-based program that installs riparian vegetative buffer strips along low order streams in three intensely farmed watersheds. Contact: Ann Francart; 920-832-6072; FrancaAP@co.outagamie.wi.us

Root River Stream Shoreland Project 12 months \$30,000
 City of Racine, Racine, Wisconsin
 To reduce the amount of sedimentation entering the Root River, the city of Racine will improve aesthetics along the river length through rock placement, establishing a monitoring system with a local school, designating a river buffer strip, and increasing community understanding through 2 meetings, a web page, and an illustrative sign. Contact: Jim Blazek; 262-636-9191; jblazek@cityofracine.org

Lake Michigan Shoreline Restoration 24 months \$29,500
Glacierland Resource Conservation and Development, Green Bay, Wisconsin
This project will develop a strategic plan to accomplish long-term wetland restoration by explaining the need for wetland restoration through a public information program and identifying all landowners and acreage in the area in order to prioritize the properties most in need of restoration. Contact: Jack VanDixhorn; 920-465-3006; greg.hines@wi.usda.gov

Wisconsin BMPs for Water Quality Educational Program 12 months \$27,500
Forest Industry Safety and Training Alliance, Rhinelander, Wisconsin
This project will develop a new presentation about forestry best management practices to replace the current outdated one and to educate and inform loggers and foresters throughout the state of Wisconsin about water quality protection. Contact: Barb Henderson; 715-282-4979; fista1@newnorth.net

LARGE SCALE PROJECTS 2003

ILLINOIS

Bull Creek Restoration and Stabilization 24 months \$100,000
Lake County Stormwater Management Commission, Libertyville, Illinois
The goal of this project is to remedy moderate to severe ravine erosion and downstream sedimentation to reduce related water quality and habitat impairments to Bull Creek, Illinois Beach State Park, and Lake Michigan. The project will include landowner education and involvement, conservation easements, removal of non-native plants, and bioengineering. Contact: Patricia Werner; 847-918-5269; pwerner@co.lake.il.us

INDIANA

Shooter Ditch Sedimentation Project 24 months \$64,425
Coffee Creek Watershed Conservancy, Inc., Chesterton, Indiana
The goal for this project is to restore a viable wetland community over approximately 25 acres in a highly developed subwatershed of Coffee Creek near Chesterton, Indiana. In coordination with these restoration efforts, the Coffee Creek Watershed Conservancy will work to procure easement rights along the upper stretches of the subwatershed to further aid in nonpoint source pollution reduction. Contact: Steve Barker; 219-926-1842; steve@coffeecreekwc.org

MICHIGAN

Kid's Creek Buffalo Pasture Restoration Project 24 months \$99,150
The Watershed Center Grand Traverse Bay, Traverse City, Michigan
This project has three goals: to restore a 3,000-foot section of Kid's Creek and reduce sediments to the natural level; to create a viable and useful demonstration site by installing trails, bridges, fencing, and informational exhibits; and to demonstrate to local governments, business owners, and the general public how a community can successfully restore a stream and fund restoration ACTIVITIES through planned unit developments. Contact: Sarah U'Ren; 231-935-1514; suren@gtbay.org

- Big Sable River Road Crossing Improvement Project*** 12 months \$88,900
 Mason-Lake Conservation District, Scottville, Michigan
 With the goal of improving the water quality and fish and wildlife habitat of the Big Sable River and Hamlin Lake, the proposed project would virtually eliminate sedimentation to the Big Sable River at the Stephens Road crossing by paving and curbing the long, steep sandy approaches and constructing diversion outlets to properly manage road run-off. The project will strengthen partnerships by involving community members in the project. Contact: Lynda Herremans; 231-757-3708; lynda-herremans@mi.nacdnet.org
- Galbraith Drain Stream and Floodplain Restoration Project*** 24 months \$100,000
 St. Clair County Drain Commissioner, St. Clair Township, Michigan
 This project will restore a section of the Galbraith Drain Stream by developing a set of regional hydraulic geometry curves for the surrounding area, designing and implementing a restoration plan for 2,600 linear feet of stream channel, increasing the amount of bankfull floodplain available for sediment capture, evaluating the stability of the restored stream and floodplain, and quantifying the associated sediment load reductions. Contact: Fred Fuller; 810-364-5369; ffuller@stclaircounty.org
- Lake Erie Watersheds Riparian Corridor Improvement Project*** 24 months \$97,627
 Wayne County Department of Environment, Detroit, Michigan
 This project seeks to reduce soil erosion and sedimentation into Lake Erie by educating public and private citizens about urban erosion control measures and stream bank protection through four riparian corridor management workshops, four hands-on technique training workshops, and four demonstration projects (one in each of the county's four watersheds). Contact: Noel Mullett Jr.; 734-326-4486; nmullett@co.wayne.mi.us

NEW YORK

- Remediation of the Limestone Creek Landslide, Madison County, New York*** 18 months \$100,000
 Madison County Planning Department, Wampsville, New York
 The goal of this project is to reduce both on-site and off-site damage to aquatic life and water quality caused by advancing slope failure adjacent to Limestone Creek. Specifically, this project will determine the extent and causes of the slope failure, examine nearby slopes for stability, determine the ecosystem impact, and design and implement a slope-failure mitigation program. Contact: Scott Ingmire; 315-366-2498; ingmire@co.madison.ny.us
- Upper Cattaraugus Creek Demonstration Project*** 12 months \$100,000
 Seneca Trail Resource Conservation and Development Council, Inc., Ellicottville, New York
 This project will accomplish three tasks: reducing stream bank erosion in the Cattaraugus Creek watershed by installing stream bank protection measures in ten critical locations; exposing 5,000 people to the importance of stream bank restoration through a permanent educational display and narrative script; and increasing the average visual assessment score for fish habitat for the entire creek. Contact: JoAnn Kurtis; 716-699-8923; jkkurtis@juno.com

OHIO

- Restoring Portage River Oxbow and Floodplain Connections*** 24 months \$100,000
 Wood SWCD, Bowling Green, Ohio
 This project proposes to restore one or two oxbow/floodplain areas along the main channel of the Rocky Ford or Middle Branch in the upper Portage River watershed, restoring approximately

2500 lineal feet of channel and up to 35 acres of riverine wetland habitat. The areas will then be reevaluated to determine the efficiency of reconnected oxbow channels as sediment traps. Contact: Jim Carter; 419-352-5172; jimcarter@oh.nacdnet.org

Ottawa River Watershed Sediment Control Demonstration Project 20 months \$100,000
Ottawa River Coalition, Lima, Ohio

This project has four specific goals: to modify a poorly engineered detention basin to function as a sediment basin; to install one continuous deflective separation stormwater treatment unit; to modify five island catchment areas and improve their capture, stormwater detention, and infiltration; and to conduct a field day event that showcases this stormwater treatment and sediment removal demonstration. Contact: Beth Seibert; 419-223-0040 x107; beth-seibert@oh.nacdnet.org

WISCONSIN

Bender Park Slope Stabilization Demonstration Project 12 months \$100,000
Milwaukee County Parks Department, Wauwatosa, Wisconsin

The goal of the project is to relieve the water pressure that causes bluff slope failure at Milwaukee's Bender Park and the associated erosion and delivery of sediment to Lake Michigan by installing wick drains on approximately 3,000 linear feet of shoreline bluff and by annually monitoring the slope failure reduction using a GPS topographic survey. Contact: Thomas Forbes; 414-257-4887; tforbes@milwcnty.com

Brown County Suamico River Riparian Buffer Project 24 months \$100,000
Brown County Land Conservancy, Green Bay, Wisconsin

This project proposes to establish fifty acres of riparian buffers and wetlands along six miles of stream length in the Suamico River watershed to reduce the amount of nutrient and pesticide laden sediments that runoff from nearby agricultural areas. The buffer areas will be identified through a stream inventory and established through cost sharing. Contact: Scott Neuberger; 920-391-4621; neuberger_sr@brown.co.wi.us