



Watershed Achievements

**2004 Annual Report to the
U.S. Environmental Protection Agency on
Clean Water Act Section 319 and
Clean Water Partnership Projects in Minnesota**



Minnesota Pollution Control Agency

September 2004



**Minnesota
Pollution
Control
Agency**



2004 Annual Report on Clean Water Act Section 319 and Clean Water Partnership Projects in Minnesota

NRCS Photo

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NPS photo

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Cover photo: Nile Fellows, MPCA



For, lo! the winter is past, the
rain is over and gone; the
flowers appear on the earth;
the time of the singing of
birds is come, and the voice
of the turtle is heard
in our land.

Song of Solomon

U.S. Fish and Wildlife Service photo

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Executive Summary

This summer, the Grand Excursion (recreating a 1854 journey) reintroduced many Minnesotans to the Mississippi River. As riverboats moved upstream, they docked at river cities to celebrate the intertwined histories of people and the river. The tour also accentuated the many changes in water quality during the last 150 years and stimulated interest in nonpoint source water pollution.

LARS* and eLink** Results for 319/CWP Projects: 1997-2003

- Soil loss reductions of 42,000 tons/year
- Sediment reduction of 15,000 tons/year
- Phosphorus reduction of 50,000 pounds/year

* Local Annual Reporting System, with data gathered by the Board of Water and Soil Resources, 1997-2002.
 **New eLink system, with data gathered by the Board of Water and Soil Resources, 2003.

Best Management Practices Funded 1997-2003

Practice	#	Soil Loss Reduction (tons/year)	Sediment Reduction (tons/year)	Phosphorus Reduction (pounds/year)
Feedlot	67	---	---	3,831
Filter Strip Projects	246	21,125	4,445	6,689
Gully Stabilization	66	6,990	3,404	3,709
Sheet and Rill Erosion Control	74	7,375	2,823	3,809
Stream and Ditch Bank Stabilization	63	4,115	4,115	3,857
Wind Erosion	10	826	---	550
Not Specified	224	139	---	---
Other	458	1,300	---	27,426
TOTAL	1,208	41,870	14,787	49,871

This report describes Minnesota's efforts to protect, improve and restore the state's waters. It also provides specific information about focused nonpoint-source water pollution activities funded by the Clean Water Act Section 319 (Section 319), Clean Water Partnership (CWP) and Minnesota River projects.

Within the past few years, the condition of Minnesota's water resources has been a major focal point of Governor Tim Pawlenty's environmental agenda. Minnesota's water resources are fundamental to the state's health, quality of life and prosperity. From the traditional Governor's Fishing Opener to promoting conservation reserve easements in agricultural country to participation in the Grand Excursion, the administration is elevating public awareness about the stewardship of the state's waters.

The MPCA has adopted a geographically based watershed approach to support local efforts to assess, protect and restore the state's waters. This approach focuses on the state's 10 major river basins and watersheds, providing data, technical assistance and training to obtain results.

Water under Stress

A 2003 MPCA study looked at stresses on Minnesota's environment, using scientific data, public perception, populations projections, federal mandates and legislative intent. The study pointed to concerns about deteriorating water quality.

Among the top five stressors identified were phosphorus, transported sediments and habitat modification. The top five sources of pollution were agricultural runoff, urban runoff and pesticide use.

The MPCA has reported that point sources contribute 14 percent of the state's water pollution and nonpoint sources 86 percent. A recent report, *St. Croix Basin Phosphorus-Based Nutrient Goals*, came up with a 20-percent point source to 80-percent nonpoint-source estimate for that basin, adding to evidence that nonpoint-source pollution is the primary problem facing Minnesota's waters.

What is a TMDL?

The Clean Water Act requires states to conduct a Total Maximum Daily Load (TMDL) study for each pollutant causing a water body to fail to meet applicable water-quality standards.

The TMDL study identifies the root causes of the problem, both point and nonpoint sources of the pollutant within the watershed. Water sampling, land-use surveys and computer modeling estimate how much each source contributes to the problem. A public participation process determines how much each source must reduce its contribution of that pollutant to ensure that water-quality standards are met. An impaired water may need one large or several smaller TMDL studies, each one determining reductions for a different pollutant.

Other state-specific factors posing challenges to water resources include:

- Minnesota's population is increasing at a faster rate than that of other Midwestern states.
- Minnesota's legendary weather has been tough on water quality in the last 20 years.
- A renaissance underway in the state's urban areas has resulted in a boom in construction and stormwater problems.
- Striking improvements in monitoring, analysis and data sharing have brought more information about water quality to light.
- Minnesota has more water resources than many other states and has formed its economy around those resources.

Setting Goals

A recent report by the U.S. Government Accountability Office concluded that water-quality grant programs should include clear goals and criteria to assess environmental results. The MPCA has developed a strategic plan with clear goals and objectives for water quality. They are:

- Assess the status or condition of Minnesota's ground-water systems.
- Prevent or reduce degradation and depletion of ground water.

- Assess the chemical, physical and biological integrity of lakes, streams and wetlands to identify if designated uses are being met and to provide information on the condition of waters.
- Maintain and enhance the chemical, physical and biological integrity of Minnesota lakes, streams and wetlands so that water-quality standards and designated uses are met and degradation is prevented.
- Restore the chemical, physical and biological integrity of Minnesota lakes, streams and wetlands that do not support designated uses.

The strategic plan includes environmental indicators that are reported upon regularly. This plan is setting the stage for convergence of point- and nonpoint-source programs, with the watershed model becoming the umbrella under which all activities take place and Total Maximum Daily Load studies and implementation plans a major tool.

Other state organizational changes will help keep the focus and priority on water quality.

- Governor Pawlenty has established a Clean Water Cabinet that includes all state agencies with water-quality responsibilities. The Governor also has proposed several specific clean-water initiatives.
- The Minnesota Legislature has streamlined agency funding to allow more reliable resource allocation.

- The MPCA has an assistant commissioner assigned entirely to water policy issues.
- Recent structural changes place core water-quality functions in industrial, municipal, regional and outcomes divisions.
- The MPCA has developed a five-year nonpoint-source water pollution plan.
- The Office of Environmental Assistance is bringing its expertise to MPCA regulatory and planning staff.

Each of the major basins has a basin coordinator and plan to ensure that the agency's resources are aligned for the best results. The MPCA's statewide five-year Nonpoint Source Management Program plan is available on the MPCA Web site at www.pca.state.mn.us/water/nonpoint/mplan.html.

Partners in Water Quality

Reducing nonpoint-source water pollution will require:

- Partnerships among all levels of government;
- Partnerships among government, businesses and citizens;
- Understanding the impact of individual actions on common water resources;
- Local efforts placed in the context of entire watersheds;

Ground-water impacts on surface-water quality

Studies on the interactions between ground water and surface water in a lake, river or stream have given us an intriguing glimpse of the water cycle in motion. The MPCA's Web site outlines several existing methods to assess this zone of interaction.

By combining existing techniques, researchers can:

- Determine whether ground-water contamination has reached surface water.
- Determine concentrations of surface-water impacts, if they have occurred.
- Determine the contaminant mass flux to the surface-water body.

- Refine the hydrogeologic conceptual model for the site.
- Refine estimates of contaminant plume width.

The methods are inexpensive and relatively easy to complete. By finding areas of upward versus downward ground-water migration, water-quality planners will be more successful in developing restoration activities that work on all sources of pollution to affect a water body -- even those, such as ground water, that can't be seen. For more information, see www.pca.state.mn.us/cleanup/gwsw-interaction.html.

- Research aimed at diagnosing impairments and targeting resources toward the biggest problems facing specific water resources;
- Public awareness, education and action;
- Information and data sharing; and
- Leveraging resources to achieve the greatest benefits at the least cost.

The MPCA works with partners in many ways, including the Section 319 and CWP programs and funding. Under Section 319, the states:

- Identify the nonpoint-source controls necessary.
- Specify the programs that will apply the controls.
- Certify that the state has adequate authorities to implement these measures.
- Identify all sources of funding for these programs.
- Establish a schedule for implementation.

The goals of the CWP include:

- Diagnosing problems and threats to water resources,
- Developing solutions for reducing the impacts of nonpoint-source pollution on water resources, and
- Implementing these solutions.

An interagency Project Coordination Team (established in statute) assists the MPCA in prioritizing Section 319 and CWP grant applications that target polluted waters and demonstrate a good chance of success. The financial and in-kind contributions from local sponsors and their communities is substantial, exceeding the 50-percent match requirement in most cases.

Statewide Impacts

The MPCA has assessed approximately 14 percent of lakes and eight percent of streams in Minnesota. More than 900 lakes and nearly 600 stream segments have been identified as impaired so far. The MPCA set a goal of assessing all Minnesota waters for impairments by 2015.

Data regarding the cumulative reductions in phosphorus, soil loss and sedimentation statewide have been available from the Minnesota Board of Water and Soil Resources' Local Annual Reporting System (LARS), but a pending upgrade to the system

is underway called eLink. In general, better information about the state of water quality is available than ever before, with remote data collection, coordinated sampling among agencies, satellite monitoring, and new online resources.

Minnesota also works with other states and nations on protecting and improving water resources. Among cooperative interstate/international projects:

- Partnership with Great Lakes states and Canada on zero discharge of nine toxic chemicals.
- Joint water-quality monitoring in the Rainy River Basin with Canada.
- Emergency response and spill drills led by the U.S. Coast Guard and multiple Minnesota and Wisconsin jurisdictions.
- A joint Minnesota/Wisconsin St. Croix Basin Planning Team.

Future Trends

When Minnesotans get the message that their lakes or rivers are in trouble, most are ready to step up and do their parts. Among the trends:

- Most projects have a public education and awareness-building component.
- Technical assistance and consultation will become a major factor in how smaller communities respond to nonpoint-source pollution problems.
- Population expansion, especially in the growth rings around major cities and on the North Shore of Lake Superior, will choose economic development options that preserve water quality.
- Monitoring and stewardship of ground water resources will improve.
- Targeted education, technical assistance and partnerships will be important in achieving good stormwater management statewide.
- The engagement of Minnesota's agricultural community in water-quality issues sets the stage for future cooperation.
- The impaired waters process will continue to bring together point- and nonpoint-source activities.

The Section 319 and CWP programs are well positioned to bring together the visions of local partners with the funding and assistance to make great things happen.

Introduction



Minnesota focuses effort and energy on impaired waters using a watershed approach

"The surface of the country ... is interspersed with numerous beautiful lakes of fresh water ... all abounding in the finest fish, and their banks covered with a fine growth of woodland."

Grand Excursion Photo

Writer J. Wesley Bond published the trip notes (above right) on the Mississippi and Red Rivers in Minnesota in 1883. He also made a prediction: "Let no one think the great tide of immigration will confine itself to the banks of the Mississippi and Minnesota Rivers." He knew that people would come to settle in the state and take advantages of its bounties.

This summer, the Grand Excursion (recreating a 1854 journey) reintroduced many Minnesotans to the Mississippi River. As riverboats moved upstream, they docked at river cities to celebrate the intertwined histories of people and the river.

Bond might have been proud to know his prediction was correct. He may not have known, however, in what ways the changes of the past 120 plus years would affect just those lakes and rivers he admired.

Population growth is one of several ongoing pressures that will affect the state's water quality in coming years. This report describes Minnesota's ambitious and coordinated response to those pressures in its ongoing efforts to protect, improve and restore the state's waters. It also provides specific information about focused nonpoint-source water pollution activities funded by the Clean Water Act Section 319 (Section 319), Clean Water Partnership (CWP) and Minnesota River programs.

Within the past few years, the condition of Minnesota's water resources has been a major focal point of Governor Tim Pawlenty's environmental agenda and organizations statewide are taking up the call for improvements in water quality. This resurgence of public commitment to clean water is energizing communities to take part not only in the stewardship of these resources, but in their celebration. The lakes, rivers and streams dotting and crisscrossing the state are more than places to fish, swim and play. They are also an integral part of who Minnesotans define ourselves to be.

Minnesota's water resources are fundamental to the state's health, quality of life and prosperity. These rich resources include:

- 11,842 lakes of 10 acres or more (14,000 lakes, including smaller lakes);
- more than one trillion gallons of ground water, used as drinking water for an estimated 70 percent of Minnesotans;
- 92,000 miles of rivers and streams;
- three continental watersheds, sending our waters north to Canada's Hudson Bay, east through the Great Lakes to the Atlantic, and south through the Mississippi River to the Gulf of Mexico;
- proximity to the largest and cleanest of the Great Lakes; and
- more shoreline than the state of California.

**Travel and Tourism-Related Gross Receipts/Sales
1998-2002**

(in Billions)



Beautiful lakes, rivers and streams make the state a great place to visit. According to the Minnesota Department of Employment and Economic Development, tourism contributes \$10 billion annually to the state’s economy, \$8.9 billion in gross receipts and sales, and \$1.1 billion in state and local tax revenue.

People clearly come for water recreation; 98 percent of Minnesota’s resorts, 80 percent of campgrounds and 24 percent of hotels are located on lakes and rivers. With 66 state parks on nearly 250,000 acres of prime recreational land, visitors can enjoy water resources by river rafting and tubing, canoeing, kayaking, houseboating, biking, golfing, horseback riding and, of course, fishing. More than 1.5 million anglers each year spend an estimated \$846 million in Minnesota.

The Pawlenty administration has spent much energy and time promoting Minnesota’s recreational value and calling attention to water-quality impacts on the state’s quality of life and economy. From the traditional Governor’s Fishing Opener to promoting conservation reserve easements in agricultural country to participation in the Grand Excursion, the administration is elevating public awareness about the stewardship of the state’s waters.

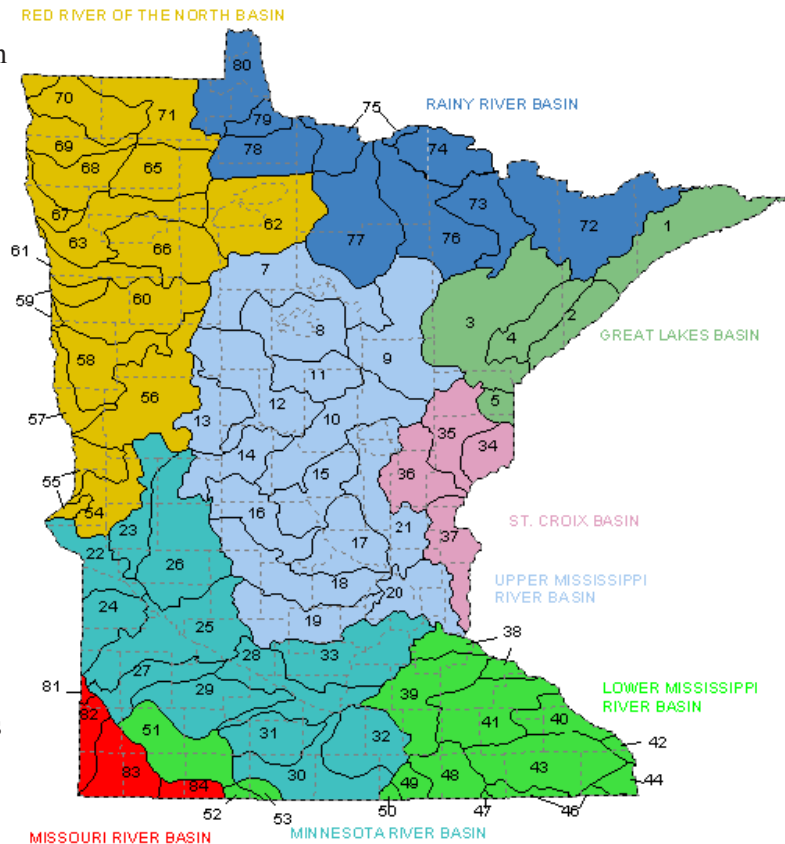
To protect and improve these abundant water resources is a massive undertaking. It requires thoughtful and informed choices by every individual. It also demands a wide-ranging strategy to move water-quality protection and improvement to the top of the state’s “To Do” list, to solve

problems and confer benefits not only on individual lakes or stream segments, but on entire watersheds and basins.

A watershed consists of “the land drained by a river or river system,” but this definition does not begin to describe the complexities of watersheds. Watersheds are as unique as the underlying geology, the weather systems sweeping across forest and prairie, the land use, the population, the wildlife and scenic wonders. Most Minnesotans can clearly identify the political boundaries that control their destinies (state, county, city or township). Now, a growing number of people are discovering that Mother Nature draws boundaries, too, in basins and watersheds.

To best protect, improve and restore the state’s waters, the MPCA has adopted a geographically based watershed approach. This approach focuses on the state’s 10 major river basins and major watersheds (shown below).

Major Basins and Watersheds of Minnesota



Water under Stress

In developing the current strong water focus, the MPCA looked at many different factors, concluding that scientific data, public perception, population projections, federal mandates and legislative intent all pointed to concerns about deteriorating water quality in Minnesota.

In 2003, the MPCA conducted a study to determine the major stressors to the state's environment. Not surprisingly, many of the biggest were nonpoint sources of water pollution (see next page). Among the top five stressors identified were phosphorus, transported sediments and habitat modification. Among the five top sources of pollution were agricultural runoff, urban runoff and pesticide use.

The study took in six categories of information: stressors, resource conditions, statutory obligations, public expectations, socioeconomic trends and environmental risk.

The nutrients, bacteria, sediments and toxic chemicals in nonpoint sources of water pollution predispose water resources to:

- overgrowth of algae and weeds that clog waters;
- depletion of oxygen required by aquatic life;
- movement of bacteria and nitrate into ground water used for drinking and cooking;
- contamination of formerly swimmable waters with bacteria;
- oxygen depletion in water resources downstream, such as the Lower Minnesota River and the Gulf of Mexico;
- destruction of critical habitat for native plants and aquatic organisms;
- proliferation of rough fish and disappearance of sport fish; and
- murkiness that deprives plants of light.

The MPCA has reported that point sources contributed 14 percent of the state's water pollution and nonpoint sources 86 percent. A report published in August 2004, *St. Croix Basin Phosphorus-Based Nutrient Goals*, came up with a 20 percent point-source to 80 percent nonpoint-source estimate for that basin, adding to the evidence that nonpoint-

source pollution is the primary problem facing Minnesota's waters.

While nonpoint-source water pollution is a major factor in water quality nationwide, Minnesota has some state-specific factors that make it even more important here.

- Minnesota's population is increasing at a faster rate than that of other Midwestern states. At the 2000 census, Minnesota had approximately five million people. The State Demographic Center projects that this will grow to six million by 2025 and seven million by 2060.
- Minnesota's legendary weather has been tough on water quality in the last 20 years. According to the National Oceanic and Atmospheric Administration (NOAA), the U.S. had 58 weather-related occurrences that caused at least \$1 billion in damage between 1980 and 2003. Of these, eight affected Minnesota, ranging from a severe drought and heat wave in 1988 to northern plains flooding in 1997 to severe storms and tornados in 2003.
- A renaissance has been underway in the state's urban areas, stimulated by initiatives to re-use polluted properties, incentives for brownfields redevelopment and administration efforts to create job-opportunity zones and new jobs. New home starts also have remained high, even during times of economic downturn. A boom in construction means a blast of stormwater and more impervious surfaces to channel runoff directly to surface waters, bypassing ground-water recharge areas.
- Striking improvements in monitoring, analysis and data sharing, as well as water modeling and assessment methods (such as satellite monitoring), have brought stewards of water quality better information than ever before. These advances make possible finding those waters most vulnerable to pollution – and establishing baseline water quality, goals for improvement and evaluation of outcomes of various strategies to reduce impacts and restore lakes, rivers and streams.
- Minnesota simply has more water resources than many other states, and has formed its economy around those resources. Agriculture and tourism are two lynchpins of the state's economy, both dependent upon clean, accessible and affordable water resources.

Stressors Facing Minnesota's Environment

In May 2003, the Minnesota Pollution Control Agency (MPCA) Environmental Outcomes Division completed a report assessing stresses facing our state -- and identifying and comparing their causes. The Environmental Information Report (EIR) examines health and ecological stresses that exist in spite of current environmental protection efforts.

Six categories of information were examined during the assessment:

- Stressors: pollution sources, impacts, trends;
- Resource conditions: air, water, land, biota;
- Statutory obligations;
- Public and stakeholder expectations;
- Socioeconomic trends; and
- Environmental risk: human health, ecosystem, quality of life.

The EIR ranks the top five stressors to the state's environment, as well as the top five sources that had negative impacts. Many of them confirm the adverse impacts of nonpoint-source water pollution, which are widespread, affect large populations, have severe impacts and are difficult to reverse.

The full report contains a program matrix that summarizes both the MPCA's and other agencies' environmental efforts, including statutory obligations, responsibilities and existing program coverages for the sources examined in the EIR. It also identifies the level of activity of environmental efforts underway in Minnesota to reduce impacts from these sources. Read the full report at www.pca.state.mn.us/publications/ei-report.html.



Five Top Stressors

Particles in the air

Phosphorus



Transported sediment



Temperature increase/
climate change

Habitat modification



Five Top Sources

On-road/off-road vehicles
and equipment

Coal-fired power plants

Agricultural runoff



Urban development
and urban runoff



Pesticide use, urban
and rural



Setting Goals

A July 2004 U.S. Government Accountability Office (GAO) report provides a critique of water-quality grant programs that do not include clear goals and criteria to assess environmental results. Its recommendations included:

- An outcomes-based grant policy, binding on agency management and staff.
- Emphasis on environmental results throughout the grant cycle – awards, monitoring and reporting.
- Aligning grants with both the agency’s strategic goals and with environmental results.

The MPCA has developed a strategic plan with clear goals and objectives for water quality in Minnesota – a plan that deals with ground- and surface-water in a watershed context. It includes environmental indicators that are reported upon regularly. (See next page for the MPCA’s environmental indicators for water quality.) The plan is setting the stage for the convergence of point- and nonpoint-source programs, with the watershed model becoming the umbrella under which all activities take place.

Two federal drivers have accelerated this process. The CWA amendments require that all waters of the state be assessed for impairments. This has brought together all impacts on given lakes, rivers or stream segments in the Total Maximum Daily Load (TMDL) study and implementation plans.

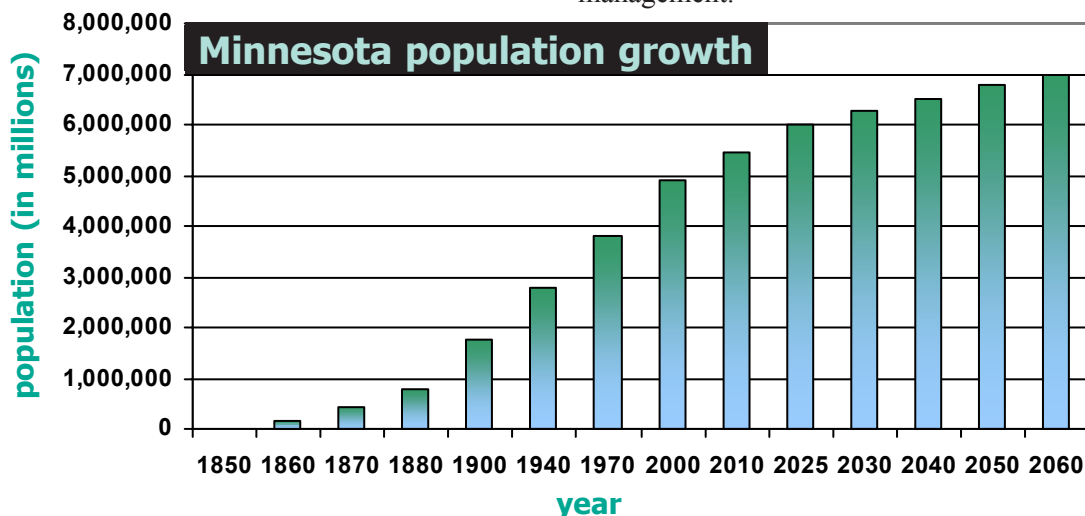
This process is underway in Minnesota, with goals of completing TMDL studies within 13 years of a water body’s initial placement on the impaired waters 305(b) list and with approved implementation plans and activities one year after EPA approves each TMDL study.

During the 2005 legislative session, the MPCA will seek approval of an impaired waters program, following recommendations made through statewide stakeholder meetings. An impaired waters focus is clear in the descriptions of the Section 319, CWP or TMDL projects completed in federal fiscal year 2004, as well as those selected for grants in 2004.

Phase II stormwater management and permitting as required by the CWA are under development, with activities in rulemaking, permit development, data management, enforcement and stakeholder/public education and assistance.

Linkages between stormwater management and wastewater treatment infrastructure planning are being explored to ensure that communities develop a coordinated approach to both point and nonpoint sources in their watersheds.

The Minnesota Legislature also signaled concerns about water quality in January 2002 with audits of the water-quality point-source permitting and compliance functions, as well as the financing of water quality programs at the MPCA. This led to a substantial restructuring of the agency’s budget to provide consistent funding for water quality -- and a more strategic and holistic approach to water-quality management.



Environmental Indicators

MPCA Strategic Plan Sets Clear Goals and Objectives for Water Quality

MPCA's Strategic Plan (at www.pca.state.mn.us/publications/reports/strategicplan.html) outlines measures for water quality in Minnesota.

Goal: Clean, fishable, swimmable surface waters and clean sustainable ground-water systems.

Assess the status or condition of Minnesota's ground water systems.

- Design an ambient ground-water system, including monitoring goals, network coverage and data management system, in cooperation with partners.
- Report on ground-water condition.
- Implement the ambient ground-water monitoring system.

Prevent or reduce degradation and depletion of ground water.

- Implement a cooperative effort to work with local government and state agencies to implement activities that reduce impacts from land-use decisions.
- Develop areawide best management practices, in cooperation with partners, that prevent ground-water degradation and depletion.
- Develop a list of options for making ground-water suitable for intended uses.

Assess the chemical, physical and biological integrity of lakes, streams and wetlands to identify if designated uses are being met, and to provide information on the condition of waters.

- By 2014, gather water-quality data and increase assessment of streams and rivers to 33 percent, in comparison to the 2003 level of 5 percent.
- By 2014, gather water-quality data and assess 100 percent of the lakes larger than 500 acres.
- By 2014, gather data and increase monitoring so that 25 percent of the state's depressional wetlands are assessed.
- Assess Minnesota's contribution to identified regional, national and international water pollution problems.
- Ensure data is readily available to the public within one year of the season it is collected.

Maintain and enhance the chemical, physical and biological integrity of Minnesota lakes, streams and wetlands so that water-quality standards and designated uses are met and degradation is prevented.



- Ensure that discharges from all permitted point sources are in significant compliance with state and federal limits 95 percent of the time for major facilities and 90 percent of the time for regular facilities.
- Prevent 1.2 million tons of sediment from reaching surface waters annually from construction activities.
- Ensure that feedlots with NPDES permits meet state and federal requirements 90 percent of the time.
- Develop and implement an evaluation system for measuring progress in attaining basin/watershed goals.
- Improve understanding of phosphorus loading in Minnesota by identifying the amounts and sources of phosphorus entering state waters.
- Feedlot facilities enrolled in the open lot program meet interim correction measures and these facilities meet water-quality effluent standards.
- Review Minnesota's water-quality standards to incorporate changes to the standards to reflect current science and information.

Restore the chemical, physical and biological integrity of Minnesota lakes, streams and wetlands that do not support designated uses.

- Complete impaired waters list according to EPA requirements.
- Complete TMDL studies within 13 years of initial listing.
- Within one year of EPA approval of each TMDL study, implementation plans will be approved and initiated.
- Obtain legislative approval of an impaired waters program.

In addition to changes in financial management, several other structural changes and proposals will help keep the focus and priority on water quality.

- Governor Pawlenty has established a Clean Water Cabinet that includes all state agencies with water-quality responsibilities (MPCA, Minnesota Department of Natural Resources, Minnesota Department of Health, Minnesota Department of Agriculture and the Board of Water and Soil Resources).
- The Governor also has announced several clean water initiatives, involving ground-water supply, North Central Minnesota lakes, and the Mississippi River, among others.
- The MPCA has an assistant commissioner assigned entirely to water policy issues to better to coordinate activities and respond to legislative and customer initiatives.
- A recent structural change places core water-quality functions in an Industrial Division (point-source permitting), Municipal Division (point-source and stormwater permitting), Regional Division (watershed management and nonpoint-source delivered from decentralized offices), and Environmental Analysis and Outcomes Division (standards, reporting, monitoring).

- The MPCA has developed a nonpoint-source five-year strategic plan to ensure that there is clarity about the road ahead.
- The Minnesota Office of Environmental Assistance, with its expertise in technical assistance and public education, is increasingly influencing and teaming with MPCA regulatory and assistance staff.

Each of the major basins has a basin coordinator and plan to ensure that the agency's resources are aligned for best results. The state is strategically and structurally prepared to make substantial gains in nonpoint-source water pollution, just as we did with point sources of pollution in the past decades. The MPCA is equipped to make the best use of Section 319, CWP and other nonpoint source program resources – and, with our partners, to back up claims of progress with measurable outcomes.

Partners in Water Quality

With many origins of nonpoint-source water pollution, the usual tools of regulation – permitting and enforcement – won't achieve the watershed-wide improvements that the state desires. Those strategies succeed with municipal and industrial discharges and have achieved great improvements in water quality.

New liaison between MPCA and agricultural community

Wayne Anderson won't be growing crops in his new job as the MPCA's agricultural policy director, but he will plant a few ideas to improve how farmers and the agency work together to protect the state's environment.

"The state's agricultural industry has an important role in a broader initiative underway [the impaired waters effort] that addresses all impacts on the quality of lakes, streams and wetlands," says Anderson, who has worked at the MPCA since 1973. "I look forward to an expanded role in the agency working with agriculture."

Anderson, an agricultural engineer, has worked in the MPCA's feedlot program, helped develop the state's Clean Water Partnership program, and led the Minnesota River Project to engage farmers in voluntary strategies to improve water quality. He grew up on a farm in Steele County, attended the University of Minnesota (Morris and Twin Cities campuses), and is a professional engineer. He is Minnesota's representative to the Gulf of Mexico Hypoxia Task Force, and serves on boards and committees focused on water quality and the environment. For more information on Anderson's expanded role working with the agricultural community, contact him at (651) 296-7323 or toll-free/TTY (800) 657-3864.

(See sidebar on page 13 for improvements in point-source pollution control.)

Reducing nonpoint-source water pollution will require different strategies implemented throughout watersheds or subwatersheds, especially:

- partnerships among all levels of government;
- partnerships among government, businesses and citizens;
- understanding the impact of individual actions on common water resources;
- local efforts placed in context of entire watersheds;
- research aimed at diagnosing and targeting resources toward the biggest problems facing specific waters;

- public awareness, education and action;
- information and data sharing; and
- leveraging resources to achieve the greatest benefits at the least cost.

Section 319 of the Clean Water Act requires Minnesota (along with the other states) to assess nonpoint sources of water pollution within its boundaries. State investigations must identify nonpoint sources of pollution that contribute to impaired water quality, as well as waters or stream segments unlikely to meet water-quality standards without reductions in nonpoint sources. In the last few years, the EPA has encouraged implementation activities aimed at producing measurable results in reducing pollution.

Results that Count

Damage from manure spill minimized, with help from Section 319 research

Knowledge is power, and nowhere was that more apparent than in May 2004, when information from a Section 319 project played a major role in preventing environmental and public health impacts from a major manure spill.

As part of the Upper Mississippi River Source Water Protection Project, the U.S. Geological Survey had conducted a dye trace study in summer 2003 on the Sauk River from Rockville to the Mississippi River confluence.

They prepared contaminant time-of-travel estimates for each of the seven Mississippi River tributaries. The research was focussed on warning downstream drinking water suppliers on the river to shut down intakes as a slug of contaminant moves down the river.

This May, valves malfunctioned on a manure tank at a farm near Rockville, spilling an estimated 100,000 gallons into Mill Creek, which flows into the Sauk River. Brisk local mobilization --

and good predictions about how fast the contamination would move -- resulted in just the downstream warnings the Section 319 project intended. However, it also guided Rockville firefighters (who constructed an earthen dam to stop the manure from running into the creek), local septic system pumpers (removing solids that settled on the creek bottom) and other emergency responders trying to minimize damage.



Photo: Dan Olson, MPCA

Specifically, Section 319 requires that states:

- identify the nonpoint-source controls necessary,
- specify the programs that will apply the controls,
- certify that the state has adequate authorities to implement these measures,
- identify all sources of funding for these programs, and
- establish a schedule for implementation.

The MPCA's statewide five-year Nonpoint Source Management Program Plan is available on the MPCA's Web site (www.pca.state.mn.us/water/nonpoint/mplan.html) and details how the state will fulfill its responsibilities. The MPCA receives funding from the EPA, both to support overall research and coordination of nonpoint-source water pollution issues and to support local projects that achieve the overall goal of clean water.

The CWP program is a primary tool in Minnesota's work to improve lakes, rivers and streams and is complementary to Section 319. Through the CWP, the MPCA supports the efforts of local units of government and citizens by providing financial and technical assistance.

The goals of the Clean Water Partnership Program include:

- diagnosing problems and threats to water resources;
- developing solutions for reducing the impacts of nonpoint-source pollution on water resources; and
- implementing these solutions.

Results that Count

Getting to the Point (Sources) of Water Pollution

Nonpoint-source pollution is today's major water-quality focus. But without continually maintaining the gains Minnesota has made in point-source pollution control during the past 30 years, water-quality improvement would be difficult, if not impossible. Among Minnesota's recent initiatives to reduce point-source impacts:

- The MPCA developed a comprehensive phosphorus strategy, part of which addresses phosphorus in National Pollutant Discharge Elimination System (NPDES) permitting. The purpose of the strategy is to develop a consistent framework for applying phosphorus controls in permits.
- Rule revision is underway of statewide water-quality standards (Minn. Chapter 7050) and Lake Superior water-quality standards (Minn. Chapter 7052) to add nutrient standards for lakes, update the mercury standard, update human-health-based standards to protect children, expand application of a 1 mg/L phosphorus effluent limit and more.
- The MPCA completed a legislative report, *Future Wastewater Infrastructure Needs and Capital Costs* in April 2004, available on the Web site at www.pca.state.mn.us.
- Progress on a point-source plan to reduce a 2002 backlog of water quality permits and compliance inspections has been very successful (reducing the backlog of major permits, for example, from 55 to 33 percent in one year).

The MPCA will continue to complement its nonpoint-source activities with improvements in point-source permitting and enforcement.

Data from *Annual Pollution Report to the Legislature*, April 2004

Table 2: Minnesota Water Pollution Discharge Estimates from Major Point Sources, 1998-2002 (thousand kilograms)

Pollutant	1998	1999	2000	2001	2002	2001-2002 % change
Total suspended solids (TSS)	8,000	6,069	5,119	8,552	8,852	3.40%
Biological oxygen demand (BOD)	5,397	4,264	3,471	4,920	5,828	15.6%
Phosphorus	1,652	1,405	1,441	1,374	1,289	-6.20%
Ammonia	1,415	1,219	1,283	1,023	1,127	9.20%
Nitrate	4,703	4,701	4,684	4,276	4,234	-10%
Total	21,167	17,658	15,998	20,145	21,330	5.6%

The CWP process begins with a proposal from a local government and/or citizen group to assess problems or implement solutions.

An interagency group called the Project Coordination Team (established in statute) assists the MPCA in prioritizing Section 319 and CWP grant applications that target polluted waters and demonstrate a good chance of success. This Team includes representatives from:

- Minnesota Pollution Control Agency
- National Resource Conservation Service (NRCS)
- Minnesota Department of Health (MDH),
- Minnesota Department of Agriculture (MDA),
- Board of Water and Soil Resources (BWSR),
- Metropolitan Council,
- Department of Natural Resources (DNR),
- Minnesota Indian Tribes and the Bureau of Indian Affairs (BIA),
- U.S. Geological Survey (USGS),
- Minnesota Geological Survey (MGS),
- Minnesota Department of Transportation (MnDOT),
- U.S. Fish and Wildlife Service, and
- Other invited parties.

MPCA staff members with expertise in assessing and cleaning up impaired waters consult with and support local project representatives on scientific or technical issues.

Since 1990, the MPCA has awarded more than \$23 million in Section 319 funds for projects addressing nonpoint-source pollution. During the 16 award cycles of the CWP, the MPCA supported more than 210 projects with an estimated \$23 million in grants and \$28 million in loans from the State Revolving Fund. The State Revolving Fund was established by the CWA to replace the federal Construction Grants Program. Under the SRF program, the EPA provides grants or “seed money” with a required 20-percent state match, to capitalize state revolving funds with which the states provide low-interest loans to communities. As loan principal and interest payments are paid back into the SRF, the money is used to finance new loan projects.

The financial and in-kind contributions from local sponsors and their communities is substantial, exceeding the 50-percent match requirement in most cases.



Results that Count Minnesota Water -- Let's Keep it Clean

The Metropolitan Council, MPCA and Office of Environmental Assistance launched this clean-water campaign in October 2003 to raise awareness about stormwater runoff pollution. The materials (including the ad at left) were made available to cities, counties and watershed educators to meet the public education requirements of their federal and state stormwater pollution-prevention plans. Metro WaterShed Partners, a group comprised of more than 40 organizations, developed the campaign to provide efficiencies, cost-savings and a consistent clean water message for the metropolitan area and the state.

This report highlights case studies of projects completed in federal fiscal year 2004 (October 1, 2003 through September 30, 2004). Each case illustrates the water-quality outcomes in the “Results that Count” section. The MPCA also provides brief sidebars throughout this report on other projects or outcomes in Minnesota designed to improve the state’s water resources.

Statewide Impacts of Section 319 and CWP

The term “impaired waters” and acronym “TMDL” were mysterious technical talk no more than a few years ago. Now, partner organizations throughout Minnesota are helping the state assess the waters of the state and work toward solutions for impaired lakes, rivers and streams.

The MPCA has assessed approximately 14 percent of lakes and eight percent of streams in Minnesota. More than 900 lakes and nearly 600 stream segments have been identified so far, with many more to go. Mercury makes up about 70 percent of the impairments on the list thus far.

The MPCA set a goal of assessing all Minnesota waters for impairment by 2015 (if funding is available), has begun work on a number of TMDLs, and has had a handful approved by EPA. In summer 2003, the MPCA began a statewide process to get citizen input on how to create a stable, long-term funding source for impaired waters work.

Data about local water quality is flowing into the state. The Minnesota Board of Water and Soil Resources’ Local Annual Reporting System (LARS) has provided statewide compilations and analyses in the past for this report. However, the LARS system required upgrading and software changes to improve tracking and outcomes. The new eLink system under development will provide:

- Annual and detailed estimated pollutant-reduction reports prepared and distributed to cooperating agencies.
- Customized reports.
- Electronic access to cooperating state agencies for report writing and data retrieval.

Yo Dawg, It’s Mercury Reduction

Mercury makes up an estimated 70 percent of the impairments identified so far in Minnesota’s waters. The MPCA has been on the forefront of study and reduction efforts regarding the toxic metal that has affected fish in many of the state’s lakes.

The Minnesota Department of Health has issued fish consumption advisories for many years, so the mercury issue has “legs” in the state. It also has a wagging tail. The first American mercury-

detecting dog, Clancy, has located hundreds of pounds of mercury in schools as part of the Mercury Free Zone program. He gives a familiar face to an effort that has included:



MPCA Photo

- Voluntary mercury-reduction agreements with many major industries in Minnesota.
- Studies of sediment cores that confirm that accumulation rates are beginning to drop in Minnesota lakes, after peaking in the 1960s and ‘70s.
- The Mercury-Free Zone effort, which brings Clancy to the classroom to demonstrate his skills and help teach students about the impacts of mercury.
- Developing mercury requirements for NPDES/SDS water-quality permits.

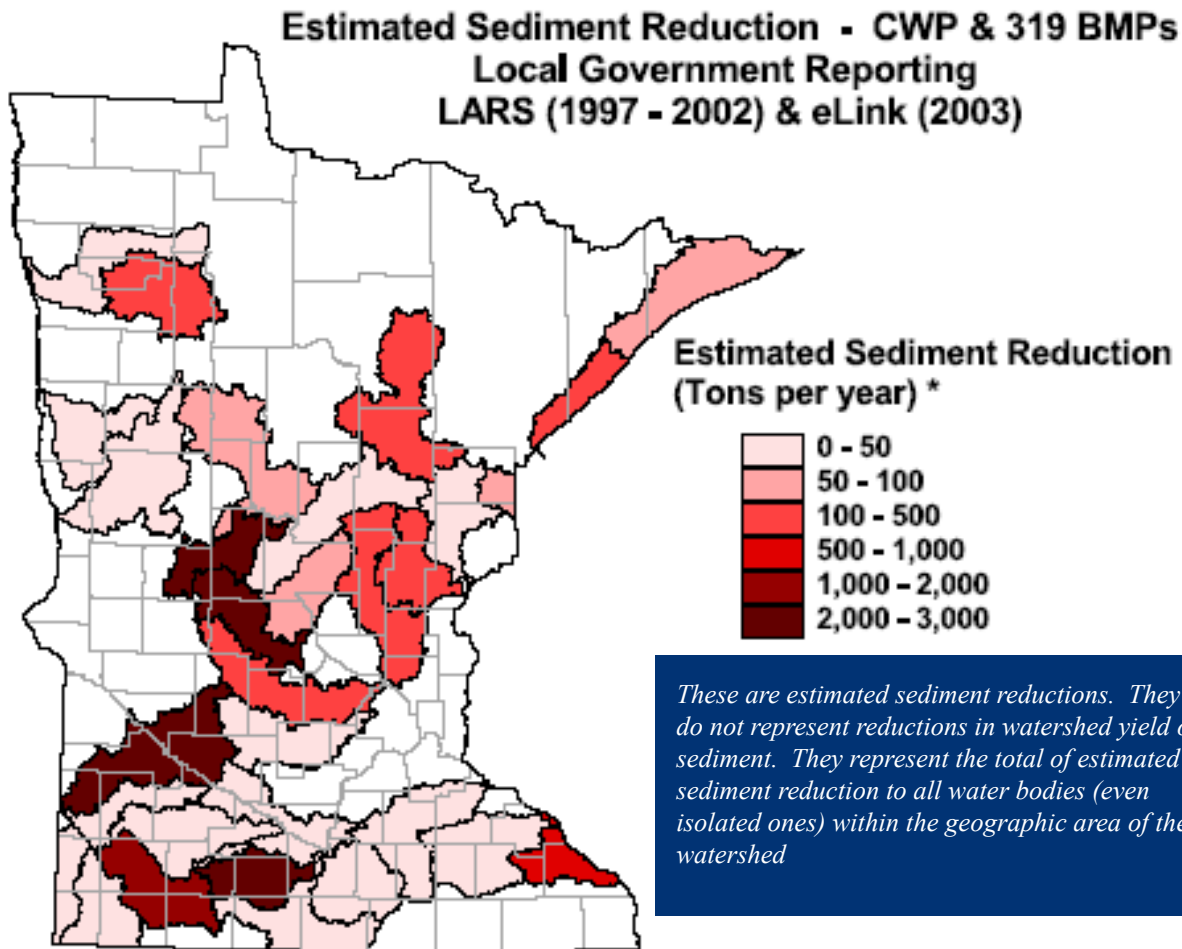
Find out more about the MPCA’s mercury strategy at www.pca.state.mn.us/air/mercury-mn.html.

The maps on the following pages show progress through 2003 based on previous LARS reporting and 2003 data from eLink.

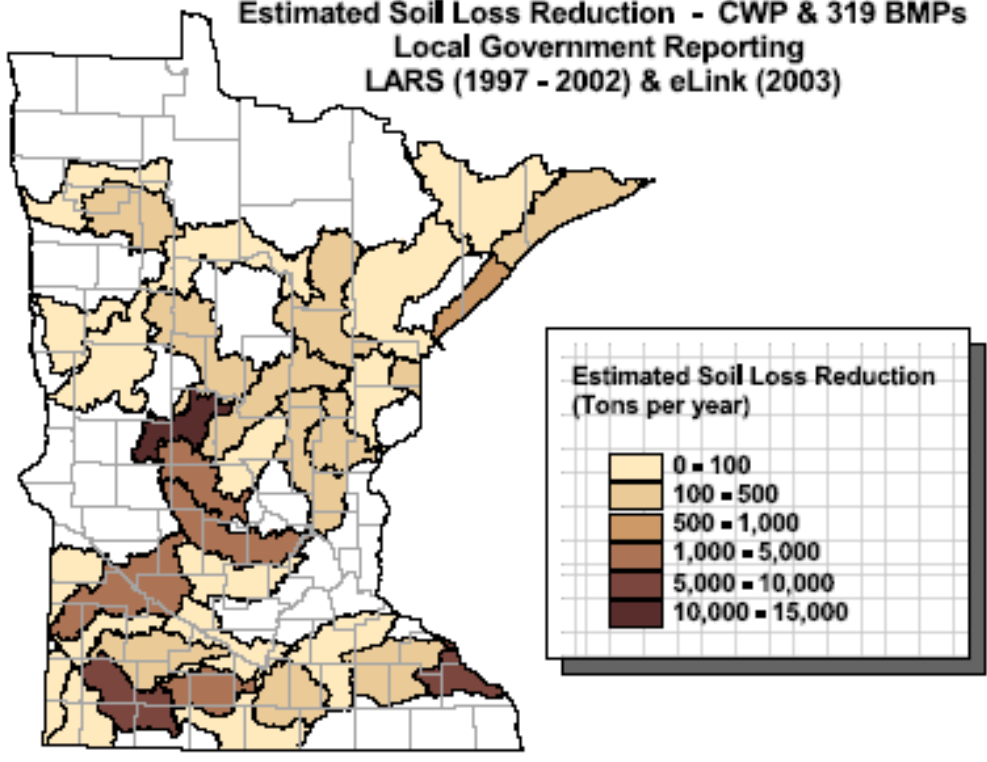
Based on LARS/eLink reporting by CWP and Section 319 project partners, these projects have reduced soil loss from 1997 – 2003 by 42,000 tons per year. Over the same period, sedimentation was reduced by an estimated 15,000 tons per year. The sediment and soil maps on this page and the next show results by watershed for the entire state.

The Section 319 and Clean Water Partnership projects achieve results through fostering best management practices that keep excessive phosphorus from the state’s waters, such as fixing failing septic systems, proper use of fertilizers and shoreline management. The LARS/eLink reporting by Section 319 and CWP partnerships shows that from 1997 – 2003, projects reduced phosphorus contributions to Minnesota’s waters by an estimated 50,000 pounds per year.

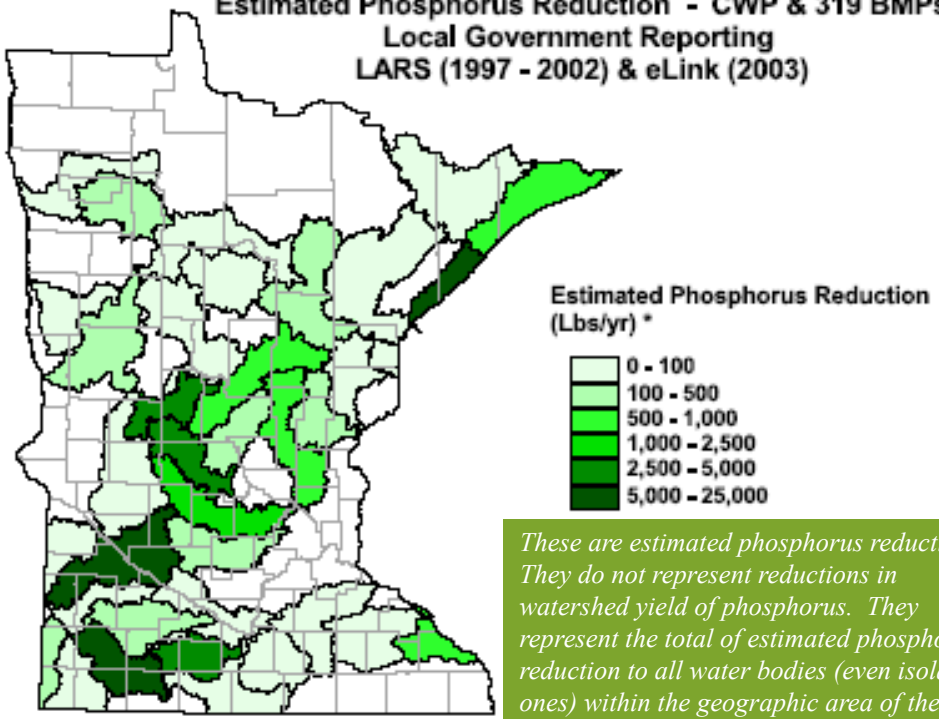
Reductions in sediments, nutrients and fecal coliform bacteria are often listed in the case studies for specific Section 319 or CWP projects. See “Results that Count” in each one-page description.



**Estimated Soil Loss Reduction - CWP & 319 BMPs
Local Government Reporting
LARS (1997 - 2002) & eLink (2003)**



**Estimated Phosphorus Reduction - CWP & 319 BMPs
Local Government Reporting
LARS (1997 - 2002) & eLink (2003)**



These are estimated phosphorus reductions. They do not represent reductions in watershed yield of phosphorus. They represent the total of estimated phosphorus reduction to all water bodies (even isolated ones) within the geographic area of the watershed

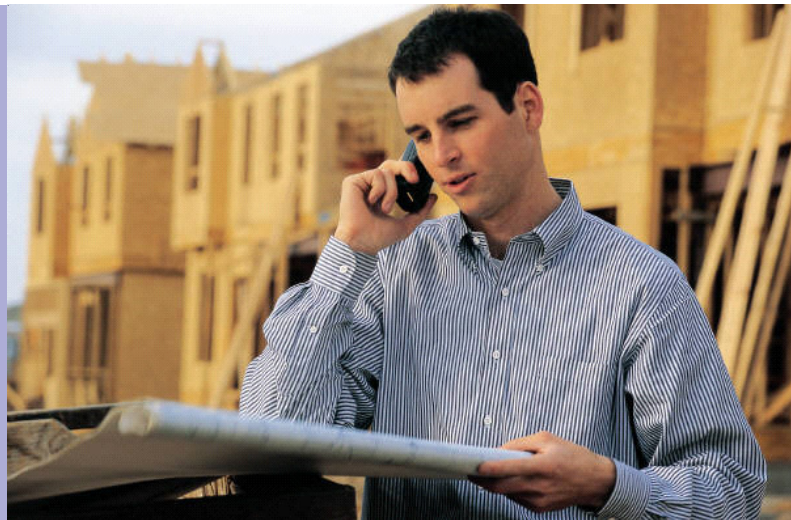
Section 319 and CWP projects, along with other initiatives in several state agencies, are making better information about water resources available to more people more effectively. The last few years have seen great progress in the cost-effectiveness and efficiency of data collection.

Data that formerly took weeks of effort to collect are now routinely recorded in days or hours, thanks to state-of-the-art computerization for data collection, laboratory analysis, dataset preparation and, finally, the assessment and summary phase of water-quality investigations. Standardization of stream-flow monitoring techniques among Minnesota state agencies (Minnesota Department of Natural

Resources, Minnesota Department of Agriculture), as well as regional and municipal partners, has led to quality data at greatly reduced expense. Automated monitoring systems installed at more than 165 locations save time, travel and funding.

Several new online resources (see sidebar below) improve partner and public access to information about lakes, rivers and streams. Section 319 and CWP funding and projects generate information and data that will increasingly define the status of water quality in Minnesota -- and allow for measurement of progress as restoration efforts for impaired waters get underway.

Online Resources Help with Planning for Construction Stormwater Runoff



Construction sites that discharge near special waters (waters with qualities that warrant extra protection) must use additional best management practices and enhanced runoff controls.

Sites that discharge near an impaired water for which there is a total maximum daily load (TMDL) allocation for sediment and parameters associated with sediment transport must meet special conditions. Discharges to calcareous fens, a very rare and unique wetland, may require an individual permit.

The MPCA has several documents and an interactive mapping web site called Special Waters Search to help project planners identify those

waters near their site that may require extra protections or an individual permit. (The specific requirements are outlined in the general permit.) These resources include:

- Special Waters List
- Known Calcareous Fens List
- Final TMDLs and Implementation Plans
- Special Waters Search

The Special Waters Search is an electronic map tool using Geographic Information Systems (GIS) technology. Users can find the construction site location, draw the site boundaries and create a list of special waters.



Confluence of the Mississippi River (below) and the St. Croix Rivers at Prescott, Wisconsin. Photo by David Morrison, MPCA.

National and International Impacts

On September 1 (as this report is going to press and online), the EPA presided over the 11th meeting of the multistate and interagency Mississippi River/Gulf of Mexico Watershed Nutrient Task Force in St. Paul. The task force, formed to address a growing zone of hypoxia in the Gulf of Mexico, will be discussing (among other topics) the impacts of nutrient loading in the Midwest on this 5,800-mile “dead zone” in the Gulf, where impacts on fishing and aquatic life has been devastating.

This is only one of many national and international impacts of Minnesota’s clean-water efforts. Section 319 and CWP projects affect everything from fishing in Canada to commercial fisheries in the Gulf. The state is uniquely involved with other states and nations because Minnesota borders Canada and Lake Superior, has several cities on state borders (Fargo-Moorhead and Duluth-Superior, for example) and has undertaken exchanges over the years with other nations on water-quality issues. In addition, the state participates in a number of national forums for water-quality planning and information exchange.

Among those water-quality projects with which the MPCA is working across borders:

- The Lake Superior Binational Program is a joint effort by Great Lakes states and Canada to work toward zero discharge of nine toxic chemicals into the Lake Superior Basin.
- In the Rainy River Basin, a joint water-quality monitoring initiative is underway between the MPCA and Environment Canada.
- The MPCA is part of an emergency response team led by the U.S. Coast Guard that would respond to a spill or other environmental emergency in Lake Superior. Both Minnesota and Wisconsin responders hold drills to ensure they are prepared for an event such as a train derailment or oil spill.
- The St. Croix Basin Planning Team is a Minnesota and Wisconsin effort to protect and improve this federally designated Wild and Scenic River. A recent report published by the team’s nutrient subcommittee recommended a 20-percent reduction in phosphorus loading to the watershed.

Water knows no boundaries, and the benefits of Section 319 and CWP projects undertaken in Minnesota travel far and well.

The Future of Section 319 and CWP

The word is out. Communities and individuals who never considered the impacts of nutrients, sediment and erosion on their favorite water resources are considering them now. Public awareness campaigns, new initiatives on stormwater and impaired waters, State Fair exhibits, publications, conferences and more are changing the way Minnesotans look at water. And when Minnesotans get the message that their lakes or rivers are in trouble, most are ready to step up and do their parts. This is one of the trends that is certain to be part of the Section 319 and CWP projects' future.

Most of the projects described in this report's case studies had a public education and awareness-building component. Projects implemented to prevent runoff or restore water quality can achieve significant improvements. However, it is powerful when citizens choose new ways to protect water resources through changing behavior. Their families and friends follow the example. A question like "Why are you raking leaves out of the gutter?" across the back fence becomes a conversation about how floating mats of algae are taking over the local lake. A weekend of fishing touches off a water-cooler discussion about strategies to curtail curly pondweed from taking over the shoreline and wrapping around boat propellers. A teenaged girl comes home from school one afternoon and asks if the family can become Citizen Stream Monitors. Public information is a good investment of time and energy to prevent nonpoint-source water pollution.

Technical assistance and consultation will become a major factor in how smaller communities respond to nonpoint-source pollution problems. Small cities and townships may be key in reducing nutrient and sediment loading to local water bodies. However, with limited resources and expertise, it may be difficult for smaller communities to make progress in stormwater management and

enforcement, developing shoreline ordinances, planning growth with the environment in mind, and other nonpoint-source pollution strategies. Resource people, publications, demonstration projects, outreach and financial assistance are increasingly going to make the difference between a small community overwhelmed and a small community that serves as a role model for others.

Population expansion, especially in the growth rings and on the North Shore of Lake Superior, will stimulate local governments to choose economic development options that preserve

water quality. Intense residential development is taxing lakes, rivers and streams, and conflicts in high growth areas are commonplace. Balancing the desire to maintain a rural character with the desire to attract jobs and income will be a challenge facing many rapidly expanding communities. Solutions will include developments with environmental amenities, new wastewater treatment options, better stormwater controls, more recreational promotion of water bodies and other creative planning.

Monitoring and stewardship of ground-water resources will improve. Several issues are

converging to increase the attention paid to ground water. Among these:

- A growing body of research indicates that ground-water recharge of lakes and rivers can have major impacts on surface water quality as a source of nutrients.
- Problems with nitrate in public and private water supplies are being detected throughout the state, while wellhead protection efforts continue to elevate local awareness about ground water.
- A memorandum of agreement among the Minnesota Department of Natural Resource, Minnesota Department of Agriculture, Minnesota Department of Health and the MPCA will expand and coordinate ground-water monitoring efforts in the state.



Photo: John Hensel, MPCA

Invasive species will pose new and hard-to-resolve threats to native species and lake water quality.

The mobility of Minnesota's population and its international ports have brought new invaders into ecosystems in which they compete for resources.

Targeted education, technical assistance and partnerships will be important in achieving good stormwater management statewide.

Best management practices designed to deal with construction runoff are good; best management practices that *prevent* construction runoff are better. Focusing resources on construction companies, building managers, developers and others is likely to provide the best long-term payoff in achieving clean water. Targeting cities that will have to develop stormwater management capabilities with information, model ordinances and technical assistance is the strategy with the best potential for success.

The engagement of the Minnesota agricultural community in water-quality issues sets the stage for future cooperation that will be a model for the nation.

Many Section 319 and CWP projects involve research and projects focused on reducing agricultural impacts on water quality while maintaining the productivity of the state's land. Among those practices that are subtly undergoing change among agricultural producers are:

- Soil testing to determine the optimum nutrient application that will grow the best crops,
- Manure testing (using new equipment) to determine the nutrient content.
- Looking at predictions about how soils absorb nutrients in agricultural communities before applying additional fertilizer.
- Looking at new drain tiles or outlets to slow the movement of nutrient-laden runoff.
- Participating in the Open Lot Agreement, which allows small feedlots to come into compliance gradually with new rules.
- Changing tilling practices, crop rotation, and maintaining crop residue.
- Continuing to participate in conservation easement programs.



NRCS Photo

The impaired waters process will continue to bring together point- and nonpoint-source activities under one roof.

As TMDL studies are completed and approved, communities will become involved in looking at all sources of impairments to local waters -- and developing and implementing comprehensive watershed plans.

Expanding public understanding of the many, complex impacts our daily lives have on water quality sets the stage for the future. The Section 319 and CWP programs are well positioned to bring together the visions of local partners with the funding and assistance to make great things happen. It is hoped that 100 years into the future a historian such as J. Wesley Bond would observe the Mississippi River -- or any river or lake in Minnesota -- and see "numerous beautiful lakes [or rivers] of fresh water ... all abounding in the finest fish."

For more information about the Section 319 or CWP projects in Minnesota, contact:

- Faye Sleeper, Manager, Water Policy and Coordination Section, (651) 297-3365
- Juline Holleran, Supervisor, Program Administration Unit, (651) 296-7701

Directory of Project Summaries

2004

The following Section 319 and CWP projects were completed in federal fiscal year 2003, October 2003 - September 2004

Section 319

- BERBI: Tile Intake Initiative -- Page 23
- Clearwater River Stream Bank Stabilization and Revitalization Project -- Page 24
- Conservation Tillage Guidelines for Fillmore County -- Page 25
- Crop Nutrient Management for the St. Peter Wellhead Protection Area -- Page 26
- Feedlot Pollution Abatement and Erosion Control Assistance -- Page 27
- Ground Water Vulnerability/Zoning Project -- Page 28
- Hawk Creek Watershed Water Quality Enhancement Project -- Page 29
- Local Government Unit Annual Reporting System (LARS) Continuation -- Page 30
- Long/Spring Lakes Shoreline Stabilization Project -- Page 31
- Rum River Watershed EQUIP Project -- Page 32
- Upper Elk Creek Erosion Control and Water Quality Improvement Project -- Page 33
- Wellhead Management for the Holland and Edgerton Wellhead -- Page 34
- Yellow Medicine River Watershed EQUIP Project -- Page 35

Total Maximum Daily Load (TMDL) Projects

- BERBI TMDL Pilot Project -- Elm and Center Creeks -- Page 36
- Lake Louisa and the Clearwater River between Clear Lake and Lake Betsy (Phase I TMDL Study) -- Page 37
- Minnesota River Basin Modeling Project -- Page 38
- St. Louis River TMDL Mercury Project -- Page 39
- South Branch Yellow Medicine River TMDL Project -- Page 40

Clean Water Partnership

- Dunns and Richardson Lakes Diagnostic-Feasibility Study -- Page 41
- Horseshoe Chain of Lakes Continuation -- Page 42
- Jefferson-German Lakes Improvement Project -- Page 43
- Lake Francis Diagnostic-Feasibility Study -- Page 44
- Lake Sallie Restoration -- Page 45
- Lake Shaokatan Continuing Restoration Project -- Page 46
- Lake Volney Improvement Project -- Page 47
- Long Prairie River Implementation Project -- Page 48
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- **Special Focus on the Mississippi River -- Page 50**



Photo:
John
Hensel,
MPCA

Projects Completed in 2004

Section 319 Projects

BERBI: Tile Intake Initiative

Environmental degradation of water quality and quantity are impacts associated with open tile intakes. Open tile intakes are prevalent in the extensive tile drainage networks in the Upper Midwest. These intakes provide a direct pathway for sediments and pollutants to enter our surface waterways. Open tile intakes can also accelerate water movement off the landscape, compounding downstream flooding. There are an estimated 13,110 intakes within the Blue Earth River Watershed.

This Section 319 project was designed to elevate awareness about the environmental impacts of open tile intakes and to alter at least 234 open tile inlets in the Blue Earth River Basin Initiative (BERBI) area to make them more environmentally friendly.

This was achieved through three main activities:

- Removing the intake,
- Removing the intake and installing a higher concentration of buried tile or installing rock inlets in the immediate vicinity of the intakes, and
- Establishing buffers in the area ponded after a one-to-two-inch storm event.

The project promoted awareness about the water-quality impacts of open tile intakes through wide distribution of a fact sheet, holding nine field demonstrations and working with county and SWCD staff on the environmental impacts of tile intakes.

Installation of rock inlets and installing more concentrated tile greatly exceeded target goals, and complete intake removal took place at 23 locations. The financial incentives for vegetative buffer



Altered open tile intakes reduce sedimentation by one ton per intake per year.

NRCS Photo

installation through the Conservation Reserve Program (CRP) was greater than what this project offered, so this option was not widely used. It is estimated that each altered intake reduces sediment by one ton per year and phosphorus by one pound per year.

For more information, contact Linda Meschke, Blue Earth River Basin Initiative, (507) 238-5449.

Results that Count

- Reduced an estimated 379 tons of sediment per year.
- Removed 23 open tile inlets (goal 39);
- Installed rock inlet or more concentrated buried tile at 347 locations (goal 78);
- Installed nine vegetative buffers (goal 117);
- Education activities resulted in contacts with landowners owning 25 percent (3,280) of the watershed's open tile intakes.

Financial Information

The \$93,375 Section 319 grant was matched by \$152,405 in local funds.

Clearwater River Stream Bank Stabilization and Revitalization Project



Shortly after construction

In late June and early July of 2002, the area experienced heavy runoff events. RLWD staff feared the worst for this site after the runoff and flooding. However, most of the site was in great condition. There were no major problems with project failure.

For more information, contact Corey Hanson, Red Lake Watershed District, (218) 681-5800.

Red Lake Watershed District Photos

The Clearwater River Stream Bank Stabilization and Revitalization Project is part of Phase II (implementation phase) of the Clearwater River Nonpoint Study. Phase I of the Clearwater River Nonpoint Study (1994) identified bank stabilization along the Clearwater River and its tributaries as a method to improve water quality in the Clearwater River watershed. Phase II of the project identified and assessed specific areas of severe erosion in the Clearwater River watershed.

The goal of this project was to make improvements to water quality in the Clearwater River Watershed while demonstrating effective methods to use in future stream and stream bank stabilization in the Red Lake Watershed District (RLWD). The efforts focused on three locations: Greenwood 27 (Greenwood Twp., Clearwater County); Gully 6 (Gully Twp., Polk County); and Equality 31 (Equality Twp., Red Lake County).

The first project to be completed was the Greenwood 27 project, which needed additional work later to ensure project stability. The erosion occurring at the Equality 31 site was determined to be part of the natural evolution of the stream. Funds allocated to that site were reallocated for the additional work on Greenwood 27, completed in the fall of 2003. Construction at the Gully 6 site took place during the fall of 2003 as well.

Results that Count

Documentation of improvements in bank slumping and erosion were photographic. The three photos on this page were taken at Site A of Greenwood 27 at different stages from roughly the same location. The results are dramatic.



Pre-construction



Two years post construction

Financial Information

The \$134,500 Section 319 grant was matched by \$134,500 in cash and in-kind services.

Conservation Tillage Guidelines for the Lower Mississippi River Basin in Minnesota

Conservation tillage systems greatly reduce soil erosion and are the leading recommended practice to reduce the transport of sediment and associated pollutants in agricultural regions in Minnesota. This Section 319 project focused on developing guidelines for conservation tillage systems for farmers in southeastern Minnesota. Specific goals included:

- Develop and publish (copy and Web versions) conservation tillage guidelines;
- Introduce the guidelines at seminars and evaluate participants' response;
- Distribute guidelines through conferences, seminars, meetings, field days and trade shows; and
- Seek broad participation in crop residue transect survey by counties in the region to determine conservation tillage practices used by farmers.

Tillage guidelines were based on University of Minnesota field research and developed for several key crop rotations: corn-soybean, corn-corn, and corn-alfalfa. Each system was described in terms of expected erosion rates, potential agronomic performance and other critical success factors.

The publication was completed and complements a similar project with guidelines for the Minnesota River. It is available in hard copy and on the U. of M. Extension Service Web site (www.extension.umn.edu/mnext.html). In two seminars held to introduce the guidelines, 95 farmers and conservation practitioners attended and responded favorably to the guidelines in evaluation. A followup mail survey sent a month after the



seminars netted 24 responses. All of the respondents currently use conservation tillage. Three wanted more information about no till and one wanted to learn about reduced tillage in vegetable production.

Since then, the publication has been disseminated throughout the region, with cover letters suggesting no fall tillage use on soybean stubble, a practice adopted by some farmers.

Research shows that farmers can produce crops profitably with conservation tillage by reducing inputs such as fuel, labor and machinery costs -- and protect surface waters.

For more information, contact Timothy L. Wagar, University of Minnesota Extension Service, at (507) 280-2863.

Results that Count

- A survey of 52 farmers introduced to the conservation tillage guidelines netted 24 responses -- and all those responding current use conservation tillage techniques.
- A special outreach effort involving mailing the guidelines with a cover letter by local water and soil experts to 500 farmers or practitioners. Several practitioners noted a substantial lack of tillage on soybean stubble in fall 2003.
- The publication won the Certificate of Excellence for Education Materials at the 2002 American Society of Agronomy annual conference.

Financial Information

The \$17,000 Section 319 grant was matched by \$18,000 in cash and in-kind contributions.

Crop Nutrient Management for the St. Peter Wellhead Protection Area

How much nitrogen should be applied to a corn crop while at the same time balancing profit and water quality? Results from a special three-year study attempted to answer this question within the St. Peter Wellhead Protection Area.

Some of the unique challenges in the St. Peter area:

- The area that supplies water for St. Peter's aquifer covers more than 4,600 acres, a portion of which is tile-drained cropland. The rapid movement of water through coarse-textured soils allows quick movement of contaminants into the aquifer.
- Seven supply wells, varying in depth from 130 to 670 feet, pump water from three separate aquifers. Four shallow wells located in the Jordan aquifer are considered vulnerable to land-use activities.
- Nitrate levels in the vulnerable wells have been steadily increasing since the 1980s.
- City staff currently blend water from various wells to produce a finished water supply which contains nitrate-N levels between 4 to 5 parts per million (ppm). The federal health standard is 10 ppm.

The goals of this Section 319 project were to:

- Evaluate crop response to various rates of nitrogen in corn-soybean rotations on soils specific to the wellhead protection area and
- Increase producers' confidence in the University of Minnesota nitrogen recommendations (120-140 lbs./acre).

The central tool for achieving these goals is the voluntary adoption of Best Management Practices (BMPs) for nitrogen. BMPs are based on the concept of total nitrogen management, which accounts for all forms of on-farm nitrogen. These BMP practices are technically sound, easily adopted, and backed by University of Minnesota and other land grant university research.

From 2000-2003, 15 corn farmers participated in the nitrogen validation project within the St. Peter Wellhead Protection Area. In 2002, 34 additional farmers in Nicollet and Blue Earth Counties

participated in the validation trial. Nitrogen application rates (0, 60, 90, 120, and 150 pounds per acre) were replicated three times at each site. Average size of the treatment sites were approximately 2.5 acres with soil types and plot boundaries geo-referenced. Yield data were then collected with a GPS-equipped yield monitor, with calibration verified by a participating advisor.

For more information, contact Bonnie Holz, Brown-Nicollet-Cottonwood Water Quality Board, (507) 934-4140.

Results that Count

- In all three years (15 farmers), the economically optimum nitrogen rate was proven at 90-120 lbs. of nitrogen per acre. This validates the U. of M. Extension Service recommendations: 120 lbs./acre will produce 150-174 bu./acre of corn.
- If rates of application were reduced from 150 to 120 lbs./acre, producers could save an average \$6-10/acre on their fertilizer costs. In addition, 38.1 tons of nitrogen would be prevented from leaching into the drinking water.
- Trials for the additional 34 farmers showed that maximum profit occurred with nitrogen application of 105 lbs./acre.

Financial Information

The \$60,000 Section 319 grant was matched by \$81,000 in cash and in-kind contributions.



NRCS Photo

Feedlot Pollution Abatement and Erosion-Control Assistance

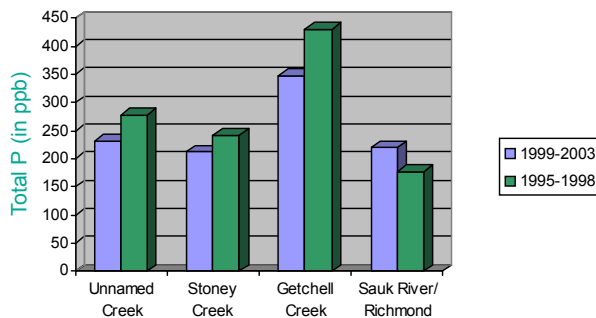
The goal of this project is to work with agricultural producers located within shoreland and coarse-textured soil regions of Stearns County in applying conservation practices to solve high-priority nonpoint pollution problems. All feedlot producers assisted will have fewer than 1,000 animal units.

The projects undertaken to provide assistance to producers included:

- Six animal waste control facility (AWCF) upgrades,
- Eight investigations at unpermitted AWCFs,
- Two erosion-control projects,
- A dairy manure application and nutrient loss field day,
- Two feedlot rule update meetings, and
- Monitoring surface waters in the project area, in cooperation with the Sauk River Watershed District.

The best management practices implemented thus far have made significant improvements in water quality, moving the total phosphorus concentration in surface waters closer to the ecoregion average. However, the agricultural economy has a direct influence on the producers' ability and motivation to implement BMPs. Leverage various grants and loans to financially assist producers was critical to the success of the project.

Total Phosphorus in Selected Subwatersheds



For more information, contact Dennis J. Fuchs, Stearns County Soil and Water Conservation District, (320) 251-7800.

Stearns County SWCD Photos

Results that Count

- The total phosphorus concentration of three monitored stream segments was reduced by 13, 16 and 20 percent.
- Projects have stabilized an estimated 686 tons of soil annually.
- Eight animal waste control facilities were installed or improved, preventing 222 pounds of phosphorus from reaching surface waters annually.
- Of 27 inspections of unpermitted AWCFs, 16 did not meet requirements and will be corrected.

Financial Information

The \$250,000 Section 319 grant was matched by \$351,500 in cash and in-kind contributions.

Ground Water Vulnerability Zoning Pilot Project

Nitrogen is commonly found in ground water, from both natural and man-made sources. Nitrate (NO₃) is the predominant form of nitrogen found in ground water.

Brown-Nicollet Environmental Health began a township testing program in 1988 to provide low-cost drinking water analysis to rural families. Since then, township testing has taken place regularly (every three years), with a database with water-quality information on 1,468 wells in Nicollet; 1,701 wells in Brown; and 501 wells in Cottonwood Counties. Approximately 11 percent of wells tested had an average nitrate concentration above the drinking water standard of 10 mg/L.

The purposes of this Section 319 project were:

- To develop tools to interpret the current status of localized resources for specific use in land-management decisions,
- To apply those tools to the decision-making process regarding land-management changes; and
- To evaluate the effectiveness of the tools for planning purposes and potential application to other areas.

More than 16 years of private well data was used, in conjunction with hydrogeologic, land-use and county well index data to develop county-wide nitrate probability maps. That is, the maps help predict where ground water is the most vulnerable to nitrate contamination. This geochemical layer of data is only available in one other Minnesota county (Washington County) as a tool for land-use decision making.

The project demonstrated that nitrate probability maps can be effective tools to:

- Identify areas that have a higher probability for nitrate-nitrogen ground-water contamination.
- Provide nitrate probability information for the land-use application process, such as feedlot and subdivision establishment and expansion.
- Provide ground-water vulnerability information as a justification for the granting of land-use permits and
- Alert Planning and Zoning personnel of ground-water concerns that merit adding conditions to land-use permits in order to protect and/or improve water quality.

For more information, contact Bonnie Holz, Brown-Nicollet-Cottonwood Water Quality Board, (507) 934-4140.

Results that Count

The nitrate probability mapping information developed through this project provides an effective tool for land-use management for ground-water protection.

Financial Information

The \$60,000 Section 319 grant was matched by \$60,000 in cash and in-kind contributions.



NRCS Photo

Hawk Creek Watershed Water Quality Project

The Hawk Creek Watershed Water Quality Project in southwestern Minnesota was undertaken to improve water quality/quantity issues while at the same time ensuring a healthy agricultural, industrial and recreation-based economy for the region. The Hawk Creek Watershed flows into the Minnesota River near Granite Falls. Specific goals for this 319 project were very ambitious and included:

- Reduce soil erosion on 35,000 acres of land by 45,000 tons.
- Implement nutrient-management plans on 25,000 acres, reducing phosphorous levels in waters by 10 percent and nitrate in wells by 5 percent.
- Install 25 livestock waste-storage facilities near surface waters and incorporate 75 waste use plans on 11,000 acres.
- Reduce sediment entering surface waters by 7 percent through erosion control measures and buffer strips.
- Restore 100 acres of wetlands and 4,000 acres of upland habitat.

The project team placed a heavy emphasis on marketing and education efforts to raise awareness of the issues and build landowner involvement in reducing the amount of nutrients, sediment and bacteria entering area surface waters. Extensive networking was conducted among farmers, many of whom implemented nutrient and residue management plans without funding from the project. Nine local producers attended a project-sponsored nutrient-management workshop. Four agriculture waste storage facilities and two livestock exclusion areas were created. Together, these efforts covered 802 acres.

The project assisted regional SWCD and NRCS offices in promoting the Conservation Reserve Enhancement Program (CREP) in the watershed, leading to inclusion of 9,000 acres in the watershed. In addition, the 319 project restored approximately 30 acres of wetlands not covered by CREP.



Replacing and upgrading ISTS

MPCA Staff Photo

The project provided cost-share assistance ranging from 4 to 70 percent, as well as other types of assistance, to complete 69 erosion-control efforts affecting 2,311 cropland acres as well as upgrades to 31 individual sewage treatment systems in the watershed. Kandiyohi County officials report lower ditch maintenance costs resulting from reductions in runoff attributed to erosion-control efforts.

For more information, contact Randy Nelson, Prairie Country Resource Conservation and Development Council, NRCS, (320) 231-0008.

Results that Count

There has been a 57-91 percent reduction in sediment at all six sites monitored. The project has calculated significant estimated reductions in various pollutants over the life of the 100 nutrient-, bacteria- and sediment-control projects mentioned above, including:

- 150,706 pounds of phosphorus (enough to fertilize 3,767 acres of corn)
- 110,388 tons (11,000 dump truck loads) of sediment to the Minnesota River.

Financial Information

This project received a \$320,000 Section 319 grant, which was matched by \$321,750 in cash and in-kind contributions locally.

Local Government Unit Annual Reporting System (LARS) Continuation

Measurable results depend upon accurate and comprehensive data management. The Local Government Annual Reporting System (LARS) is a reporting system that allows local government officials to capture and track information about installed best management practices, focusing on size, location, cost and the resulting pollution reductions. These data then will be available to state and local government staff to:

- Analyze funding programs,
- Establish trends,
- Target priority areas, and
- Summarize performance and accomplishments.

The Board of Water and Soil Resources is retooling LARS, which will become eLINK, the electronic link between state and local governments. The goal of this Section 319 project is software development for the eLink system. The software should facilitate reporting and tracking statewide and locally by:

- Capturing the water-quality and soil-erosion benefits associated with installed BMPs statewide;
- Integrating GIS functionality with the reporting system to assist spatial modeling;
- Creating information that can help implement BMPs that have the most impact on local priorities;
- Assessing and summarizing the use of state or other funds for subsidizing BMP implementation; and
- Supporting day-to-day business at the local government level by making reporting a byproduct of regular duties, rather than an extra task.

The eLINK design was completed in April 2002, with modules ready to test in August 2002. Debugging and acceptance testing was completed in January 2003. The system roll-out took place in February 2003.

BWSR is in the process of analyzing its first year's worth of reporting data. In addition to training local officials on the use of eLINK, the agency continues to upgrade and patch the software.

For more information about eLINK, contact Doug Thomas, Minnesota Board of Water and Soil Resources, (651) 297-5617.

Results that Count

Milestones in the development of eLINK include:

- Annual and detailed estimated pollutant-reduction reports are prepared and distributed to cooperating agencies on request.
- Customized LARS reports are generated upon request.
- Electronic access to LARS is provided to cooperating state agencies for report writing and data retrieval.

Financial Information

The \$122,400 Section 319 grant was matched by \$328,954 in cash and in-kind contributions.



Long/Spring Lakes Shoreline Stabilization Project

Long and Spring Lakes in Meeker County suffer from nutrient loading and erosion. The Dassel Area Environmental Association (DAEA) recommended the installation of shoreline buffers as one part of the solution. The goal of this Section 319 project was to complete the selection, design, construction and revegetation of 10 shoreline buffer areas with the cash and in-kind help of homeowners and staff from the City of Dassel, Meeker County, the MPCA and the Minnesota Department of Natural Resources. The 10 properties will serve as demonstration sites that may encourage additional property owners to adopt similar best management practices. A City of Dassel site includes stabilization of a steep bank and installation of a drop culvert structure.

Other aspects of the project include public education, no phosphorus/yard-waste management ordinances and enforcement by the City of Dassel.

Local participants needed time to accept the shoreline restoration efforts and buy in to the idea of not mowing to the waters' edge. The projects that were most successful were those where communication with landowners occurred often. Interest is growing among landowners who look at references on lakescaping and see the possibilities or hear that neighbors are participating in a restoration project.

Shoreline restoration was the main topic of the DAEA annual meeting in May 2003, with educational efforts throughout the year. The City of Dassel instituted and enforced ordinances that



prohibited phosphorus-containing fertilizers and discharge of grass clippings. The city also conducted street sweeping seven times in 2003.

During the project, three of the 10 landowners withdrew and were replaced by others willing to restore the shore. All 10 projects were completed and plans for three years of maintenance are established.

For more information, contact Don Carlson, Dassel Area Environmental Association, (320) 275-3166.

Results that Count

While results from monitoring these BMP installations are not yet in, the following activities were completed in 2003:

- Site 1: terraces and tiling to minimize erosion at Long Lake delta.
- Site 5: vegetation planted in buffer zone along channel in the park.
- Site 6: vegetation planted on lake bank and stonework installed on shoreline.
- Site 7: eight trees spaded in to protect against erosion.
- Sites 8 and 9: Plantings, stone, dirt and fiber matting installed.

Financial Information

The \$15,000 Section 319 grant was matched by \$15,000 in cash and in-kind services. Some City of Dassel costs are not included in the match estimate.

Rum River Watershed EQUIP Project

The Rum River watershed is located in east central Minnesota, beginning at Mille Lacs Lake and terminating just upstream from Minneapolis. It has a 992,000 acre drainage, of which the Rum River, Anoka Sand Plain and Mille Lacs Lake are a part. The goal of this project is, through cost-share and assistance, to work with landowners to implement approved best management practices to reduce pollution to surface and ground water.

Counties in the watershed work with landowners to develop conservation plans and submit them with funding requests. A workgroup consisting of county representatives weigh the environmental benefit versus the cost.

These projects are focused to help achieve long-term goals for the river that include:

- Reducing total phosphorus in lakes being monitored to .055 ppm.
- Reducing erosion on 12,500 acres of cultivated land within 500 feet of surface water.
- Reducing total suspended solids in heavily affected streams to 26 mg/kg.
- Reducing occurrences of bacteria and nitrate in drinking water that exceeds health limits.
- Improving wildlife habitat.

The project staff contacted 48 landowners to discuss possible BMP installation. Of these, 38 prepared plans for installation of 139 different BMPs. Several landowners did not use funds from this grant, but the 55 practices planned for their properties were usually completed using other funding options. Contracts were obtained from 28 landowners for 84 BMPs.

The project also involved two major public education initiatives. The staff distributed 2,500 manuals on effective pasture management and offered individual site consultations. In addition, four workshops describing key BMPs introduced the book *Lakescaping for Wildlife and Water Quality*.

For more information, contact Chris Lord, Anoka Conservation District Manager, (763) 434-2030.



Results that Count

Contracts for 84 BMPs were entered and all projects completed, including:

- 1 agricultural waste system
- 89.1 acres conservation crop rotation
- 1 diversion
- 2 critical area plantings
- 2.25 acres filter strips
- 12 fish stream improvements
- 1/2 acre grassed waterway
- 13.9 acres livestock exclusion
- 40,272 livestock exclusion fencing
- 2 livestock ponds
- 1 livestock well
- 2/5 acres mulching
- 98.1 acres nutrient management
- 45 acres pasture planting
- 13 acres pasture seeding
- 224 acres pasture/hayland planting
- 56.9 acres integrated pest management
- 4,940 feet pipeline
- 12 acres prescribed burning
- 25 acres prescribed grazing
- 39.9 acres residue management
- 4.33 acres riparian buffers
- 3 sediment basins
- 785 shoreline protection
- 2,190 feet streambank protection
- 21 trough/tanks
- 24.2 upland wildlife habitat management
- 2 waste management systems
- 41.2 acres waste utilization
- 16 wells decommissioned
- 4 wetland restorations

Financial Information

The \$310,000 Section 319 grant was matched by \$310,000 in cash and in-kind contributions.

Upper Elk Creek Erosion Control and Water-Quality Improvement Process

The Heron Lake Watershed District encompasses approximately 472 square miles in Nobles, Jackson, Murray and Cottonwood Counties. Three major lakes provide recreational opportunities, such as swimming and fishing. The Heron Lake system is the primary receiving basin for the watershed. Elk Creek is located in Nobles County and is a subwatershed of the Heron Lake Watershed.

The goals of this Section 319 project were:

- to contact landowners and farm operations and make them aware of local, state and federal cost-share programs available in the Elk Creek subwatershed;
- to hold meetings with landowners, farm operators and other stakeholders about which BMPs would best be applied to priority areas;
- to enroll properties in the various programs; and
- to collect water-quality data.

The project also involved the public through meetings, newsletter distribution and tours. Tracking the progress was an integral part of the grant, with data entered into the LARS database (with 2003 information now going to the new eLINK database).

Landowners were hesitant to participate in the program, concerned about giving up the farmland necessary to install waterways or alternative tile intakes. The balance between educational activities and implementation is important to continue to make improvements to Elk Creek.

Through the efforts of staff and willing landowners, the following BMPs were installed from 1998-2003:

- 7.9 acres of critical area planting
- 64.9 acres of grassed waterway
- 6.1 acres of wetland restoration

- 3 rock inlets
- 184.4 conserving use acres
- 14.8 acres of filter strips.

Funding for water-quality improvements within the subwatershed will continue with funds from the Heron Lake Watershed District general operating levy. A new Clean Water Partnership implementation grant begins this year as well. For more information, contact Dan Dols, Heron Lake Watershed District, (507) 793-2462.

Results that Count

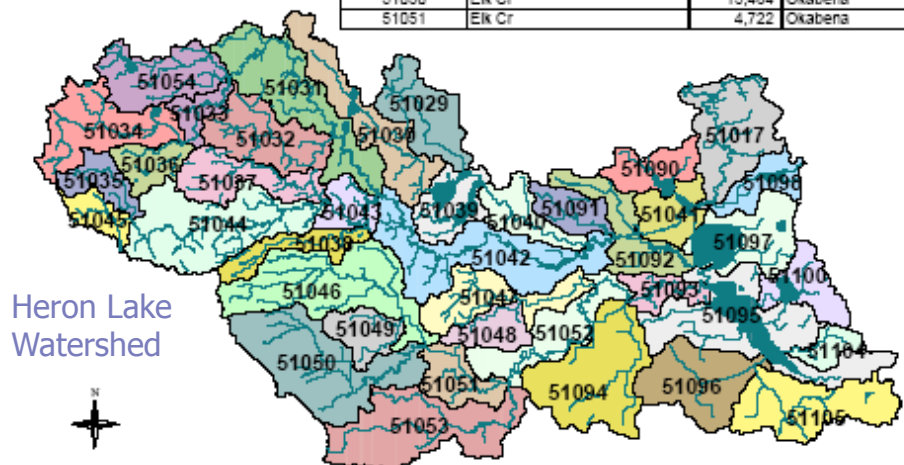
From 1999 through 2001, 98 projects within the Elk Creek subwatershed were entered into the LARS program. The information from LARS indicates that because of these practices, this subwatershed saw:

- Phosphorus reductions of 553.7 pounds per year,
- Sediment reductions of 323.1 tons per year, and
- Soil loss reductions of 1,950.1 tons per year.

Financial Information

The \$51,900 Section 319 grant were matched with \$51,900 in cash and in-kind contributions.

MINOR5	MINNAME	ACRES	SUBSHED
51046	Unknown Watershed Name	14,856	Okabena
51049	Unknown Watershed Name	4,044	Okabena
51050	Elk Cr	15,464	Okabena
51051	Elk Cr	4,722	Okabena



Wellhead Management Project for the Holland and Edgerton Wellhead

The Holland well field is one of three operated by the Lincoln Pipestone Rural Water System in southwestern Minnesota. It provides drinking water to 24 communities and 2,830 farms. The Edgerton well field supplies water to the community of Edgerton. The aquifers supporting these wells are relatively shallow and vulnerable to contamination.

Both well fields have exceeded federal limits for nitrate in drinking water. The nearby Pipestone Creek and Rock River are listed as impaired on the final Minnesota 1998 Clean Water Act Section 303(d) list for fecal coliform bacteria. The river is also impaired for ammonia. The degraded habitat in these streams threatens the Topeka Shiner, an endangered species.

This Section 319 project is reducing pollutants by providing best management practice and nutrient management education to farmers, correcting non-compliant feedlot operations and upgrading underperforming septic systems in the area. In addition, weekly and storm-based monitoring is taking place for fecal coliform, total phosphorus, turbidity, total solids and nitrate.

Specific project goals included:

- Writing nutrient-management plans for 3,000 acres;
- Adopting conservation tillage practices on 1,500 acres;
- Upgrading 10 septic systems; and
- Sampling surface waters in the Edgerton and Holland areas to track changes in water quality.
- Thirty septic system inspections are scheduled to check on compliance.

Project team members made a decision during the year to provide cost share support for approximately 10 septic system upgrades instead of three feedlot upgrades due to producer interest in the septic upgrades and higher than expected costs for feedlot upgrades.



For more information, contact John Biren, Pipestone County, (507) 825-6765.

Results that Count

- Nine septic systems were upgraded, with 10 more scheduled.
- Conservation tillage and nutrient-management plans have been implemented on 1,791 acres for the 2003 crop year.
- Stream samples taken weekly and during storms at two locations on Pipestone Creek were used (along with flow readings) to establish a rating curve for each site.

Financial Information

This project received a \$92,960 Section 319 grant, matched locally by \$129,430 in cash and in-kind contributions.

Yellow Medicine River Watershed EQUIP Project

The Yellow Medicine Watershed includes 422,600 acres located within a three-county area (Lyon, Lincoln and Yellow Medicine). Flooding, drainage, erosion, sedimentation and water quality are considered to be the foremost problems in this watershed. Currently, sheet, rill and wind erosion is exceeding tolerable levels on nearly 221,300 acres of the watershed, with 39,100 acres exceeding twice the tolerable level.

The goals of this Section 319 project are to increase the implementation of best management practices, enhancing water quality and overall benefits in the entire watershed by reducing soil erosion, improving water quality and reducing flooding. The project staff worked with willing landowners to implement a variety of projects, using existing program processes such as ranking, cost-share and contracting.

Water and sediment control basins made up the largest share of the installed BMPs, with 86 constructed during the term of the project. In addition, one dam structure and one grazing system were upgraded and improved.

Opportunities existed for combined efforts of federal, state and local agencies' technical and financial

resources to increase BMPs for the protection of the resources while bringing economic benefits to the participating landowners.

For more information, contact Pauline Moen, Lincoln County Soil and Water Conservation District, (507) 694-1630.

Results that Count

Because of the implementation of 88 BMPs, specific and quantifiable environmental changes have occurred, including:

- Reduction in soil loss of 1,214.4 tons per year,
- Sediment reduction of 896.9 tons per year, and
- Phosphorus reduction of 1,015 pounds per year.

Financial Information

The \$190,000 Section 319 grant was matched by \$191,500 in local cash and in-kind contributions.



Projects Completed in 2004

Total Maximum Daily Loads

Blue Earth River Watershed TMDL Pilot Project - Elm and Center Creek

The Elm and Center Creek watersheds are listed on Minnesota's 303(d) list of impaired waters. The data upon which the listing took place are outdated, presenting problems in developing allocation and implementation plans.

The goals of this project were:

- To determine if water-quality standards are still being exceeded within the Center and Elm Creek Watershed and to show the accuracy of the 303(d) list.
- To provide updated data, so that better watershed decisions can be made.
- To develop some understanding of the magnitude and variability of the water-quality issues for each watershed, assuming that water-quality standards are being exceeded.

The project's technical committee consisted of staff from Martin County (the sponsor), the MPCA, the Minnesota Department of Agriculture, Martin County SWCD, Faribault County, the City of Fairmont and the Pork Producers. The group's recommendations included:

- Requesting a better definition of the TMDL process, as well as delisting criteria;
- Using monitoring data from the project to establish the magnitude of the pollution problems; and
- Using watershed assessment to assist with pollution allocations.

Monitoring stations established in Verona Township on Center Creek (Faribault County) and Center Creek

Township on Elm Creek (Martin County) were installed in May 2002 collected grab samples during base flow and storm events. In addition, 10 sites are sampled five times per month for fecal coliform bacteria, stage, temperature, pH, dissolved oxygen, transparency and stream condition. Twice a month, the sites are sampled for nutrients. The project staff recruited a volunteer stream monitor to track two locations in the Elm Creek Watershed.

For more information, contact Linda Meschke, BERBI Coordinator, at (507) 238-5449.

Results that Count

The project final report and analysis show that many reaches of the Elm and Center Creeks assessed as impaired were not, and stretches that were impaired were not listed on the 303(d) list. The data was assessed by frequency of impairment and compared with comparable sites to determine the distribution, magnitude and variability of impairments.

Financial Information

The total estimated project cost was \$21,125.



Lake Louisa and the Clearwater River between Clear Lake and Lake Betsy (Phase I TMDL Study)

The Clearwater River Watershed District is a predominantly agricultural 168-square mile watershed in central Minnesota. The Clearwater River and the Clearwater River Chain of Lakes are the predominant water features in of the District.

As specified in Minnesota Rules, Chapter 7050, the Clearwater River's and Lake Louisa's designated uses are aquatic life, recreation, industrial consumption, agriculture, wildlife, aesthetic enjoyment, and navigation. Two water bodies in the watershed are listed on the 303(d) list as not meeting those designated uses. Lake Louisa is impaired because of excess nutrients. The Clearwater River reach between Clear Lake and Lake Betsy does not meet water-quality standards for dissolved oxygen (DO) and fecal coliform bacteria.

This Phase I Total Maximum Daily Load Study focused on defining the extent, persistence and severity of DO depletion and bacteria in the river segment, as well as the sources of excess nutrients in Lake Louisa. The study team analyzed existing data for gaps, identified technical issues that will be important, and developed a Phase II work plan for sampling and source identification.

The Clearwater River segment has been monitored from 1981 to 2003, and analysis determined that:

- 56 percent of the DO violations occurred between 1989 and 1994.
- DO violations occur during summer months over a range of flow regimes.
- Most DO violations occurred within two days of a 0.1-inch or greater precipitation event.
- Bacteria concentrations between 1981 and 1989 were higher than those observed more recently, 1999 through 2002.

- Four tributaries to the river show consistent levels of bacteria at or above 200 CFU/100 mL.
- One-time spikes in bacteria exceeding 2,000 CFU/100 mL are widespread.

The data revealed improvement over time at Lake Louisa:

- Since 1981, average summer concentrations to total phosphorus (TP) have been reduced by 80 percent.
- The largest source of nutrients to Lake Louisa during high flows is the Clearwater River. During high average flow years, total phosphorus ranges from 22,300 to 25,600 lbs annually. During low flows, TP loads range from 530 to 9,500 lbs.
- During low flows, internal phosphorus cycling is a significant source of nutrients, with annual internal loading estimates from 3,200 to 3,600 lbs.

Additional data are needed to diagnose sources of the impairments. For more information, contact Roland Froyen, Clearwater River Watershed District, (320) 274-3935.

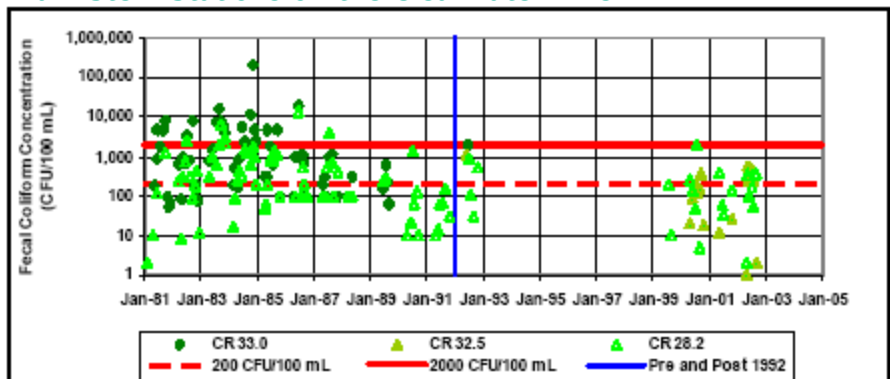
Results that Count

The Phase I TMDL and Phase II Work Plan are complete.

Financial Information

The Phase I cost \$34,222 to date.

Fecal Coliform Concentrations Over Time at Main Stem Stations on the Clearwater River



Lower Minnesota River Basin Modeling Project

The Minnesota River has a 335-mile main stem draining 17,000 square miles (15,000 in Minnesota). This TMDL project's goal was to develop a basin model extending from Lac qui Parle Dam to the U.S. Geological Service gage on the Minnesota River near Jordan. This area covers nine major watersheds. In addition, Yellow Medicine River and Hawk Creek watersheds were simulated separately. The model, developed to consider impairments in the Minnesota River Basin, consists of features that will assist in identifying priority areas for improvement.

The flow and water-quality simulation model employs the Hydrologic Simulation Program - Fortran (HSPF). The advanced capabilities of HSPF version 12 were used in this application.

Among those features that the model will simulate:

- Hydrology, determined from soils data.
- Sedimentation,
- Nutrient loading,
- Water temperature,
- Dissolved oxygen and biological oxygen demand,
- Fecal coliform bacteria,
- Chlorophyll *a*,
- Tile drainage,
- Bank and bluff erosion, and
- ISTS and unsewered communities.

The model was calibrated using those stations within the basin where significant amounts of data over the model calibration period were available. During model calibration, parameters are adjusted or fine-tuned to reproduce observations.

Calibration alone does not guarantee that the selected parameter values are “right” or robust enough to represent conditions other than those for which the model was calibrated.

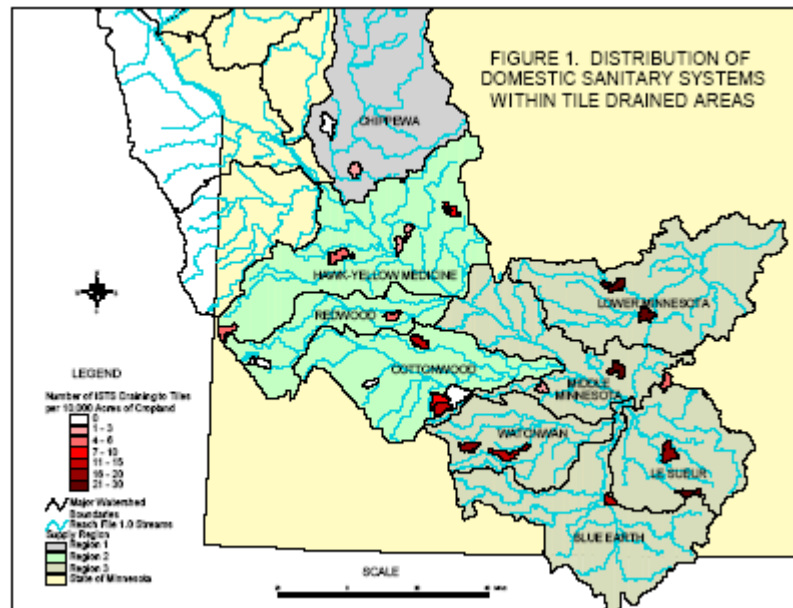


Figure 2-4. Density of ISTS Draining to Tiles from MPCA (1994).

Model validation is used to address this issue. In essence, the validation process consists of a test of the calibrated model on a second, independent set of data. Model validation was evaluated using the same statistical tests described above for model calibration. Validation tests for the Minnesota River basin models in most cases confirmed the calibration. In specific instances, the validation revealed problems in the initial calibration, which were then fixed. The successful validation exercise indicates that the models are suitable for application.

For more information, contact Scott Tracy, Tetra Tech, Inc., (952) 736-2770.

Results that Count

The computer model developed to determine total flow, nutrient loading and other conditions in the Minnesota River Basin was developed, calibrated and validated. It is now available for use during the TMDL and allocation studies.

Financial Information

Funding for this TMDL project consisted of a grant for \$365,490.

St. Louis River Mercury Reduction Efforts

The Western Lake Superior Sanitary District (WLSSD) is the main coordinator for the St. Louis River TMDL Partnership, a diverse group of northeast Minnesota stakeholders working to reduce mercury levels in the river by decreasing the sale and use of mercury-containing products and the improper disposal of mercury wastes. The ultimate goal is to reduce the potential human health effects of mercury by reducing levels of mercury found in fish.

The WLSSD is pursuing this goal in three phases. The Section 319 grant provided money to conduct Phase I, which covered:

- Identifying /evaluating existing programs for managing mercury materials.
- Identifying where gaps exist in the current mix of programs.
- Developing strategies for correcting these gaps and a plan for monitoring the effectiveness of the new solutions.

Phase II will involve implementing the strategies identified in Phase I. Phase III will involve implementing monitoring strategies to gauge the effectiveness of new mercury-reducing efforts.

The Phase I plan identified and analyzed 27 programs involved in mercury-reducing efforts covering virtually every type of mercury use of concern to the WLSSD. These programs are focused in populated areas. County-level awareness and activity varies, likely leaving a number of households underinformed in some counties.

Through this process, the WLSSD discovered some sectors that contribute substantial amounts of mercury to the environment have made notable reductions in the recent past, notably dental practices and schools, while less progress has been made in other sectors, such as automotive.

Strategies for new or expanded programs were identified and organized for various sectors, with priority given to sectors with the greatest potential for further reductions in mercury use and disposal.



The following priorities are listed, from lesser to greater priority:

- Training for future healthcare workers
- Raising awareness among household members and the general public
- Voluntary agreements with regional industries
- Removing more switches from junked autos
- The greatest opportunities for reducing mercury were seen in the following sectors: schools, dental and other health-care settings, and shipping.

For more information, contact Joseph Stepum, WLSSD, (218) 740-7806.

Results that Count

- Audiences that need more information on managing waste include rail and shipping industries, dental and other medical settings that have not installed high-efficiency amalgam waste collection units, automotive sites and family households.
- In addition to the main objectives listed for this project is an additional goal: making it as easy as feasible to do the right thing when using or disposing of mercury.

Financial Information

This project received a \$30,000 Section 319 grant to complete Phase I of a three-stage effort to reduce the use and improper disposal of mercury.

South Branch Yellow Medicine River TMDL Project

A stream reach in the South Branch of the Yellow Medicine River Watershed is listed under Section 303(d) of the Clean Water Act as impaired for swimming, primarily due to excessive fecal coliform bacteria. The area of concern is a subwatershed with land use dominated by agricultural cropping and animal production. The goal of this project was to characterize fecal levels, probable sources, and estimated reduction needs to meet the water-quality standard for fecal coliform bacteria.

Over a three year period, samples were collected at 11 stations (by MPCA) and 25 stations (project sponsor), of which six were common to both. Data analysis showed that although impaired status was rare during spring and fall, all sites showed impairment during at least one of the summer months, June through August.

The TMDL report includes:

- A problem statement,
- Applicable water-quality standards and numeric targets,
- Pollutant assessment,
- Linkage analysis,
- TMDL and allocation recommendations,
- Follow-up monitoring plan,
- Public participation, and
- Implementation plan.

The TMDL implementation plan is composed of three parts:

- A watershed-wide recommendation of a 78-percent reduction in fecal coliform, to bring the geometric monthly mean, during wet conditions, of all sampling stations from 794 organisms/100 ml to fewer than 180 organisms/100 ml, a water-quality goal that includes a 10-percent margin of safety.
- A range of high implementation activities.
- Intensive monitoring to determine the success of the plan and the performance of specific implementation activities.

For more information, contact Cindi Potz, Yellow Medicine River Watershed District, (507) 872-6720.

Results that Count

The project report sets goals for fecal coliform reductions of 78 percent in the watershed, outlines proposed restoration and implementation activities, and recommends a plan for effectiveness monitoring.

Financial Information

This project received a \$58,672 grant to pay for this TMDL study and implementation plan.

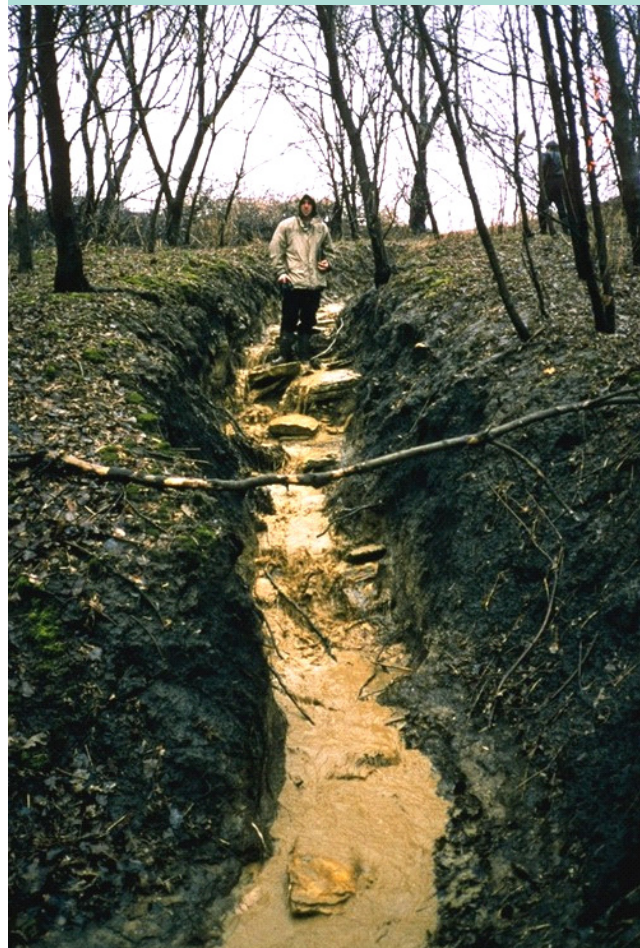


Photo: Dave Morrison, MPCA

Projects Completed in 2004

Clean Water Partnership

Dunns and Richardson Lakes Diagnostic-Feasibility Study

Dunns and Richardson Lakes are located in central Minnesota near the city of Darwin. Both are becoming eutrophic and turning into wetlands. Lake users perceive a reduction in water transparency, aquatic vegetation and game fish, as well as an increase in algae. The Dunns and Richardson Lakes Association (DARLA) was formed to address these problems, requesting a Lake Assessment Program study from the MPCA in 1996 and a Phase I Diagnostic-Feasibility Study under the CWP program.

The goals of the project are:

- To improve the recreational quality of the lakes by reducing the frequency and severity of algal blooms and increasing the fishery potential.
- To provide Meeker County (the project sponsor) and DARLA with a comprehensive strategy for managing, improving and protecting the water quality.



The diagnostic study determined that:

- Both lakes have similar water quality, but Dunns Lake is more eutrophic and has higher phosphorus and chlorophyll a. Both lakes have rough fish population problems and limited aquatic vegetation.
- Water entering Richardson Lake is coming from a county ditch (60 percent) and ground water (20 percent), with other sources.
- Only approximately 10-20 percent of the water in Dunns Lake comes from Richardson Lake.
- Rough fish are a serious problem in both lakes, eliminating aquatic vegetation and disturbing bottom sediments.
- Residence time for water in Richardson Lake is approximately two years; for Dunns Lake it is 12 years. Without precautions, Dunns Lake could quickly become more eutrophic.

For more information, contact Paul Virnig, Meeker County, (320) 693-5200.

Results that Count

Recommendations of the study include:

- Public education,
- Septic system upgrades,
- Roughfish control,
- Watershed erosion control, and
- Shoreline erosion control.

Financial Information

The \$33,750 CWP grant was matched by \$33,750 in cash and in-kind services

Horseshoe Chain of Lakes Continuation

The Sauk River chain of bay-like lakes in northeastern Minnesota has seen tremendous land-use changes during the past 75 years. These contribute an increasing amount of nutrients to the water from agricultural operations, as well as sewage treatment systems serving a rapidly growing population in shoreland areas. Studies have shown declining water quality has an adverse economic impact on lake shore values and neighboring communities.

The focus of this project is preventing further degradation and improving the chain of lakes' current condition.

Upgrading feedlots and wastewater treatment systems and implementing best management practices (BMPs) throughout the watershed have reduced the total phosphorus concentration in the river. The average inflow total phosphorus concentrations into the Sauk River Chain of Lakes have dropped from the range of 300 to 1220 ug P/L in the 1980s to a low value of 176 ug P/L in 2002 and 2003. This represents a 48-percent decrease.

Additional short-term goals (one to three years) for the watershed include:

- Reduce flow-weighted mean average TP concentrations to <150 ug/L
- Reduce in-flow average total suspended solids (TSS) to approximately 16,000 ug/L
- Maintain summer transparency readings between 4 and 6 feet.

Longer-term goals (five plus years) include:

- Achieve flow-weighted mean average TP in the 100-125 ug/L range
- Reduce in-flow average TSS to 9,000 ug/L
- Increase summer transparency readings to greater than 9 feet.

Improvements made by area residents to septic systems, feedlots, buffer strips and wetland restoration have succeeded in helping to maintain the



region's water-quality status; however, more efforts are needed to attain improvement goals, including addressing bank undercutting caused by overgrazing and high flows.

For more information, contact Lynn Nelson, Sauk River Watershed District, (320) 352-2231.

Results that Count

- Installed and/or improved 36 ag-waste storage facilities
- More than 40 producers developed manure management plans
- Restored four shoreland riparian sites.
- Enrolled 5,000 acres in the CREP
- Helped 17 lakeshore residents and a resort upgrade sewage systems
- Abandoned one large polluting hog operation
- The "Traveling Environmental Education Classroom" visited all area schools
- Installed water/sediment retention basins on farms in the watershed
- More than 20 meetings held to educate groups on nutrient management, shoreland BMPs and other conservation practices.

Financial Information

The \$135,000 CWP grant was matched by \$717,250 in cash and in-kind contributions.

Jefferson-German Lakes Improvement Project, Phase IIB

Jefferson and German Lakes in Le Sueur County have not supported designated uses for many years, and improvement and restoration efforts have been underway for several years. The goal of this project was to complete the second implementation phase of the improvement plan. The overall goals of the plan are:

- Short term: to obtain a 30-40 percent reduction in total phosphorus from the upgrade of three priority feedlots and associated nutrient management areas.
- Long term: to obtain an additional 15-25 percent reduction in TP from the implementation of best management practices in primary management areas, with the first priority being highly erodible lands adjacent to drainage systems within four specific subwatersheds.
- Overall goal: to reduce the annual flow-weighted mean concentration of TP from 460 ug/L to 150-200 ug/L.

A number of activities were completed during the grant period, encompassing agricultural best management practices, septic system upgrades, public education and more. A watershed specialist assigned to the project has improved coordination

between the watershed project and the conservation field office. A Citizen's Steering Committee provides long-term project oversight and encourage public support and involvement.

For more information, contact Kate Leinen, Le Sueur County, (507) 357-2251.

Results that Count

Activities completed include:

- Increased county feedlot officer inspections and technical support.
- Upgrading or replacing 135 individual sewage treatment systems.
- Stabilization of a severely ravined lot in Washington Township.
- Working with the lake association to ensure that lake issues were included in a sanitary sewer district feasibility study.
- Identifying selected tributary inflow locations with continued high phosphorus levels.
- Applying for a challenge grant to undertake a drainage system inventory and management plan.
- Offering incentives and technical assistance for several BMP-related projects



Financial Information

The \$39,700 CWP grant for the project was matched by \$50,407 in cash and in-kind contributions. A \$140,000 SRF loan also was part of the project resources.

Lake Francis Phase I Diagnostic-Feasibility Study

Lake Francis in Isanti County has historically been a wetland area, but routing of a county ditch and damming the outlet changed both hydrology and nutrient balances. With rising water levels came change, and cultural eutrophication is well underway there.

This CWP project's objectives were to understand the current conditions of the lake and make recommendations for improving water quality. Samples were collected periodically from 1999-2001 from the lake as well as its inlet and outlet. Included were water samples, microscopic plants, aquatic vegetation and flow measurements. In addition, information about soils, geology, hydrology, climate vegetation, population and land use were reviewed. Major findings include:

- Lake Francis has poor water transparency, from wind, power boats and bottom-feeding rough fish that stir up the lake bottom.
- Lake Francis is nitrogen limited, and internal phosphorus is continuously recycled in the lake. This internal phosphorus loading promotes growth of algae, not the desired kinds of aquatic vegetation.
- Water entering the lake comes primarily from county ditch 10 and ground water, with 38 percent from precipitation and only about 5 percent local runoff.

The study recommended a number of strategies to improve Lake Francis's water quality.

- To drastically reduce the internal phosphorus loading by compaction of sediments during a lake drawdown. During the drawdown (two years) vegetation will be allowed to grow and the previous fish population eliminated.
- During the drawdown, some lakeshore owners will receive Department of Natural Resources permits to remove sediment to help reduce phosphorus loading once the lake is refilled.
- Measures to reduce erosion, including no-wake zones and reduction of allowable horsepower for boats.



- Individual septic system repairs and upgrades.
- Erosion control measures (such as buffer strips) at CD-10.
- Lake aeration during winters to prevent fish winterkill.
- Restocking the lake with gamefish.
- Public education and lake stewardship programs.

For more information, contact Jerry Tvedt, Isanti County, (763) 689-3859.

Results that Count

This CWP-funded study provided recommendations for improving water quality in Lake Francis, along with specific long-term goals:

- Total phosphorus will decline from 394 to 60 ug/l
- Chlorophyll *a* will decline from 196 to 10 ug/l
- Secchi disk readings will improve from 0.15 meters to a 1-2 meter range.

Financial Information

The \$24,150 CWP grant was matched by \$51,395 in cash and in-kind contributions.

Lake Sallie Phase II Restoration Project

Twelve-hundred-acre Lake Sallie, located on the Pelican River chain of lakes in west central Minnesota, has had problems with summer algae blooms since the 1930s, due to upstream sewage treatment and land-use practices. In the 1980s, the Pelican River Watershed District received a Clean Lake Project Phase I grant to study water quality and pollution sources for Lake Sallie. This profile summarizes a Phase II effort begun in the mid-1990s and continued in 2000.

The project aimed to reduce the trophic (nutrient) status of Lake Sallie to below 50 based on the Carlson Trophic Index. While this goal has not yet been consistently met, there are indications water quality is improving: phosphorus loading to the lake declined during the study period, as has the number of days with severe algae blooms. In addition, the ratio of black to yellow bullheads has steadily increased, which some feel is an indicator of improving water quality.

Best management practices (BMPs) adopted in the watershed include:

- Creation of rain detention ponds in Detroit Lakes, as well as policies and practices to guide future stormwater-management efforts.
- Sewer system monitoring and upgrading, including engineering studies to evaluate treatment options for densely settled areas near the lake.
- Greater permit oversight of developments to require on-site detention and other runoff controls, both during construction and ongoing.
- BMPs to address problems related to ditching and the draining of wetlands.

In 1998, the District applied a treatment of aluminum sulfate to Lake St. Clair, located three miles upstream of Lake Sallie. It's estimated that this has reduced the amount of phosphorus leaving Lake St. Clair by a factor of half to two-thirds.

The District conducts routine monitoring throughout the watershed to help gauge current conditions and



track the progress of efforts to reduce nutrient loads to streams, rivers and lakes.

For more information, contact Tera Guetter, Pelican Lake Watershed District, (218) 846-0436.

Results that Count

- The amount of phosphorous leaving Lake St. Clair for Lake Sallie dropped from 900 pounds a year to 200.
- New equipment purchased and installed to acquire a more detailed picture of Lake Sallie in terms of stratification and other conditions that affect phosphorous cycling.
- All district lakes targeted for aquatic plan management plans.
- Fifteen hundred water quality reports distributed each year as part of the District's extensive educational outreach efforts targeting area lake associations, schools and other organizations.

Financial Information

The \$40,400 CWP grant for this project was matched by \$165,400 in cash and in-kind contributions.

Lake Shaokatan Continuing Restoration Project

Lake Shaokatan is a 995 acre lake located in southwest Minnesota in Lincoln County near the South Dakota border. With a maximum depth of 12 feet and a predominately agricultural watershed, it is fairly typical of lakes in the ecoregion. The lake has a history of water-quality problems, including severe nuisance blue-green blooms, summer/winter anoxia and periodic fish kills.

The goal of this continuing restoration project was to upgrade 30-35 existing septic systems around Lake Shaokatan and within watersheds that feed into the lake. The major difficulty was in convincing landowners that their systems were, in fact, noncompliant and needed replacement or updating. A local ordinance requiring that septic systems be up to code when a request for a permit or property transfer takes place -- and enforcement of the ordinance -- convinced landowners of the need to work on ISTS problems.

Informing residents about the availability of assistance for ISTS repair and replacement took longer than expected. The residents of the Nielsen Estates on the southwest side of lake needed to be convinced that a problem existed and a solution was at hand. However, in the end, the development built and operated its own cluster system to treat wastewater.

The project staff achieved the target, upgrading 30 ISTS for permanent or seasonal lake residents, 25 of which were on the lakeshore. In addition, one commercial business (a restaurant/supper club) had an upgrade, with consultation from the Minnesota Department of Natural Resources. Of these 31 systems, five had an outlet directly into the lake. While trend analysis was not a part of this project, monitoring data is being

collected and will be part of a follow-up assessment to the original Phase I investigation. This study will help determine whether water-quality improvements to the lake have occurred -- and in response to which activities performed under the CWP grant.

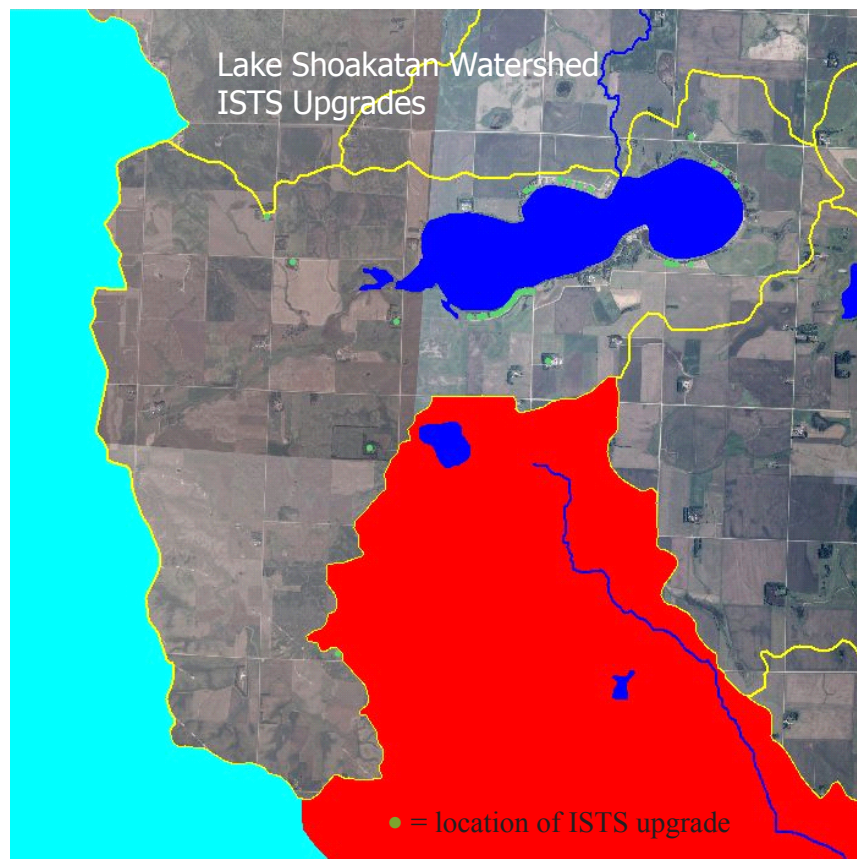
For more information, contact Robert Olsen, Lincoln County, (507) 694-1344.

Results that Count

By calculating the average maximum daily flows of the 31 ISTS systems upgraded, project staff estimate that as many as 10,000 gallons of untreated sewage per day is no longer entering the lake (directly or indirectly through the ground water).

Financial Information

This \$50,000 CWP grant was matched by \$110,000 in cash and in-kind local contributions.



Lake Volney Improvement Project

A second implementation phase of improvements to Lake Volney in Le Sueur County is completed. The data, best management practices installation, shoreline and aquatic plant surveys and other activities will be extremely helpful, as a TMDL study begins in 2005 for Lake Volney.

The project has both short- and long-term goals:

- Improve lake water quality by improving watershed conditions in priority management areas of the watershed.
- Implement best management practices to reduce the loading of nutrients from the watershed and the recycling of nutrients in the lake.
- Improve coordination of watershed activities.
- Promote adoption of BMPs to initiate flow reduction at the subwatershed level, promote lakeshore and streambank stabilization, and upgrade wastewater treatment.
- Reduce lake sediment nutrient recycling.
- Increase public awareness and adoption of BMPs.
- Evaluate effectiveness.

A watershed specialist has been maintained to improve coordination between the watershed project and the county conservation field office, a key to successful implementation of agricultural BMPs, specifically terrace systems, grass buffers and a diversion above a feedlot. A contractor (“The Lake Doctor”) is assessing Lake Volney’s plant and algae communities, as well as the phosphorus cycle in the lake.

The local SWCD has surveyed potential wetland restoration sites, and lakeshore landscaping with native plants has been completed. In cooperation with Minnesota State University -- Mankato, educational packs and workshops have been developed and presented on ISTS operation and maintenance, shoreland landscaping, feedlot and manure management, and stormwater runoff. Eight on-site septic systems have been upgraded or installed new.



Citizen lake monitoring, as well as inflow monitoring, continued through 2002 and 2003. Inflow monitoring and spot monitoring during rainfall events is helping to identify priority areas for improvement, including one site with continued high phosphorus readings and another with continued high nitrate.

For more information, contact Carrie Mueller, Le Sueur County, (507) 357-2251.

Results that Count

While data from monitoring was not available for this report, the management objectives for Lake Volney Watershed include:

- Total phosphorus 60-80 ppb
- Chlorophyll *a* 10 ppb
- N/P ratio >16
- Si/P ratio >100
- OP/TP 0.10
- Hypolimnetic Fe/TP >3
- Chlorophyll *a*/TP 0.10

Financial Information

The \$174,651 CWP grant was matched by \$667,626 in cash or in-kind contributions locally.

Long Prairie River Implementation Project

The Long Prairie River flows some 92 miles through Douglas, Todd and Morrison Counties, from the outlet of Lake Carlos to the Crow Wing River, an Upper Mississippi River Basin tributary. Segments of the Long Prairie River are impaired for dissolved oxygen (DO), mainly the result of ammonia toxicity. The low DO often takes place during low-flow conditions.

This project was designed to identify potential ammonia reductions, which come from both point sources (such as the five municipalities with treatment facilities on the river) and runoff from agricultural land. Subwatersheds that exhibit high export of pollutants have been identified through modeling of agricultural practices, topography, soil characteristics, climatology and other factors.

This study helped quantify pollutant contributions by tributary, land use and pollutant source. Pollutant reduction targets for each of the watersheds and subwatersheds modeled can be determined with this information.

During low-flow conditions, the impact of three specific wastewater treatment facilities (WWTF) is

key: Carlos WWTF, Eagle Bend WWTP and Clarissa WWTP. During high-flow period, the stormwater runoff contributions to the problem become more significant.

The implementation of the Long Prairie River TMDL will involve working with municipal wastewater treatment plant operators, Soil and Water Conservation District staff, and other partners. In June 2003, the project sponsor conducted public meetings in two locations to discuss how best to reduce nonpoint source loads by 10 percent and achieve reductions in the WWTF loads.

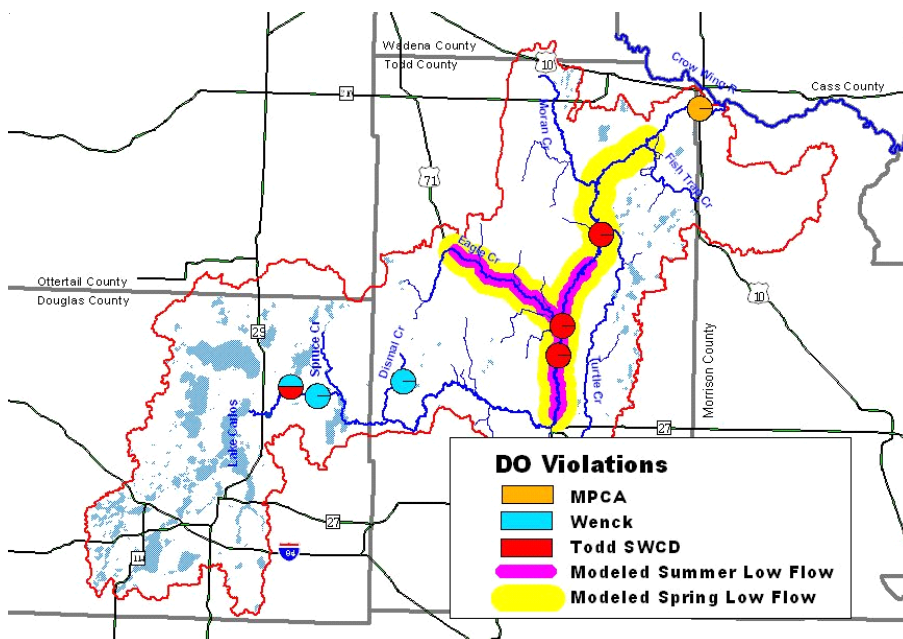
For more information, contact Kitty Tepley, Todd County, (320) 732-2644.

Results that Count

The study identified target reductions of 10 percent for the nonpoint source impacts on the dissolved oxygen/ammonia impairment in the Long Prairie River.

Financial Information

A \$316,565 CWP grant included both the TMDL and implementation, with \$125,500 in cash and in-kind contributions.



Osakis Lake Improvement Project

Osakis Lake in central Minnesota has experienced a marked decline in clarity and an increase in submerged vegetation since the early 1970s. Without lake and watershed management changes, the incidence of "swimming impaired" conditions could increase and eventually lead to "no recreation conditions" and major changes to the composition of fish species within 20 years.



This was a worrisome scenario, considering a major portion of the region's economy is driven by the recreational use of surface waters. Previous projects identified nutrients carried by Judicial Ditch 2 (JD2) and an inlet from adjacent Faille Lake as the primary causes of this degradation to Osakis Lake.

This Clean Water Partnership project was created to improve water quality by reducing nonpoint sources of pollution to the lake, including:

- Reducing sediment from JD2
- Reducing nutrient loading from Faille Lake
- Reducing lakeshore erosion and pollution from inadequate individual sewage treatments systems.

Resident/lake owner education efforts focused on maintaining and upgrading septic systems and reducing runoff from lawns and impervious surfaces. Resources and technical assistance were provided to install, upgrade and maintain septic systems. Seminars for area farmers covered erosion control best management practices, the Conservation Reserve Program, buffer strips, conservation tillage and rotational grazing.

These outreach efforts drew 50 area farmers to erosion-control seminars. Lakeshore management education efforts reached hundreds of area residents and students. The watershed district has hired a full-time environmental technician to provide ongoing education to landowners and farmers.

For more information, contact Lynn Nelson, Sauk River Watershed District, (320) 352-2231.

Results that Count

- Total Phosphorus levels for JD2 have decreased to near ecoregion concentrations. Levels of suspended solids are expected to decrease following completion of sediment holding ponds in June 2003.
- Average in-lake Total Phosphorus has declined from 62 to 27 parts per billion.
- Treatments to Faille and Clifford lakes of aluminum sulfate and lime significantly reduced phosphorus stored in sediments.
- The cities of Osakis and Nelson are implementing erosion-control projects to reduce stormwater runoff.

Financial Information

This project received a \$56,830 CWP grant, matched by \$419,461 in cash and in-kind contributions.

Average in-lake Total Phosphorus has declined from 62 to 27 parts per billion.

Minnesota, Wisconsin Governors join forces to improve water quality in the Mighty Mississippi

On June 30, Minnesota Governor Tim Pawlenty and Wisconsin Governor Jim Doyle renewed the two states' commitment to protecting the water quality of the Mississippi River.

The governors have each directed a member of their cabinet to work with the other state on developing a more coordinated approach to protecting the country's most important river.

Spearheading the joint state effort will be MPCA Commissioner Sheryl Corrigan and her counterpart, Wisconsin Department of Natural Resources Secretary Scott Hassett.

Some of the goals for this effort include:

- Establishing a long-term goal of making the Mississippi River unimpaired, fishable, and swimmable again;
- Working together, wherever possible, to protect water quality on the river, and restore those waters impaired;

- Putting a higher statewide environmental priority on efforts to protect the Mississippi River, including strategic efforts at the watershed level to develop watershed plans and ways to track results; and
- Focusing on meeting the two states' shared responsibility for nutrient and sediment reduction, including making progress on the multi-state plan to reduce nitrogen discharges into the Gulf of Mexico by 30 percent by 2015.

The commitment to reduce nutrients stems from a plan developed by a coalition of state and federal officials to address hypoxia, which is responsible for the "dead zone" in the Gulf of Mexico. Complete details on this plan are available on the U.S. EPA's Mississippi River Basin Action Plan Web page.

General information hypoxia and Minnesota's contribution to this problem is available in the fall 2000 edition of *Minnesota Environment* magazine.



Aerial photo showing the confluence of the Mississippi River and Rice Lake.

Projects Awarded in 2004

Project KEY

Section 319 Projects in GREEN

CWP Projects in Purple

Chippewa River Watershed Continuation Project

Sponsor: Chippewa County, contact Kylene Olson, (320) 269-2139 ext.116

This project continues the activities begun in the Chippewa River Watershed Implementation Project. These activities include funding three staff members, continuing information and education on best management practices with watershed students and residents, continued maintenance of the water-quality monitoring network and continuing implementation of best management practices in the watershed, including agricultural BMPs, urban BMPs in stormwater management, upgrading individual septic systems and manure management.

Cost-Share Incentives for Small Feedlot Fixes

Sponsor: Hiawatha Valley RC&D Association, contact Roger Lenzmeier, (507) 281-1959 ext. 4

The 11-county Hiawatha Valley RC&D includes 92 percent of the county feedlots that qualify for the Open Lot Agreement (300 animal units or fewer). Project proponents will provide a 50-percent cost-share up to \$1,000 for the implementation cost of OLA feedlot fixes that help achieve the Phase I October 2005 50-percent runoff reduction.

Project sponsors will cost-share with counties. Feedlots will be prioritized in one of three categories, based upon the environmental risk they pose. The project cost-share will provide low-cost partial fixes on at least 220 feedlots.

Cottonwood River Restoration Project BMP Implementation Continuation

Sponsor: Redwood-Cottonwood Rivers Control Area, contact James Doering, (507) 637-2142 ext. 4

This project continues the implementation activities begun in the Cottonwood River Restoration BMP Implementation Project. These activities include continuing outreach to the watershed community,

education on watershed BMPs, stream bank restoration, agricultural best management practices, urban stormwater BMPs, continuing water-quality monitoring and data analysis, and ongoing project administration.

Dakota County Nonpoint Source Reduction Project

Sponsor: Dakota County, contact Jill Trescott, (952) 891-7019

This project, based upon a CWP diagnostic study of drinking-water contamination issues in the Hastings area, will focus on water-quality issues associated with the Vermillion River. These include:

- Initiating an intensive one-on-one farmer outreach program;
- Purchasing permanent conservation easements along the Vermillion River and its tributaries; and
- Expanding water-quality monitoring of both ground water and the Vermillion River.

Designing Feedlot Improvements in Targeted Areas under the Open Lot Agreement

Sponsor: Southeast Minnesota Water Resources Board, contact Bea Hoffman, (507) 457-5223

This project is part of a basin-wide response to the findings of the Total Maximum Daily Load (TMDL) study that identified the streams of the Lower Mississippi River Basin in Minnesota as posing a risk of human illness for high levels of fecal coliform bacteria. Average bacteria levels through the Basin are twice the standard for skin contact.

The TMDL found that runoff from feedlots or manure stockpiles without runoff controls comprise an estimated loading of fecal coliform bacteria to streams of 17 percent during a wet spring and 37 percent during a wet summer. In order to reach water-quality standards by 2010, the implementation

plan calls for reducing bacteria impairments from all major sources by an average of 65 percent. This project will provide assistance for accelerated compliance with the state feedlot rules. It involves providing financial and technical assistance for designing low-cost solutions for feedlot runoff.

Educating Local Officials on Water-Quality Impacts of Nonpoint Source Pollution

Sponsor: Minnesota Lakes Association, contact Paula West, (218) 824-5565

The Minnesota Lakes Association requested \$30,000 in Section 319 funds to support a project to educate elected and appointed officials on the connection between water quality and land-use. The goal is to provide local officials with new tools that will lead to better land-use decisions, policies and enforcement.

The project will use tools that include one-day workshops; presentations at local government conferences; working with trade groups, such as the Association of Minnesota Counties, Minnesota Association of Townships, and Minnesota Association of County Planning and Zoning Administrators and others; and the production of videos and brochures.

Expansion of the Red Top Farm Demonstration Concept

Sponsor: Minnesota Department of Agriculture, contact Brian Williams, (507) 665-6806.

This project is designed to develop information that will assist in determining meaningful TMDLs for agricultural land. The MDA's Red Top Farm water-quality demonstration in Nicollet County provided three 25-acre fields with subsurface drain tile systems -- and instrumentation to measure nutrients and pesticides.

This project is designed to obtain year-round quantification of nutrient and pesticide losses from the fields under different best management practices and scenarios. The results should help answer questions about the effectiveness of various BMPs for agricultural nutrients and pesticides.

Greater Yellow Medicine River Phase II Continuation Project

Sponsor: Yellow Medicine River Watershed District, contact Terry Renken, (507) 872-6720

The Greater Yellow Medicine River Phase II Project continues through the awarding of this grant. Water quality monitoring, data analysis, project administration and local education activities will continue, but the bulk of the activity will center on implementation of agricultural best management practices such as nutrient management, filter strip construction, conservation easements and cost-share with other conservation programs.

Hawk Creek Watershed Continuation Project

Sponsor: Renville County, contact Loren Engelby, (320) 523-3672

This project continuation in the Hawk Creek Watershed funds three staff persons; additional water-quality monitoring and data analysis to measure prior BMP performance; outreach activities such as displays, tours, demonstrations and fairs; and land-use BMPs, including nutrient management, stream bank erosion control and an individual septic system loan program.

Hawk Creek Watershed Project -- Beaver Tales

Sponsor: Renville County, contact Loren Engelby, (320) 523-3666

This project will provide financial incentives to landowners to correct and prevent water pollution, using the theme "If you do what you've always done, you'll get what you've always gotten." The effort will capitalize on current momentum and energy for improving water quality through appropriate land-use decisions and best management practices.

Hawk Creek Watershed Project -- Hawk TMDL

Sponsor: Renville County, contact Loren Engelby, (320) 523-3666

The main stem of Hawk Creek from the confluence of Chetomba Creek to the mouth is listed as impaired on the draft 2004 Clean Water Act 303(d) list. This project will provide financial incentives to landowners to implement conservation practices that will reduce the impacts of nonpoint source water pollution on the creek.

Jefferson-German Lakes Water Quality Improvement Continuation Project

Sponsor: Le Sueur County, contact Carrie Mueller, (507) 357-8540

This ongoing Jefferson-German Lakes Water Quality Improvement Project focuses on upgrading BMPs for priority feedlots, devising solutions for highly erodible lands in four priority subwatersheds, providing loan funding to upgrade nonconforming individual septic treatment systems, continued water-quality monitoring/data analysis, assistance in updating the Le Sueur County water plan, planning BMP demonstration sites and developing information materials.

Little Cottonwood River Restoration Continuation Project

Sponsor: Brown, Nicollet and Blue Earth Counties, contact Kevin Kuehner, (507) 934-4140

Little Cottonwood River Restoration Continuation Project will continue funding two staff people responsible for targeting, marketing, creating relationships and enrolling environmentally sensitive agricultural lands into state and federal programs, such as Grasslands Reserve Program, CRP filter strips, Farmable Wetlands, Living Snow Fences and Water Ways. Nutrient management demonstrations, EQIP funding for polluting feedlots and upgrading noncompliant septic systems are also priorities for this project. Continued watershed monitoring, data analysis, maintaining an interactive watershed Web site, newsletters and other educational efforts will round out the work of this continuation.

On-Farm Manure Management Demonstration

Sponsor: University of Minnesota, contact Jim Anderson, (612) 625-0279.

The goal of this project is to reduce delivery of pathogens, phosphorus, nitrogen and organic materials from livestock manure to impaired surface waters of Minnesota. This will be accomplished through enhanced farmer adoption of best management practices and new technology for field application of manure.

Restoring Water Resources of the Sauk River Chain of Lakes

Sponsor: Sauk River Watershed District, contact Lynn Nelson, (320) 352-2231

The Sauk River Chain of Lakes is currently classified as hypereutrophic. Intensive efforts have reduced total phosphorus and total suspended solids in the lakes, but not to ecoregion concentrations. Total phosphorus levels are still 20-30 percent above the short-term goal set in the initial 1997 implementation project.

This proposed project continues to carry out the goal of phosphorus reduction and loading by following the recommendations made in the CWP Phase IIA Final Report.

Shakopee Creek Headwaters Project

Sponsor: Kandiyohi County, contact Rob Spitzley, (320) 231-0008

This project is a cooperative partnership of local individuals, organizations and government agencies actively working together to improve water quality in the Shakopee Creek watershed. The goal of the project is to promote conservation practices that target water-quality improvement and flood reduction through education and incentives. The project encourages active landowner participation in developing strategies that create a sustainable environment.

South Branch Root River Watershed Fecal Coliform Bacteria Reduction Project

Sponsor: Fillmore County, contact Donna Rasmussen, (507) 765-3878, ext. 3

Fed by karst springs, the cold water segments and tributaries of the South Branch of the Root River are managed by the Minnesota Department of Natural Resources for wild, semi-wild and stocked trout populations. These are some of the premier trout streams in Minnesota. Water quality in the Root River is integral to the overall enjoyment of the 120,000 visitors who come to Forestville/Mystery Cave Park each year to fish, camp, hike and visit the cave.

The Root River watershed has been selected as the pilot watershed for the Governor's Clean Water Initiative to improve impaired waters in southeastern Minnesota. The South Branch Root River project area will be a special focus, with results to be transferred to other parts of the watershed. This project's three-year goals are to reduce fecal coliform levels by 20 percent, turbidity/total suspended solids by 10 percent, and reduce harmful bacteria by 65 percent and sediments by 30 percent in southeastern rivers and stream within 10 years.

Southeast Minnesota Milk House Wastewater Treatment Demonstration

Sponsor: University of Minnesota, contact Kevin Janni, (612) 625-3108

In this project, different milk house wastewater handling systems will be installed on cooperating dairy farms for evaluation and demonstration. The project builds on one already established in Carver and Wright Counties. In southeastern Minnesota, different soils, karst conditions, topography and cultural practices drive the need for this type of research and demonstration.

Steele County Septic System Loan Program

Sponsor: Steele County, contact Scott Golberg, (507) 444-7400

The Straight River TMDL report identified two of the major sources of fecal coliform bacteria loading to the watershed to be direct discharge and failing septic systems. Current efforts to reduce fecal coliform bacteria are intensifying. This project will accelerate current efforts to reduce fecal coliform bacteria in the Straight River watershed and other watersheds in Steele County by providing financial assistance low-interest loans for individual landowners to upgrade inadequate septic systems.

Targeted Feedlot Open Lot Implementation Engineering Assistance

Sponsor: Southeast SWCD Technical Support Joint Powers Board, contact Glen Roberson, (651) 923-5286

This proposal is part of a basin-wide response to a regional TMDL study which identified the streams of the Lower Mississippi River Basin in Minnesota as posing a potential risk of human illness from excessive levels of fecal coliform bacteria. The

regional TMDL study found that feedlot runoff is the single greatest pollutant source during summer wet periods, when it is responsible for 37 percent of the fecal coliform load. During May wet periods, which are dominated by runoff from surface application of manure, feedlot runoff is the second most important source, responsible for 17 percent of the fecal coliform load.

There are 9,649 feedlots in the basin, and the vast majority of these (87 percent) have fewer than 300 animal units. This project is focused on working with livestock producers who sign up for the Open Lot Agreement, which allows them to come into compliance in a phased manner. By October 2005, these producers need to have measures in place to reduce runoff by 50 percent; and by October 2010, feedlots must be in full compliance. This project will provide the engineering technical assistance and work with producers who sign up for the Open Lot Agreement.

Targeting Implementation/Compliance Activity within TMDL and Ecologically Sensitive Areas

Sponsor: Stearns County SWCD, contact Dennis Fuchs, (320) 251-7800

This project focuses on the following implementation activities for reductions in nonpoint water pollution within ecologically sensitive areas:

- Investigations of unpermitted earthen manure storage basins,
- Targeted and accelerated compliance,
- Educational initiatives,
- Manure management,
- Feedlot pollution abatement systems,
- Erosion control,
- Promotion of related best management practices, and
- Water-quality monitoring.

Upper Main Stem Chippewa River Implementation

Sponsor: Chippewa County, contact Kylene Olson, (320) 269-2139, ext. 116

The goal of this project is to reduce the levels of phosphorus, nitrogen, sediment and bacteria reaching the Chippewa and, ultimately, the Minnesota River. Strategies to achieve this include:

Minnesota Pollution Control Agency

- Buffer Strip Initiative: Buffer strips along the streams and ditches of the Upper Main Stem will reduce runoff. The plan calls for enrollment of 900 acres in the Conservation Reserve Program.
- Filters for the Future Initiative: An innovative education and marketing program involving the Future Farmers of America to learn about buffer strips while working with farmers on on-site assessment and enrolling new landowners in the program.
- Septic Inspection Fee: With loan funding, as well as an additional 50 septic system inspections per year resulting from the fee, the pace of upgrades will accelerate.
- Livestock exclusion projects for landowners, with fencing for an estimated 6,000 feet of riverbank or lakeshore.
- Manure testing for an estimated 10 landowners per year.
- Shoreline naturalization site installation, with 50 percent cost-share with landowners.
- Alternative Tile Intake Initiative: Research indicates that alternative tile intakes can reduce phosphorus by 30 percent and sedimentation by 46 percent per structure. The goal is to replace 10 per year.
- Special projects including sediment basins, terraces, wetland restoration or other best management practices.

Watonwan River Major Watershed Implementation Plan Continuation

Sponsor: Watonwan County, contact Bruce Johnson, (507) 375-1225

The Watonwan River Major Watershed Implementation Plan Continuation concentrates state, federal and local resources on agricultural BMPs for nutrient management, streambank stabilization, channel restoration, re-meandering demonstrations, drainage inventory, residue management, water retention and upgrading individual septic treatment systems. In addition, funding will be used for ongoing monitoring and data analysis and education activities such as the St. James Creek Environmental Learning Center and Outdoor Lab, the area Ecology Bus, Green Saturdays, field trips and information materials.



Projects Currently Active

(listed by year of award)

Project KEY **Section 319 Projects in GREEN** **CWP Projects in Purple**

1996

Project: Heron Lake State Revolving Fund Loans

Sponsor: First National Bank of Brewster
Funding: CWP (Loan), \$444,036 Awarded: 1996
Purpose: Provide funding for best management practices implementation in the Heron Lake Watershed.

1998

Project: Lake Superior Protection Project

Sponsor: Cook County
Funding: CWP (Loan) \$940,000 Awarded: 1998
Purpose: Provide CWP loan funding to stabilize the Lake Superior shoreline in Lake and Cook Counties.

Project: South Zumbro Watershed Partnership

Sponsor: Olmsted County
Funding: CWP (Grant) \$228,510 Awarded: 1998
Purpose: Continue implementing best management practices in the Zumbro River watershed.

Project: Upper Mississippi River Protection Project

Sponsor: City of St. Cloud
Funding: CWP (Grant) \$125,000 Awarded: 1998
Purpose: Identify nonpoint sources of pollution that are threats to drinking water.

1999

Project: Best Management Practices Implementation in the Lake Superior Drainage Area

Sponsor: Minnesota Board of Soil and Water Resources
Funding: Section 319 (Grant) \$30,860 Awarded: 1999
Purpose: To educate landowners, design best management practices, and provide construction oversight for erosion control and water quality improvements in the Lake Superior Basin.

Project: Big Fish and Long Lakes Watershed Protection Project

Sponsor: Sauk River Watershed District
Funding: CWP (Grant) \$33,000 Awarded: 1999
Purpose: Conduct diagnostic study to determine functioning watershed elements.

Project: Big Ten Mississippi Watershed EQIP Project

Sponsor: Morrison County Soil and Water Conservation District
Funding: Section 319 (Grant) \$310,000 Awarded: 1999
Purpose: Water quality improvement through EQIP projects in the Big Ten Mississippi watershed.

Project: Cation/Anion and Isotope Analysis Project

Sponsor: University of Minnesota Department of Geology and Geophysics
Funding: Section 319 (Grant) \$5,219 Awarded: 1999
Purpose: Analyze water samples from MPCA ground and surface water projects for cations, anions and total suspended sediments.

Project: Hastings Area Nitrate Study

Sponsor: Dakota County
Funding: CWP (Grant) \$75,000 Awarded: 1999
Purpose: Determine cause and extent of nitrate contamination in the Prairie du Chien/Jordan aquifer.

Project: Heron Lake Continuation, SRF Loans

Sponsor: First National Bank of Brewster
Funding: CWP (Loan) \$500,000 Awarded: 1999
Purpose: Continue best management practices activities in Heron Lake Watershed (Jackson, Murray and Nobles Counties).

Project: Implementation of Locally Administered Nitrate Testing and Education

Sponsor: Minnesota Department of Agriculture
Funding: Section 319 (Grant) \$100,000 Awarded: 1999
Purpose: Develop equipment distribution network and cooperative training program, provide oversight to local nitrate water testing clinics.

Project: Knife River Watershed EQIP Project

Sponsor: South St. Louis County Soil and Water Conservation District
Funding: Section 319 (Grant) \$78,322 Awarded: 1999
Purpose: Develop forest stewardship plans, stabilization and reduction of active bank erosion, stabilize stream temperature.

Project: Mille Lacs Lake Watershed Management Project

Sponsor: Mille Lacs County
Funding: CWP (Grant) \$170,000 Awarded: 1999
Purpose: Establish baseline database of watershed resources and water quality for subsequent promotion of best management practices.

Project: Minneapolis Chain of Lakes Project

Sponsor: Minneapolis Park and Recreation Board
Funding: Section 319 (Grant) \$100,000 Awarded: 1999
Purpose: Treat Lakes Calhoun and Harriet with alum, measure for effects on lake phosphorus levels by monitoring and modeling.

Project: Nemadji River Basin Project

Sponsor: Carlton County
Funding: 319 (Grant) \$143,500 Awarded: 1999
Purpose: Manage healthy riparian zones, restore damaged areas (stream banks), implement other best management practices.

Project: Olmsted County Intensive Manure Management Program

Sponsor: Olmsted County Extension Service
Funding: Section 319 (Grant) \$73,000 Awarded: 1999
Purpose: Develop manure management plans for livestock producers and work with NRCS to develop EQIP plans.

Project: Osakis Lake Improvement Project, SRF Loans

Sponsor: Sauk River Watershed District
Funding: CWP (Loan) \$400,000 Awarded: 1999
Purpose: Continue SRF loan program for septic systems around Osakis Lake.

Project: Yellow Medicine River Watershed EQIP Project

Sponsor: Lincoln County Soil and Water Conservation District
Funding: Section 319 (Grant) \$190,000 Awarded: 1999
Purpose: Increase implementation of conservation practices that reduce soil erosion and flooding, as well as sedimentation and nutrient loading.

2000

Project: Agricultural and Rural Water Management: On-Farm Demonstrations

Sponsor: Minnesota Department of Agriculture
Funding: Section 319 (Grant) \$200,000 Awarded: 2000
Purpose: Plan and implement four on-farm water management demonstrations; design and target educational materials, workshops and programs.

Project: Ashley and Hoboken Creeks Water Quality Improvement Project

Sponsor: Sauk River Watershed District
Funding: Section 319 (Grant) \$231,500 Awarded: 2000
Purpose: Evaluation of agricultural waste management, best management practice implementation and monitoring for program effectiveness.

Project: Blue Earth River - Watonwan Basin Implementation

Sponsor: Blue Earth River Clean Water Partnership
Funding: CWP (Grant) \$500,000, (Loan) \$2,156,345 Awarded: 2000
Purpose: Provide SRF loans to fund best management practices in Watonwan, Jackson and Cottonwood Counties.

Project: Cottage Grove Nitrate Study

Sponsor: Washington County
Funding: CWP (Grant) \$75,000 Awarded: 2000
Purpose: Identify the sources and causes of nitrate contamination in the Cottage Grove area and develop a basis for improvements.

Project: Cottonwood River Restoration Project

Sponsor: Redwood-Cottonwood River Control Area
Funding: CWP (Grant) \$400,700, (Loan) \$370,000 Awarded: 2000
Purpose: Make the Cottonwood River navigable and canoe accessible. Increase game fish populations, produce and construct trails.

Project: Crow River Watershed Water Quality Enhancement Project

Sponsor: Prairie Country RC&D
Funding: Section 319 (Grant) \$453,790 Awarded: 2000
Purpose: Stabilize seven streambank or lakeshore sites, install 14 agricultural waste systems, install other best management practices to reduce sedimentation.

Project: Digital Soil Data for Management of Wetlands and Rivers

Sponsor: Minnesota Board of Water and Soil Resources
Funding: Section 319 (Grant) \$68,400 Awarded: 2000
Purpose: Develop digitizing lab, establish procedures, secure agreements, obtain NRCS survey certification.

Project: Education to Improve Feedlot, Manure and Nutrient Management

Sponsor: University of Minnesota
Funding: Section 319 (Grant) \$97,000 Awarded: 2000
Purpose: Develop educational materials and present workshops to county feedlot officers and producers on feedlot registration.

Project: Green Lake and Middle Fork Crow River Watershed Project

Sponsor: Kandiyohi County
Funding: CWP (Grant) \$105,000 Awarded: 2000
Purpose: Conduct a resource investigation of the Green Lake and Middle Fork Crow River watershed area.

Project: High Island Creek Watershed Assessment Project

Sponsor: Sibley County
Funding: CWP (Grant) \$23,000 Awarded: 2000
Purpose: Resource assessment of hydrologic, water quality and ecological status of High Island Creek watershed.

Project: Information and Education Coordinator

Sponsor: University of Minnesota Extension Service
Funding: Section 319 (Grant) \$69,500 Awarded: 2000
Purpose: Continue to coordinate and assist water planners and counties with nonpoint source education.

Project: In-Situ Measurement of Denitrification

Sponsor: University of North Dakota
Funding: Section 319 (Grant) \$117,273 Awarded: 2000
Purpose: Determine the capacity of the aquifer to denitrify.

Project: Lake Jessie Watershed Project

Sponsor: Itasca County
Funding: CWP (Grant) \$72,000 Awarded: 2000
Purpose: Implementing best management practices in the Lake Jessie watershed.

Project: Midway River Watershed Restoration Project

Sponsor: South St. Louis County Soil and Water Conservation District
Funding: Section 319 (Grant) \$35,750 Awarded: 2000
Purpose: Identify sites contributing sediment loads, provide information and education, prepare GIS inventory and plant trees to stabilize erosion.

Project: Mississippi River Headwaters Board Nonpoint Source Remediation Effort

Sponsor: Mississippi Headwaters Board
Funding: Section 319 (Grant) \$172,832 Awarded: 2000
Purpose: Develop and implement Whiskey Creek retention pond, stabilize Itasca County shoreline, conduct best management practices workshops.

Project: Pollution Reduction Project, Cannon River Watershed

Sponsor: Cannon River Watershed Partnership
Funding: Section 319 (Grant) \$65,000 Awarded: 2000
Purpose: Implementing best management practices in the Cannon River watershed.

Project: Rice and Koronis Lake Restoration Project

Sponsor: North Fork Crow River Watershed District
Funding: CWP (Grant) \$80,000, (Loan) \$500,000
Awarded: 2000
Purpose: Wetland restoration, feedlot management, general erosion control and agricultural best management practices to improve watershed water quality.

Project: Salem Creek Bacteria Reduction Project

Sponsor: Dodge County Environmental Quality Department
Funding: Section 319 (Grant) \$21,000 Awarded: 2000
Purpose: Target sources of bacteria contamination in Salem Creek through education, outreach, citizen monitoring and one-on-one discussions with landowners.

Project: Training, Technical Assistance and Incentives for Nutrient Management

Sponsor: Minnesota Board of Water and Soil Resources
Funding: Section 319 (Grant) \$30,000 Awarded: 2000
Purpose: Select priority watershed, develop and deliver nutrient management workshops to local staff, develop local nutrient management plans.

Project: Trapper's Run Best Management Practices Cost Share Project

Sponsor: Pope County
Funding: CWP (Grant) \$150,000 Awarded: 2000
Purpose: Identification of noncompliant feedlots, encourage placement of land in CREP, CRP and RIM programs.

Project: Vermillion River Watershed Total Maximum Daily Load (TMDL) Project

Sponsor: Vermillion River WMO
Funding: Section 319 (Grant) \$57,800 Awarded: 2000
Purpose: Identify possible nonpoint sources of fecal coliform bacteria through monitoring, land use assessment and landowner GIS data.

2001

Project: Agnes Henry Winona Clean Lake Monitoring Program

Sponsor: Douglas County
Funding: Section 319 (Grant) \$261,700 Awarded: 2001
Purpose: Construct two stormwater detention ponds, monitor effectiveness.

Project: Big Birch Lake Improvement Project

Sponsor: Sauk River Watershed District
Funding: Section 319 (Grant) \$50,000 Awarded: 2001
Purpose: Implement shoreline best management practices, information and education initiatives, develop erosion control projects, and reestablish shoreline vegetation.

Project: Dalen Coulee Natural Waterway Project

Sponsor: Wild Rice Watershed District
Funding: Section 319 (Grant) \$50,000 Awarded: 2001
Purpose: Construct weirs and natural channels, place adjacent land in set-aside program, complete sediment and debris reduction structures.

Project: Internet Technology to Enhance Communication of Nonpoint Source Information

Sponsor: Minnesota Lakes Association
Funding: Section 319 (Grant) \$10,000 Awarded: 2001
Purpose: Update and enhance computerized bibliography and web for nonpoint-source best management practices information and resources.

Project: Local Nitrate Testing and Education/Outreach

Sponsor: Minnesota Department of Agriculture
Funding: Section 319 (Grant) \$110,000 Awarded: 2001
Purpose: Provide support and technical assistance to LUGs to provide nitrate water testing services and educational outreach.

Project: Local Shoreland Landscape Networks

Sponsor: University of Minnesota Water Resources Center
Funding: Section 319 (Grant) \$48,000 Awarded: 2001
Purpose: Conduct three shoreland workshops, prepare and distribute related shoreland materials, evaluate and report.

Project: Minneapolis Chain of Lakes Project

Sponsor: Minneapolis Parks and Recreation Board
Funding: Section 319 (Grant) \$100,000 Awarded: 2001
Purpose: Apply an alum treatment to Lake Calhoun, prioritize and document its effects on internal loading.

Project: Nemadji River Basin Project

Sponsor: Carlton County
Funding: Section 319 (Grant) \$50,450 Awarded: 2001
Purpose: Assess dams for Red Clay Project, implement four upland wetland demonstrations, and develop a 15-acre riparian restoration.

Project: Red Lake River Restoration and Habitat Improvement Project

Sponsor: City of Crookston
Funding: Section 319 (Grant) \$420,000 Awarded: 2001
Purpose: Develop and implement streambank and bed stabilization practices, remove dam, construct rapids and provide additional bank restoration.

Project: Rush River Assessment Project

Sponsor: Sibley County
Funding: CWP (Grant) \$312,518 Awarded: 2001
Purpose: Develop diagnostic study and implementation plan for Rush River watershed.

Project: Sauk Lake Restoration Project

Sponsor: Sauk River Watershed District
Funding: Section 319 (Grant) \$325,000 Awarded: 2001
Purpose: Apply agricultural conservation practices, develop agriculture best management practices, collect water-quality data, develop shoreland BMPs.

Project: Sauk River Chain of Lakes Watershed Basin Restoration

Sponsor: Sauk River Watershed District
Funding: Section 319 (Grant) \$200,000 Awarded: 2001
Purpose: Provide agricultural waste management assistance, land use best management practices, shoreland restoration, upgrades to septic systems and education.

Project: Targeted Feedlot Runoff Reduction Project

Sponsor: Southeast Minnesota Water Resources Board
Funding: Section 319 (Grant) \$586,080 Awarded: 2001
Purpose: Hire experienced agriculturalist for each of eight counties, prepare information on the open lot agreement, train agriculturalists on best management practices.

Project: Whitewater River Watershed National Monitoring Program -- Paired Watershed Monitoring

Sponsor: Robert Finley
Funding: Section 319 (Grant) \$50,000 Awarded: 2001
Purpose: Evaluate surface and ground-water interactions and detect improvements through use of feedlot management, erosion control, land use best management practices, education and monitoring.

2002

Project: BERBI Nonpoint Source Accelerated Implementation

Sponsor: Blue Earth River Basin Initiative
Funding: CWP (Grant) \$671,000 Awarded: 2002
Purpose: Accelerate the implementation of conservation practices that address nonpoint source pollution within the greater Blue Earth River system in order to meet TMDL and hypoxia-reduction goals.

Project: Best Management Practices Implementation Program

Sponsor: Carnelian Marine Watershed District
Funding: CWP (Grant) \$50,000 Awarded: 2002
Purpose: Manage each lake in the district, corresponding shoreland, and contributing subwatershed to maintain the water quality of existing high quality, high value lakes and improve water quality of lesser quality lakes.

Project: Big Lake Partnership Wastewater Alternatives Study

Sponsor: Fond du Lac Reservation Business Committee
Funding: CWP (Grant) \$16,000 Awarded: 2002
Purpose: Review potential alternatives for wastewater treatment in the Big Lake area, and develop and implement a plan.

Project: Blue Earth River Watershed Project (Lily and Center Creeks)

Sponsor: Martin County Environmental Services
Funding: Section 319 (Grant) \$450,000 (grant), \$300,000 (loan)
Awarded: 2002
Purpose: Reduce sediment and total suspended solids in the Lily and Center Creek subwatersheds, two of the top three found in the Phase I diagnostic report. Center Creek is also a TMDL project for ammonia and bacteria.

Project: Dairy Milkhouse Wastewater Treatment Demonstration

Sponsor: University of Minnesota
Funding: Section 319 (Grant) \$193,000 Awarded: 2002
Purpose: Evaluate and demonstrate effective techniques or systems to reduce environmental pollution contained in dairy milkhouse wastewater and disseminating the results to dairy producers in Minnesota.

Project: East Branch Chippewa River Implementation

Sponsor: Chippewa County
Funding: Section 319 (Grant) \$212,000 Awarded: 2002
Purpose: Implement a plan to reduce high nutrient loads and sediment during the growing season from rainfall-driven runoff that occurs throughout the watershed of this tributary to the Chippewa and, eventually, Minnesota River.

Project: Elk Creek Conservation Tillage Incentive Program

Sponsor: Heron Lake Watershed District
Funding: Section 319 (Grant) \$28,000 Awarded: 2002
Purpose: Reduce major sources of nutrients and total solids to Okabena Creek from Elk Creek and the section that drains the City of Worthington by encouraging use of conservation tillage.

Project: Fond du Lac Nonpoint Source Assessment and Management Plan

Sponsor: Fond du Lac Reservation Business Committee
Funding: CWP (Grant) \$20,000 Awarded: 2002
Purpose: Develop a tribal Nonpoint Source Management Plan that will complement and enhance the state's and other agencies' nonpoint-source objectives.

Project: Grazing Management for Trout Stream Improvement

Sponsor: Minnesota Board of Water and Soil Resources
Funding: Section 319 (Grant) \$139,000 Awarded: 2002
Purpose: Train service providers to develop managed grazing plans and facilitate fencing, livestock watering systems and protection of sensitive areas.

Project: Hawk Creek Watershed Project "Green Corridors"

Sponsor: Renville County
Funding: Section 319 (Grant) \$123,000 Awarded: 2002
Purpose: Reduce erosion and nutrient loading to Middle Hawk Creek and Chetomba Creek, two priority subwatersheds, through enrolling riparian areas into Reinvest in Minnesota, improving agricultural drain-tiling systems, and ditch bank stabilization.

Project: Indian Creek Improvement Project

Sponsor: Blue Earth County
Funding: CWP (Grant) \$82,000 Awarded: 2002
Purpose: Reducing sediment deposition and bacteria levels in this tributary to the Minnesota River that flows through the City of Mankato by developing a plan to address land use, storm water and other strategies.

Project: Lambert Creek Water Quality Improvement Project

Sponsor: Vadnais Lake Area Water Mgmt. Organization
Funding: Section 319 (Grant) \$176,000 Awarded: 2002
Purpose: Restore sheet flow and natural catchment of waters in Lambert Lake, a previously ditched wetland draining to Vadnais Lake, the final impoundment reservoir for the St. Paul Regional Water Services.

Project: Long-term Water Quality Study of Glacial Ridge Surface and Ground Water Systems

Sponsor: Red Lake Watershed District
Funding: CWP (Grant) \$525,000 Awarded: 2002
Purpose: Improve the quality of both surface and ground water, reduce flow and create outstanding wildlife habitat in the Gently River, Burnham Creek, the Polk-Red Lake County Beach Ridge Aquifer and the Red Lake River.

Project: The Lower Maple River Watershed Project

Sponsor: Blue Earth County
Funding: Section 319 \$534,000 (Grant), \$200,000 (Loan)
Awarded: 2002
Purpose: Reduce sediment, phosphorus, nitrate, nitrogen and fecal coliform bacteria in the Maple River by 25 percent.

Project: Manure Management within Ecologically Sensitive Areas in Stearns County

Sponsor: Stearns County SWCD
Funding: Section 319 (Grant) \$490,000 Awarded: 2002
Purpose: Enhance, sustain, conserve and protect county surface and ground-water resources.

Project: Middle Sauk River Rehabilitation Project

Sponsor: Sauk River Watershed District
Funding: CWP \$250,000 (grant), \$500,000 (loan)
Awarded: 2002
Purpose: Address agricultural impacts, including priority feedlots, erosion along ditches, BMPs and rural septic systems.

Project: Northstar NEMO Initiative

Sponsor: Minnesota Erosion Control Association
Funding: Section 319 (Grant) \$125,000 Awarded: 2002
Purpose: Expand nonpoint-source education for local land-use officials, incorporate principles in local plans, and bring together groups interested in land-use and water quality.

Project: Nutrient Reductions to Improve Lake Detroit Water Quality

Sponsor: Pelican River Watershed District
Funding: Section 319 \$50,000 (grant), \$450,000 (loan)
Awarded: 2002
Purpose: Reduce episodes of internal nutrient loading from Rice Lake and adjacent wetlands, promote agricultural BMPs, and reduce biomass nutrient contributions.

Project: Osakis Lake Watershed Management Program

Sponsor: Sauk River Watershed District
Funding: CWP \$365,000 (grant), \$355,000 (loan)
Awarded: 2002
Purpose: Prevent the lake from further degradation and improve or maintain its current condition by addressing water-quality concerns within each subwatershed.

Project: Pond Sediment Characterization

Sponsor: Metropolitan Council Environmental Services
Funding: Section 319 (Grant) \$90,000 Awarded: 2002
Purpose: Characterize pond sediments (quantity and quality) in the Twin Cities metro area and provide that information to agencies with responsibilities for public health and water quality.

Project: Projects for Big Sandy Watershed's Future

Sponsor: Aitkin County Soil and Water Conservation District
Funding: CWP (Grant) \$33,000 Awarded: 2002
Purpose: To improve and protect water quality, wildlife, fisheries and aesthetic concerns in sensitive areas of the watershed.

Project: Red Lake River Restoration and Habitat Improvement Project

Sponsor: City of Crookston
Funding: Section 319 (Grant) \$89,000 Awarded: 2002
Purpose: Correct erosion, reduce sedimentation, improve fish habitat, remove a dam hazard, create recreational opportunities and protect City of Crookston infrastructure.

Project: Rush River Assessment Project

Sponsor: Sibley County
Funding: Section 319 (Grant) \$313,000 Awarded: 2002
Purpose: Develop numerical, measurable and achievable short- and long-term goals for the Rush River.

Project: Sauk Lake Storm and Surface Water Resource Investigation Project

Sponsor: Sauk River Watershed District
Funding: Section 319 (Grant) \$80,000 Awarded: 2002
Purpose: Focus on storm-water runoff and its effects on Sauk Lake with identification of primary sources and BMPs.

Project: Seven-Mile Creek Watershed Project

Sponsor: Brown-Nicollet-Cottonwood Water Quality Board
Funding: CWP \$196,000 (grant), \$550,000 (loan)
Awarded: 2002
Purpose: Reduce nitrate/nitrogen by 40 percent, phosphorus by 40 percent, total suspended solids by 25 percent and fecal coliform bacteria to levels below 200/100 ml.

Project: Small Group Preparation of Nutrient Management Plans

Sponsor: University of Minnesota Extension
Funding: Section 319 (Grant) \$263,000 Awarded: 2002
Purpose: Improve nutrient and manure management practices by increasing the number of management plans and provide clear access to information through a centralized Web site.

Project: Springbrook Subwatershed Implementation Project

Sponsor: City of Fridley
Funding: CWP (Grant) \$201,000 Awarded: 2002
Purpose: Restore the Springbrook wetland ecosystem by reestablishing a 66:33 emergent plant/open water balance.

Project: Targeted Residential Wastewater Treatment Project

Sponsor: Southeast Minnesota Water Resources Board
Funding: Section 319 (Grant) \$530,000 Awarded: 2002
Purpose: Double the average rate at which individual sewage treatment systems are corrected through local efforts across the basin.

Project: Upper Mississippi River Source-Water Protection Project

Sponsor: City of St. Cloud
Funding: Section 319 (Grant) \$243,000 Awarded: 2002
Purpose: Implement source-water protection at a watershed level among several water suppliers who share a common source water resource

2003

Project: Conservation Tillage Demonstration Project

Sponsor: U. of M. Water Resources Center
Funding: Section 319 (Grant) \$17,000 Awarded: 2003
Purpose: To reduce sediment delivery to surface waters and preserve agricultural soils through increased crop residue cover on row-cropped fields of southern Minnesota.

Project: Elk River Watershed Priority Lakes Phosphorus Reduction

Sponsor: Elk River Watershed Association Joint Powers Board
Funding: Section 319 (Grant) \$122,780 Awarded: 2003
Purpose: To implement BMPs in the Elk River Watershed to reduce phosphorus loading.

Project: Evaluating Feedlot Runoff Pollution and Ways to Reduce Impacts

Sponsor: Minnesota Pollution Control Agency
Funding: Section 319 (Grant) \$(no data) Awarded: 2003
Purpose: To update and upgrade the FLEval model for allocation of costs and decision-making.

Project: Hawk Creek Watershed Project TMDL -- "Land of the Lost"

Sponsor: Renville County
Funding: Section 319 \$356,220 Awarded: 2003
Purpose: To reduce concentrations of nutrients and sediment to the 50th percentile of the Western Corn Belt Plains Ecoregion.

Project: Heron Lake Watershed District CWP Project

Sponsor: Heron Lake Watershed District
Funding: CWP (Grant) \$250,000 Awarded: 2003
Purpose: To improve water quality, increase the quality and quantity of waterfowl, restore wetland habitat and reduce flooding.

Project: High Island Implementation Project

Sponsor: Sibley County
Funding: CWP (Grant) \$163,428 Awarded: 2003
Purpose: To implement plants to install BMPs, conduct public education activities and monitor for results.

Project: Improved Livestock Management in Riparian Areas

Sponsor: Minnesota Department of Agriculture
Funding: Section 319 (Grant) \$200,000 Awarded: 2003
Purpose: To examine the effectiveness of managed grazing plans along sensitive riparian stream corridors to improve water quality.

Project: Local Nitrate Testing and Educational Outreach for Private Well Owners

Sponsor: Minnesota Department of Agriculture
Funding: Section 319 (Grant) \$110,000 Awarded: 2003
Purpose: To assist local entities to provide nitrate water-testing services and water-quality outreach on a county level.

Project: Lower Main Stem Chippewa River Subbasin

Sponsor: Chippewa County
Funding: CWP (Grant) \$469,372 Awarded: 2003
Purpose: To achieve water-quality improvements pertinent to the scheduled TMDL study and to address the impairment for dissolved oxygen on the Lower Minnesota River.

Project: Manure Management within Ecologically Sensitive Areas in Stearns County -- Phase II

Sponsor: Stearns County Soil and Water Conservation District
Funding: Section 319 (Grant) \$490,000 Awarded: 2003
Purpose: To address nonpoint water-pollution problems associated with livestock agriculture located in ecologically sensitive areas.

Project: Meeting TMDL Goals with the Minnesota Phosphorus Index

Sponsor: Minnesota Department of Agriculture
Funding: Section 319 (Grant) \$(no data) Awarded: 2003
Purpose: To field test, validate and implement the Minnesota Phosphorus Index in real-world setting, including evaluation of its effectiveness as a tool for prioritizing high-risk fields and farms.

Project: Minnesota Restorable Wetland Inventory

Sponsor: Ducks Unlimited
Funding: Section 319 (Grant) \$(no data) Awarded: 2003
Purpose: To identify and map restorable wetlands in a total of at least six counties and make the data available on an internet-based GIS utility.

Project: Red River Basin Buffer Initiative

Sponsor: Red River Basin Commission
Funding: TMDL (Grant) \$60,000 Awarded: 2003
Purpose: To demonstrate and advance the process of implementing buffers and wetland restorations through a targeted approach.

Project: Reduction of Fecal Coliform Bacteria from Human Sources (TMDL Implementation Project)

Sponsor: Southeast Minnesota Water Resources Board
Funding: Section 319 (Grant) \$530,000 Awarded: 2003
Purpose: To address obstacles to the development of wastewater treatment solutions for unsewered communities and individual residents.

Project: Redwood River Watershed Phosphorus TMDL Compliance Project

Sponsor: Redwood-Cottonwood Rivers Control Area
Funding: Section 319 (Grant) \$166,970 Awarded: 2003
Purpose: To reduce sediment and nutrient loading, expand game fish population, reduce peak flows, and increase public awareness about water-quality issues in the Redwood River Watershed.

Project: Shared Coastal Zone Engineering Assistance

Sponsor: Minnesota Board of Water and Soil Resources
Funding: Section 319 (Grant) \$(no data) Awarded: 2003
Purpose: To share a coastal engineer position for BWSR, the Minnesota Pollution Control Agency and the Department of Natural Resources to implement coastal projects to restore critical areas of Lake Superior.

Project: Snake River Watershed Enhancement Project

Sponsor: Snake River Watershed Management Board
Funding: CWP (Grant) \$250,000 Awarded: 2003
Purpose: To achieve a 25 percent reduction in phosphorus and nitrogen loading and a 15-20 percent reduction in TSS and fecal coliform bacteria loading to the Snake River Watershed.

Project: South Branch Buffalo River Water-Quality Modeling Demonstration Project

Sponsor: Buffalo Red Watershed District
Funding: Section 319 (Grant) \$(no data) Awarded: 2003
Purpose: To develop a comprehensive program of education, citizen involvement, conservation of critical land, BMPs and monitoring.

Project: Straight River Fecal Coliform Reduction Project (A Regional Fecal Coliform TMDL Project)

Sponsor: Cannon River Watershed Partnership
Funding: CWP (Grant) \$256,750 Awarded: 2003
Purpose: To reduce fecal coliform bacterial by up to 20 percent in priority areas.

TMDL Educational Seminar

Sponsor: Heron Lake Watershed District
Funding: Section 319 (Grant) \$(no data) Awarded: 2003
Purpose: To present a seminar on what local groups need to do after a resource in the watershed is listed on the 303(d) list as impaired.

Whitewater River Watershed National Monitoring Program

Sponsor: Whitewater River Joint Powers Board
Funding: Section 319 (Grant) \$(no data) Awarded: 2003
Purpose: To continue monitoring this priority watershed, evaluating data in context of land use, geology, hydrology and other features.

Projects Completed History

(listed by year of award)

Project KEY Section 319 Projects in GREEN CWP Projects in PURPLE

Project: Boy River Recreational Area Diagnostic/ Feasibility Study

Sponsor: Cass County
Funding: CWP (Grant) \$59,862 Awarded: 1989
Purpose: Prevent degradation of resources through identification of nonpoint-source controls and education.

Project: East Side Lake Improvement Project

Sponsor: Mower County
Funding: CWP (Grant) \$39,650 Awarded: 1989
Purpose: Monitor water quality and sediments, improve water quality for recreational and aesthetic purposes.

Project: French Lake Water Quality Improvement Project

Sponsor: Rice County
Funding: CWP (Grant) \$46,779 Awarded: 1989
Purpose: Determine sources and locations of pollutants entering French Lake.

Project: Grove Lake Restoration Project

Sponsor: North Fork Crow River Watershed District
Funding: CWP (Grant) \$18,632 Awarded: 1989
Purpose: Reduce algal blooms and weed growth through wetland restoration and feedlot management.

Project: Lake Bemidji Watershed Study

Sponsor: Beltrami County
Funding: CWP (Grant) \$84,425 Awarded: 1989
Purpose: Protect and improve water quality using urban and forestry best management practices, as well as feedlot and erosion control.

Project: Lake Florence Restoration Project

Sponsor: City of Stewartville
Funding: CWP (Grant) \$30,250 Awarded: 1989
Purpose: Study water-quality problems and determine restorative measures for Lake Florence.

Project: Lake Redwood Monitoring Project

Sponsor: Redwood-Cottonwood Rivers Control Area
Funding: CWP (Grant) \$27,570 Awarded: 1989
Purpose: Prioritize and implement best management practices in subwatersheds of Lake Redwood.

Project: Lambert Creek/Vadnais Lake Water Quality Improvement Project

Sponsor: Vadnais Lake Area Water Management Organization
Funding: CWP (Grant) \$97,000 Awarded: 1989
Purpose: Reduce phosphorus concentrations in watershed and St. Paul reservoir lakes.

Project: Long Lake Diagnostic/Feasibility Study

Sponsor: Minnehaha Creek Watershed District
Funding: CWP (Grant) \$32,485 Awarded: 1989
Purpose: Reduce algal blooms through control of in-lake sediments and watershed best management practices.

Project: Maple Grove Drift Aquifer Protection

Sponsor: City of Maple Grove
Funding: CWP (Grant) \$67,500 Awarded: 1989
Purpose: Municipal wellhead protection, monitoring and development of protection strategy.

Project: Okabena-Ocheda-Bella Diagnostic/ Feasibility Study

Sponsor: City of Worthington
Funding: CWP (Grant) \$57,740 Awarded: 1989
Purpose: Reduce algal blooms, preserve and restore wetlands, protect the water supply aquifer.

Project: Olmsted County Ground-Water and Wellhead Protection Project

Sponsor: Olmsted County
Funding: CWP (Grant) \$180,114 Awarded: 1989
Purpose: Install monitoring network for wellhead protection, develop land use strategies that protect the water supply.

Project: Trout Lake Diagnostic Feasibility Project

Sponsor: City of Coleraine
Funding: CWP (Grant) \$38,700 Awarded: 1989
Purpose: Restore swimming by reducing algal blooms, reintroduce trout, develop a management plan.

Project: Agnes, Henry and Winona Clean Lakes Monitoring Project

Sponsor: Douglas County
Funding: CWP (Grant) \$60,233 Awarded: 1990
Purpose: Monitoring three hypereutrophic lakes, management plan to improve recreational uses.

Project: Buffalo River Aquifer – Buffalo River Monitoring Project

Sponsor: Clay County Health Department
Funding: CWP (Grant) \$69,998 Awarded: 1990
Purpose: Determine water quality and identify potential contamination for the Buffalo River aquifer.

Project: Centerville Peltier Lake Project

Sponsor: Rice Creek Watershed District
Funding: CWP (Grant) \$44,750 Awarded: 1990
Purpose: Control severe algal blooms through wetland restoration and watershed management.

Project: Dept. of Natural Resources Water Coordinator

Sponsor: Minnesota Department of Natural Resources
Funding: Section 319 (Grant) \$50,000 Awarded: 1990
Purpose: Initiate DNR Waters and Forestry 319 work plans and coordination efforts.

Project: Duck Lake Water Quality Improvement Project

Sponsor: Blue Earth County
Funding: CWP (Grant) \$42,840 Awarded: 1990
Purpose: Reduce algal blooms using agricultural and urban best management practices, improve recreational uses.

Project: Ground-Water Analysis of East Brown and West Nicollet Counties

Sponsor: Brown-Nicollet-Cottonwood Water Quality Board
Funding: CWP (Grant) \$50,340 Awarded: 1990
Purpose: Monitor nitrate contamination of wells, focus on nitrogen best management practices implementation.

Project: Lake Sarah Project

Sponsor: Pioneer-Sarah Creek Watershed Management Commission
Funding: CWP (Grant) \$51,830 Awarded: 1990
Purpose: Reduce algal blooms, reduce weeds to improve recreation with BMPs and wetland restoration.

Project: Loon Lake Project

Sponsor: City of Waseca
Funding: CWP (Grant) \$38,000 Awarded: 1990
Purpose: Construct treatment pond to reduce phosphorus and sediment from storm water.

Project: Minneapolis Chain of Lakes

Sponsor: Minneapolis Parks and Recreation Board
Funding: CWP (Grant) \$150,000 Awarded: 1990
Purpose: Improve and maintain recreational uses of Minneapolis Chain (Lakes Cedar through Harriet) using urban best management practices.

Project: Minnesota Nonpoint-Source Implementation Program

Sponsor: University of Minnesota Extension Service
Funding: Section 319 (Grant) \$80,000 Awarded: 1990
Purpose: Development of best management practices, manure management, farmstead and on-site workshops.

Project: Mountain Lake Project

Sponsor: City of Mountain Lake
Funding: CWP (Grant) \$28,885 Awarded: 1990
Purpose: Reduce weed growth for recreational uses through control of agricultural and urban runoff and sediment.

Project: Nonpoint-Source Analysis of the Nemadji River

Sponsor: Carlton County Soil and Water Conservation District
Funding: Section 319 (Grant) \$25,000 Awarded: 1990
Purpose: Analysis of nonpoint-source problems and sources in the Nemadji River Basin.

Project: Nonpoint-Source Analysis of the St. Louis River

Sponsor: South St. Louis County Soil and Water Conservation District
Funding: Section 319 (Grant) \$35,000 Awarded: 1990
Purpose: Analysis of nonpoint-source problems in the tributaries of the St. Louis River

Project: North Shore Management Board Project on Nonconforming Septic Systems

Sponsor: North Shore Management Board
Funding: Section 319 (Grant) \$15,000 Awarded: 1990
Purpose: Assessment of nonconforming septic systems from the Lester to the Encampment Rivers.

Project: Pesticide Management

Sponsor: Minnesota Department of Agriculture
Funding: Section 319 (Grant) \$40,000 Awarded: 1990
Purpose: Management and storage site plans for pesticide collection and disposal.

Project: Schwanz Lake Water Quality Diagnostic Study

Sponsor: City of Eagan
Funding: CWP (Grant) \$29,503 Awarded: 1990
Purpose: Develop solutions for a hypereutrophic lake in a suburban park, using storm-water best management practices education program.

**Project: U. S. Fish and Wildlife Service
Technical Assistance**

Sponsor: U.S. Fish and Wildlife Service
Funding: Section 319 (Grant) \$40,000 Awarded: 1990
Purpose: Provide technical assistance on wetland restoration and development.

Project: Whitewater Watershed Project

Sponsor: Winona State University
Funding: CWP (Grant) \$63,000 Awarded: 1990
Purpose: Improve water and land resources, streams and wetland in a cooperative project with the USDA.

Project: Best Management Practices Field Audits on Forest Land

Sponsor: Minnesota Department of Natural Resources
Funding: Section 319 (Grant) \$20,000 Awarded: 1991
Purpose: Pilot a best management practices field audit for future use.

Project: Best Management Practices on Nonferrous Mine Wastes

Sponsor: Minnesota Department of Natural Resources
Funding: Section 319 (Grant) \$25,000 Awarded: 1991
Purpose: Develop guidance on wetland treatment best management practices to reduce trace metal runoff.

Project: Clear Lake Wellhead Project

Sponsor: City of Clear Lake
Funding: CWP (Grant) \$70,538 Awarded: 1991
Purpose: Investigate high municipal well nitrate-N and develop reduction methods.

Project: Clearwater Nonpoint-Source Study

Sponsor: Red Lake Watershed District
Funding: CWP (Grant) \$142,142 Awarded: 1991
Purpose: Develop best management practices plan to improve river water quality, feedlot management and agricultural practices.

Project: DNR Coordination Effort

Sponsor: Minnesota Department of Natural Resources
Funding: Section 319 (Grant) \$45,850 Awarded: 1991
Purpose: Coordination and implementation of DNR water nonpoint-source efforts.

Project: Farm*A*Syst and Manure Management

Sponsor: University of Minnesota Office of Research and Technology
Funding: Section 319 (Grant) \$39,800 Awarded: 1991
Purpose: Develop Farm*A*Syst displays and brochures, manure management manual and training.

Project: Feedlots in Marshall II

Sponsor: Minnesota Board of Water and Soil Resources
Funding: Section 319 (Grant) \$47,790 Awarded: 1991
Purpose: Provide a feedlot technical assistance specialist in the Marshall Office.

Project: Feedlots in the Marshall Region

Sponsor: Minnesota Board of Water and Soil Resources
Funding: Section 319 (Grant) \$40,000 Awarded: 1991
Purpose: Provide technical assistance to soil and water conservation district staff on addressing high-priority feedlots.

Project: Garvin Brook RCW Project II

Sponsor: Winona County Extension Service
Funding: Section 319 (Grant) \$5,267 Awarded: 1991
Purpose: Continuing well sampling and surveying for nitrogen/nitrates, and providing information to the public.

Project: Great Lakes Erosion Control

Sponsor: South St. Louis County Soil and Water Conservation District
Funding: Section 319 (Grant) \$100,000 Awarded: 1991
Purpose: Investigate methods of limiting erosion in the Lake Superior Basin.

Project: Lake Sarah Project

Sponsor: Pioneer-Sarah Creek Watershed Management Commission
Funding: CWP (Grant) \$50,060 Awarded: 1991
Purpose: Reduce algal blooms, reduce weeds to improve recreation through best management practices and wetland restoration.

Project: Lake Shaokatan Restoration Project

Sponsor: Yellow Medicine River Watershed District
Funding: CWP (Grant) \$48,000 Awarded: 1991
Purpose: Reduce algal and toxic algal blooms, improve fishery and other uses.

Project: Metropolitan Ground-Water Study of Highway Runoff

Sponsor: Metropolitan Council
Funding: Section 319 (Grant) \$39,500 Awarded: 1991
Purpose: Determining ground-water impacts of PAHs from infiltrating highway runoff.

Project: Middle Des Moines Watershed Restoration

Sponsor: Jackson County
Funding: CWP (Grant) \$172,000 Awarded: 1991
Purpose: Stop and reduce degradation of surface waters, Heron Lake and wetlands.

Project: Minneapolis Chain of Lakes

Sponsor: Minneapolis Parks and Recreation Board
Funding: CWP (Grant) \$250,000 Awarded: 1991
Purpose: Improve and maintain recreational uses of the Minneapolis Chain (Cedar through Harriet lakes) through urban best management practices.

Project: Minnesota River Play

Sponsor: Theater for Corporate and Community
Funding: Section 319 (Grant) \$5,000 Awarded: 1991
Purpose: Development of a script for a play on the value and water-quality condition of the Minnesota River.

Project: St. Louis River Phosphorus Abatement

Sponsor: South St. Louis County SWCD
Funding: Section 319 (Grant) \$48,000 Awarded: 1991
Purpose: Investigation of best management practices to reduce phosphorus in the St. Louis River.

Project: Statewide Nonpoint-Source Educational Strategy

Sponsor: Office of Strategic and Long Range Planning
Funding: Section 319 (Grant) \$42,000 Awarded: 1991
Purpose: Develop a statewide nonpoint-source pollution educational strategy

Project: Upper Coon Creek Watershed Water Quality

Sponsor: Coon Creek Watershed District
Funding: CWP (Grant) \$48,000 Awarded: 1991
Purpose: Develop an interactive ground water and surface water project, implement watershed best management practices for water quality.

Project: Wellhead Protection Outreach and Public Information

Sponsor: Minnesota Department of Health
Funding: Section 319 (Grant) \$62,000 Awarded: 1991
Purpose: Develop public information and outreach activities to promote wellhead protection.

Project: Wetlands Restoration in the Upper Minnesota River

Sponsor: Upper Minnesota River Watershed District
Funding: Section 319 (Grant) \$30,000 Awarded: 1991
Purpose: Wetlands restoration throughout the Upper Minnesota River watershed for improved water quality.

Project: Anoka Sand Plain Project

Sponsor: U. S. Geological Survey
Funding: Section 319 (Grant) \$40,000 Awarded: 1992
Purpose: Study of the residence time of recharge water and flux of agricultural chemicals in the unsaturated zone.

Project: Best Management Practices Field Audits on Forest Land II

Sponsor: Minnesota Department of Natural Resources
Funding: Section 319 (Grant) \$38,500 Awarded: 1992
Purpose: Continue forestry best management practices field audits.

Project: Farm*A*Syst and Manure Management Materials

Sponsor: University of Minnesota Office of Research and Technology
Funding: Section 319 (Grant) \$50,000 Awarded: 1992
Purpose: Continuation of Farm*A*Syst Program.

Project: Feedlots in Marshall Project

Sponsor: Minnesota Board of Water and Soil Resources
Funding: Section 319 (Grant) \$52,500 Awarded: 1992
Purpose: Feedlot management training and technical assistance to soil and water conservation districts in the Marshall area.

Project: Garvin Brook RCW Project III

Sponsor: Winona County Extension Service
Funding: Section 319 (Grant) \$9,000 Awarded: 1992
Purpose: Continuation of well sampling and cataloging in Garvin Brook project area.

Project: Garvin Brook RCW Project IV – Well Sampling

Sponsor: Winona County Extension Service
Funding: Section 319 (Grant) \$3,632 Awarded: 1992
Purpose: Continuation of well sampling in the Garvin Brook area.

Project: Growth Management Project

Sponsor: Natural Resources Conservation Service
Funding: Section 319 (Grant) \$40,000 Awarded: 1992
Purpose: Growth management assessment to mitigate nonpoint-source pollution.

Project: Jefferson – German Lakes Water Quality Improvement Project

Sponsor: LeSueur County
Funding: CWP (Grant) \$118,000 Awarded: 1992
Purpose: Resource investigation of Jefferson-German Lakes watershed.

Project: Lake Bemidji Watershed Project

Sponsor: Beltrami County
Funding: CWP (Grant) \$274,000 Awarded: 1992
Purpose: Implementation of Phase II to reduce nonpoint-source pollution to Bemidji and Irving Lakes and the sand plain aquifer.

Project: Minnesota River Water Quality Conference

Sponsor: Sportsmen's Coalition for a Clean Minnesota River
Funding: Section 319 (Grant) \$5,000 Awarded: 1992
Purpose: Sponsorship of citizens interested in improving the water quality in the Minnesota River.

Project: Natural Resources Conservation Service Conservationist Best Management Practices Implementation

Sponsor: Natural Resources Conservation Service
Funding: Section 319 (Grant) \$58,800 Awarded: 1992
Purpose: Assignment of SCS conservationist to MPCA to assist with best management practices implementation.

Project: Nutrient Management Technical Assistance

Sponsor: Minnesota Department of Agriculture
Funding: Section 319 (Grant) \$58,800 Awarded: 1992
Purpose: Provide nutrient management technical assistance to Minnesota farmers.

Project: Pineland Clean Water Project

Sponsor: Pineland Clean Water Project Joint Powers Board
Funding: CWP (Grant) \$145,000 Awarded: 1992
Purpose: Resource investigation of surface and ground-water nonpoint-source pollution in Hubbard and Becker Counties.

Project: St. Louis River Phosphorus Reduction

Sponsor: South St. Louis County SWCD
Funding: Section 319 (Grant) \$48,000 Awarded: 1992
Purpose: Reduce phosphorus nonpoint-source pollution in the St. Louis River.

Project: Wellhead Protection Outreach and Public Information

Sponsor: Minnesota Department of Health
Funding: Section 319 (Grant) \$40,000 Awarded: 1992
Purpose: Continuation of public information and outreach activities promoting wellhead protection.

Project: Anoka Sand Plain Project II

Sponsor: U.S. Geological Survey
Funding: Section 319 (Grant) \$35,000 Awarded: 1993
Purpose: Determine the residence time of water and chemicals in the Anoka Sand Plain area.

Project: Biological Community Monitoring in the Minnesota River Basin

Sponsor: Winona State University
Funding: Section 319 (Grant) \$10,000 Awarded: 1993
Purpose: Conduct a nonpoint-source assessment of biological elements of the Minnesota River.

Project: Brown-Nicollet-Cottonwood Phase II – Ground-Water Implementation

Sponsor: Brown-Nicollet-Cottonwood Water Quality Board
Funding: CWP (Grant) \$264,000 Awarded: 1993
Purpose: Implementation of Phase II ground-water monitoring and improvements.

Project: French Lake Water Quality Improvement Project, Phase II

Sponsor: Rice County Highway Department
Funding: CWP (Grant) \$139,000 Awarded: 1993
Purpose: Implementation stage of the French Lake water-quality improvement project.

Project: Garvin Brook RCW Project V

Sponsor: Winona County Soil and Water Conservation District
Funding: Section 319 (Grant) \$1,074 Awarded: 1993
Purpose: Continuation of the Garvin Brook Clean Water Project to assess ground-water quality.

Project: Growth Management Project II

Sponsor: Natural Resources Conservation Service
Funding: Section 319 (Grant) \$33,750 Awarded: 1993
Purpose: Phase II project to prevent nonpoint-source pollution via growth management strategies.

Project: Information and Education Coordinator

Sponsor: University of Minnesota Extension Service
Funding: Section 319 (Grant) \$92,000 Awarded: 1993
Purpose: Coordinator to provide educational programming to reduce nonpoint-source pollution.

Project: Isotopic and Chemical Analyses of Waters from the Whitewater/Minnesota River Basin

Sponsor: U of M Office of Research and Technology
Funding: Section 319 (Grant) \$10,000 Awarded: 1993
Purpose: Evaluate implemented best management practices and pollutant flow paths, assess BMP timeframe impacts.

Project: Lake Harriet Watershed Assistance Project

Sponsor: Minnesota Department of Agriculture
Funding: Section 319 (Grant) \$50,000 Awarded: 1993
Purpose: Implementation and evaluation of best management practices in the Lake Harriet watershed.

Project: Lake Shaokatan Restoration Project, Phase II

Sponsor: Yellow Medicine River Watershed District
Funding: CWP (Grant) \$240,000 Awarded: 1993
Purpose: Implementation of the Lake Shaokatan project to reduce algal/toxic algal blooms and improve recreational uses.

Project: Lake Shetek Watershed Improvement Project

Sponsor: Murray County
Funding: CWP (Grant) \$131,000 Awarded: 1993
Purpose: Resource investigation of Lake Shetek to assess and develop improvement plan.

Project: Lake Traverse Improvement Project

Sponsor: Bois de Sioux Watershed District
Funding: CWP (Grant) \$70,000 Awarded: 1993
Purpose: Resource investigation of Lake Traverse to assess and develop improvement plan.

Project: Lake Washington Water Quality Improvement Project

Sponsor: Le Sueur County
Funding: CWP (Grant) \$94,000 Awarded: 1993
Purpose: Resource investigation of Lake Washington to assess and develop improvement plan.

Project: Lambert Creek Improvement Project

Sponsor: Vadnais Lake Area Water Management Org.
Funding: CWP (Grant) \$245,000 Awarded: 1993
Purpose: Implementation of Lambert Creek project to reduce phosphorus in its reservoir lake.

Project: Manure Management Program

Sponsor: U of M Office of Research and Technology
Funding: Section 319 (Grant) \$58,000 Awarded: 1993
Purpose: Develop a manure management program to advance the state's nonpoint-source abatement efforts.

Project: Manure Storage Basin Monitoring Project

Sponsor: Morrison County
Funding: Section 319 (Grant) \$2,000 Awarded: 1993
Purpose: Conduct a manure storage basin monitoring project in Morrison County.

Project: NRCS Conservationist Best Management Practices Implementation

Sponsor: Natural Resources Conservation Service
Funding: Section 319 (Grant) \$35,000 Awarded: 1993
Purpose: Continuation of conservation position to work on nonpoint-source issues.

Project: Whitewater Project Land-Use Data

Sponsor: Whitewater River Watershed Joint Powers Board
Funding: Section 319 (Grant) \$6,000 Awarded: 1993
Purpose: Develop land-use data for the Whitewater River watershed.

Project: Whitewater River Monitoring

Sponsor: Whitewater River Watershed Joint Powers Board
Funding: Section 319 (Grant) \$3,600 Awarded: 1993
Purpose: Develop and implement a monitoring plan for the Whitewater River watershed.

Project: Whitewater River Runoff Monitoring Project

Sponsor: Whitewater River Watershed Joint Powers Board
Funding: Section 319 (Grant) \$8,200 Awarded: 1993
Purpose: Monitor runoff from the Whitewater River watershed.

Project: Whitewater Watershed Monitoring -- Finley

Sponsor: Joseph Finley
Funding: Section 319 (Grant) \$300 Awarded: 1993
Purpose: Evaluate effectiveness of best management practices through the use of paired-watershed monitoring.

Project: 1996 Nonpoint Source Conference Management

Sponsor: Southeast Minnesota Water Resources Board
Funding: Section 319 (Grant) \$10,000 Awarded: 1994
Purpose: Provide funding for the 1996 agricultural nonpoint source conference.

Project: Anoka Sand Plain Project III

Sponsor: U.S. Geological Survey
Funding: Section 319 (Grant) \$35,000 Awarded: 1994
Purpose: Continue monitoring activities of the Anoka Sand Plain Project.

Project: Big Sandy Area Lakes Watershed Project

Sponsor: Aitkin County
Funding: CWP (Grant) \$69,000 Awarded: 1994
Purpose: Protect and maintain the beneficial uses of the Big Sandy Lakes watershed.

Project: Boy River CWP Project, Phase II

Sponsor: Cass County
Funding: CWP (Grant) \$38,000 Awarded: 1994
Purpose: Implementation of the improvement plans for the Boy River.

Project: Crystal, Loon, Mills Lakes Water Quality Improvement Project

Sponsor: Blue Earth County
Funding: CWP (Grant) \$93,000 Awarded: 1994
Purpose: Investigate the sources of degradation to Crystal, Loon and Mills Lake.

Project: Fairfax Urban Demonstration Project

Sponsor: Prior Lake-Spring Lake Watershed District
Funding: Section 319 (Grant) \$110,000 Awarded: 1994
Purpose: Implement structural and nonstructural best management practices in an urban watershed.

Project: Feedlot Technical Assistance Project

Sponsor: Minnesota Board of Water and Soil Resources
Funding: Section 319 (Grant) \$63,000 Awarded: 1994
Purpose: Prove statewide feedlot technical support to implement revolving loan fund program.

Project: Great Lakes Erosion Control II

Sponsor: South St. Louis County SWCD
Funding: Section 319 (Grant) \$40,000 Awarded: 1994
Purpose: Develop projects to correct erosion, sedimentation and pollution problems.

Project: Information and Education Coordinator

Sponsor: University of Minnesota Extension Service
Funding: Section 319 (Grant) \$60,000 Awarded: 1994
Purpose: Continue coordination of educational programming to reduce nonpoint-source pollution.

Project: Knife Lake Demonstration Project

Sponsor: Kanabec County
Funding: CWP (Grant) \$31,500 Awarded: 1994
Purpose: To begin implementation of the final phase of rehabilitation for Knife Lake.

Project: Lake Harriet Best Management Practices

Sponsor: Minnesota Department of Agriculture
Funding: Section 319 (Grant) \$50,000 Awarded: 1994
Purpose: Test the implementation and evaluation of urban best management practices in the Lake Harriet Watershed.

Project: Manure Management Program

Sponsor: University of Minnesota Office of Research and Technology
Funding: Section 319 (Grant) \$54,000 Awarded: 1994
Purpose: Continue one-on-one contact with livestock producers for manure management plans.

Project: Minneapolis Chain of Lakes Implementation Project

Sponsor: Minneapolis Parks and Recreation Board
Funding: CWP (Grant) \$812,000 Awarded: 1994
Purpose: Implementation of best management practices for the Minneapolis Chain of Lakes watershed.

Project: Minnesota Lakes Association 1994 Annual Conference

Sponsor: Minnesota Lakes Association
Funding: Section 319 (Grant) \$2,000 Awarded: 1994
Purpose: Cosponsor the 1994 Minnesota Lakes Association annual conference.

Project: Mountain Lake CWP Phase II Project

Sponsor: City of Mountain Lake
Funding: Section 319 (Grant) \$100,000 Awarded: 1994
Purpose: Implementation of improvement plan for Mountain Lake.

Project: Nutrient Management Technical Assistance

Sponsor: Minnesota Department of Agriculture
Funding: Section 319 (Grant) \$95,000 Awarded: 1994
Purpose: Continue nutrient management activities with farmers and expand to agricultural retailers.

Project: Prior Lake Wetlands Project

Sponsor: Prior Lake- Spring Lake Watershed District
Funding: Section 319 (Grant) \$74,000 Awarded: 1994
Purpose: Demonstration of wetland restoration on nonpoint-source pollution in Prior Lake.

Project: Prior Lake - Spring Lake CWP Phase II Project

Sponsor: Prior Lake - Spring Lake Watershed District
Funding: Section 319 (Grant) \$100,000 Awarded: 1994
Purpose: Implementation activities for Prior and Spring Lakes improvement.

Project: Redwood River Clean Water Project

Sponsor: Cotton River Clean Water Partnership
Funding: Section 319 (Grant) \$109,000 Awarded: 1994
Purpose: Implementation of the Redwood River improvement strategies.

Project: Schwanz Lake Clean Water Partnership Phase II Project

Sponsor: City of Eagan
Funding: Section 319 (Grant) \$89,100 Awarded: 1994
Purpose: Implementation of the improvement plan for Schwanz Lake.

Project: Whitewater Watershed Project

Sponsor: Whitewater River Watershed Joint Powers Board
Funding: Section 319 (Grant) \$8,600 Awarded: 1994
Purpose: Water sampling and assessments in the Whitewater River watershed.

Project: Whitewater Watershed Project - U of M

Sponsor: University of Minnesota
Funding: Section 319 (Grant) \$12,700 Awarded: 1994
Purpose: Complete a macroinvertebrate, fishery and habitat assessment in the Whitewater River watershed.

Project: Whitewater Watershed Project Continuation

Sponsor: Whitewater River Watershed Joint Powers Board
Funding: Section 319 (Grant) \$18,000 Awarded: 1994
Purpose: Continuation of water sampling at new sites in the Whitewater River watershed.

Project: 24,000 Scale Hydrology Mapping

Sponsor: St. Cloud State University
Funding: Section 319 (Grant) \$33,000 Awarded: 1995
Purpose: Develop complete stream network using Arcview and other information.

Project: Agricultural Best Management Practices Implementation Program

Sponsor: Minnesota Board of Water and Soil Resources
Funding: Section 319 (Grant) \$261,000 Awarded: 1995
Purpose: Provide technical staffing assistance and support to implement agricultural State Revolving Fund loans.

Project: Anoka Sand Plain Project V

Sponsor: U.S. Geological Survey
Funding: Section 319 (Grant) \$40,000 Awarded: 1995
Purpose: Continuation of monitoring activities in the Anoka Sand Plains area.

Project: Big Birch II SRF Loan Agreements

Sponsor: Sauk River Watershed District
Funding: CWP (Loan) \$403,000 Awarded: 1995
Purpose: Develop loan agreements to assist with best management practices implementation on Big Birch Lake.

Project: Blue Earth River Basin Implementation Framework

Sponsor: Blue Earth River Basin Initiative
Funding: CWP (Grant) \$220,000 Awarded: 1995
Purpose: Identify contributions of pollutants from the Blue Earth River basin and determine strategies for reduction.

Project: Brown-Nicollet-Cottonwood Phase II Implementation Project

Sponsor: Brown-Nicollet-Cottonwood Counties Joint Powers Board
Funding: CWP (Grant) \$129,000; (Loan) \$1,086,000 Awarded: 1995
Purpose: Continue implementation and diagnostic activities begun in earlier phases of the project.

Project: Cation, Anion and Isotope Analysis Project

Sponsor: University of Minnesota Department of Geology/Geophysics
Funding: Section 319 (Grant) \$5,200 Awarded: 1995
Purpose: Analyze cations, anions and isotopes in samples provided by the MPCA.

Project: Cost-Benefit Analysis for Water Quality Regulation and Decisionmaking

Sponsor: Express Interactive Solutions
Funding: Section 319 (Grant) \$15,000 Awarded: 1995
Purpose: Present seminar on cost/benefit analysis for water- quality regulation.

Project: Digital Hydrographic Data Project

Sponsor: U.S. Department of the Interior -- Geological Survey
Funding: Section 319 (Grant) \$68,400 Awarded: 1995
Purpose: To develop and analyze digital hydrographic data in portions of Minnesota.

Project: Fecal Coliform Analysis for the Minnesota River Basin

Sponsor: Mankato State University
Funding: Section 319 (Grant) \$3,000 Awarded: 1995
Purpose: Collect and analyze Minnesota River Basin water samples for fecal coliform, enter into database.

Project: Fish and Invertebrate Communities in the Whitewater River

Sponsor: Whitewater River Watershed Joint Powers Board
Funding: Section 319 (Grant) \$6,700 Awarded: 1995
Purpose: Using GIS technology, examine fish and invertebrate communities in Whitewater River watershed.

Project: Fish Lake Phase II Project

Sponsor: U of M Office of Research and Technology
Funding: CWP (Grant) \$49,000 Awarded: 1995
Purpose: Implement best management practices to reduce phosphorus and nutrient loading to Fish Lake.

Project: French Lake II Loan Agreement

Sponsor: Rice County Highway Department
Funding: CWP (Loan) \$153,000 Awarded: 1995
Purpose: Loan funding to assist with implementation activities for the French Lake Phase II project.

Project: Growth Management Project III, Implementation

Sponsor: Natural Resources Conservation Service
Funding: Section 319 (Grant) \$41,000 Awarded: 1995
Purpose: Implement a land management framework.

Project: Jefferson-German Lakes Water Quality Improvement Project

Sponsor: Le Sueur County
Funding: CWP (Grant) \$96,000 Awarded: 1995
Purpose: To reduce phosphorus loadings to the Jefferson-German Lakes system through best management practices.

Project: Lake Bemidji IIA Watershed Management Project

Sponsor: Beltrami County
Funding: CWP (Grant) \$120,000; (Loan) \$780,000
Awarded: 1995
Purpose: To continue implementation activities begun under the Lake Bemidji Phase II project.

Project: Lake Volney Water Quality Improvement Project

Sponsor: Le Sueur County
Funding: CWP (Grant) \$50,000 Awarded: 1995
Purpose: To determine cause and effect relationships between land use and water quality, develop an improvement plan and implement.

Project: Maplewood Innovative Storm-Water Management Project

Sponsor: City of Maplewood
Funding: Section 319 (Grant) \$63,000 Awarded: 1995
Purpose: Implement storm-water methods and infiltrate storm water using innovative strategies and techniques.

Project: Minnesota River Basin Fecal Coliform Analysis

Sponsor: Mankato State University
Funding: Section 319 (Grant) \$3,000 Awarded: 1995
Purpose: Collect and analyze Minnesota River Basin water samples for fecal coliform, enter in a database.

Project: Mountain Lake Project Phase II

Sponsor: City of Mountain Lake
Funding: Section 319 (Grant) \$100,000 Awarded: 1995
Purpose: Continue implementation activities begun in the Mountain Lake Phase II CWP project.

Project: Phosphate Management in the Blue Earth River Basin

Sponsor: University of Minnesota Office of Research and Technology
Funding: Section 319 (Grant) \$61,000 Awarded: 1995
Purpose: Increase adoption of practices to reduce losses of pollutants to the Blue Earth River watershed.

Project: Pokegama Lake Watershed Project

Sponsor: Pine County Soil and Water Conservation District
Funding: CWP (Grant) \$62,000 Awarded: 1995
Purpose: To develop a comprehensive lake and watershed management plan for Pokegama Lake.

Project: Prior/Spring Lakes Phase II CWP Project

Sponsor: Prior Lake - Spring Lake Watershed District
Funding: Section 319 (Grant) \$77,000 Awarded: 1995
Purpose: Continue implementation activities begun previously.

Project: Redwood River Phase II Clean Water Project

Sponsor: Cotton River Clean Water Partnership
Funding: Section 319 (Grant) \$109,000 Awarded: 1995
Purpose: Continue implementation and best management practices begun in Redwood River Phase II.

Project: Shoreland Vegetation Best Management Practices to Reduce Erosion and Runoff

Sponsor: University of Minnesota
Funding: Section 319 (Grant) \$33,000 Awarded: 1995
Purpose: Demonstrate pollution prevention by the effectiveness of vegetative plantings.

Project: South Zumbro River Watershed Project

Sponsor: Olmsted County
Funding: CWP (Grant) \$135,000 Awarded: 1995
Purpose: Implement best management practices to reduce ground-water and surface-water pollution in the Zumbro River watershed.

Project: Whitewater River Fish and Invertebrates

Sponsor: University of Minnesota Office of Research and Technology
Funding: Section 319 (Grant) \$6,700 Awarded: 1995
Purpose: Using GIS technology, examine the fish and invertebrate communities in the Whitewater River.

Project: Whitewater Watershed Project II

Sponsor: University of Minnesota Office of Research and Technology
Funding: Section 319 (Grant) \$27,000 Awarded: 1995
Purpose: Continue macroinvertebrate fishery and habitat assessments for Whitewater River.

Project: Whitewater Watershed Project: Automated Monitoring

Sponsor: U of M Office of Research and Technology
Funding: Section 319 (Grant) \$7,800 Awarded: 1995
Purpose: Operate and maintain automated monitoring sites near the Whitewater River watershed.

Project: Whitewater Watershed Project: Biosystems and Ag Engineer

Sponsor: University of Minnesota Office of Research and Technology

Funding: Section 319 (Grant) \$5,000 Awarded: 1995

Purpose: Assist operation of five automated monitoring sites, monitor weather station.

Project: Big Sandy Lake Phase II Restoration Plan

Sponsor: Aitkin County

Funding: CWP (Grant) \$200,000 Awarded: 1996

Purpose: Reduce phosphorus loadings and increase participation in conservation practices.

Project: Bioavailable Phosphorus Credit Pay for Pounds

Sponsor: University of Minnesota Office of Research and Technology

Funding: Section 319 (Grant) \$3,000 Awarded: 1996

Purpose: Determine relationships of soils, phosphorus absorption and chemistry in the Minnesota River Basin.

Project: Blue Earth River-Watonwan Basin Implementation Framework

Sponsor: Blue Earth River Clean Water Partnership

Funding: CWP (Grant) \$214,000 Awarded: 1996

Purpose: Identify water-quality contributions of the Watonwan River and determine goals for improvement.

Project: Best Management Practices implementation in the Lake Superior Drainage Basin

Sponsor: Minnesota Board of Water and Soil Resources

Funding: Section 319 (Grant) \$22,000 Awarded: 1996

Purpose: Fund a position to educate, design best management practices, oversee erosion control in Lake Superior.

Project: Brown-Nicollet-Cottonwood Phase IIB Amendment

Sponsor: Brown-Nicollet-Cottonwood Water Quality Board

Funding: CWP (Grant) \$150,000 Awarded: 1996

Purpose: Continue implementation and diagnostic activities begun, further loan funding for BMP implementation.

Project: Cation/Anion and Isotope Analysis Project

Sponsor: University of Minnesota Department of Geology/Geophysics

Funding: Section 319 (Grant) \$7,800 Awarded: 1996

Purpose: Analyze cation, anion and isotopes in samples provided by the MPCA.

Project: Clearwater River State Revolving Loan Water Quality Improvement Project

Sponsor: U of M Office of Research and Technology

Funding: CWP (Loan) \$567,000 Awarded: 1996

Purpose: Provide SRF loan funding for streambank stabilization, public education and best management practices.

Project: Cottonwood River Restoration Project

Sponsor: Cotton River Clean Water Partnership

Funding: CWP (Grant) \$215,000 Awarded: 1996

Purpose: Document factors affecting sediment/nutrient transport, develop an implementation plan.

Project: Create Wetlands over Acid Generating Tailings

Sponsor: Minnesota Department of Natural Resources

Funding: Section 319 (Grant) \$2,500 Awarded: 1996

Purpose: Convert tailings basins into wetlands to protect water quality and create habitat.

Project: Cross Lake Watershed Project -- Pine County

Sponsor: Pine County Soil and Water Conservation District

Funding: CWP (Grant) \$35,000 Awarded: 1996

Purpose: Collect data, determine nutrient/hydrogeologic budgets, promote awareness.

Project: Economic Evaluation -- Pollutant Reduction

Sponsor: U of M Office of Research and Technology

Funding: Section 319 (Grant) \$20,000 Awarded: 1996

Purpose: Develop economic model of decisions to estimate the financial impacts of pollutant reduction on farms and local units of government.

Project: French Lake Phase II Continuation Agreement

Sponsor: Rice County Highway Department

Funding: CWP (Grant) \$62,000 Awarded: 1996

Purpose: Continue best management practices implementation activities begun in French Lake Phase II.

Project: Grass Lake Restoration Project

Sponsor: Kandiyohi County Soil and Water Conservation District

Funding: Section 319 (Grant) \$100,000 Awarded: 1996

Purpose: Acquire conservation easements and restore drained prairie wetland basin.

Project: Grove Lake Restoration Project, Phase II

Sponsor: North Fork Crow River Watershed District

Funding: CWP (Grant) \$40,000; (Loan) \$143,000

Awarded: 1996

Purpose: Reduce or eliminate nutrient loading through implementing best management practices.

Project: Growth Management Project: Sustainable Land-Use Pilots

Sponsor: Natural Resources Conservation Service
Funding: Section 319 (Grant) \$90,000 Awarded: 1996
Purpose: Test planning, principles and goals through sustainable local land-use pilots.

Project: Heron Lake Watershed Restoration Project

Sponsor: Heron Lake Watershed District
Funding: CWP (Grant) \$200,000; (Loan) \$444,000
Awarded: 1996
Purpose: Reduce pollutant loading, improve wildlife habitat, improve lake management.

Project: Jefferson-German II State Revolving Fund Loan #2

Sponsor: Le Sueur County
Funding: CWP (Loan) \$1,050,000 Awarded: 1996
Purpose: Additional loan for continuation of implementation activities.

Project: Lake Harriet Watershed Best Management Practices Project, Phase III

Sponsor: Minnesota Department of Agriculture
Funding: Section 319 (Grant) \$50,000 Awarded: 1996
Purpose: Continue best management practices activities in the Lake Harriet watershed.

Project: Lake Washington Phase II Water Quality Improvement Project

Sponsor: Le Sueur County
Funding: CWP (Grant) \$102,500; (Loan) \$1,251,000
Awarded: 1996
Purpose: Improve watershed coordination, reduce watershed loading, develop plans and educational opportunities.

Project: Miller Creek Restoration Project

Sponsor: U.S. Department of Agriculture
Funding: Section 319 (Grant) \$15,000 Awarded: 1996
Purpose: Riparian tree planting, pond side plantings, reestablish spring and fish habitat.

Project: Miller Creek Watershed Preservation and Restoration Project

Sponsor: Natural Resources Conservation Service
Funding: CWP (Grant) \$18,300 Awarded: 1996
Purpose: Monitor Miller Creek to determine current status and begin implementation of best management practices.

Project: Mountain Lake Phase IIB Watershed Project

Sponsor: City of Mountain Lake
Funding: Section 319 (Grant) \$100,000 Awarded: 1996
Purpose: Continue best management practices activities for the Mountain Lake project.

Project: NALMS 1996 Conference

Sponsor: North American Lake Management Society
Funding: Section 319 (Grant) \$2,500 Awarded: 1996
Purpose: Provide funding to assist with implementation of 1996 NALMS conference.

Project: NRCS Conservationist Best Management Practices Implementation

Sponsor: Natural Resources Conservation Service
Funding: Section 319 (Grant) \$15,000 Awarded: 1996
Purpose: Continue the technical assistance to local governmental units of NRCS conservationist.

Project: Oakdale Wellhead Protection Program

Sponsor: City of Oakdale
Funding: CWP (Grant) \$25,000 Awarded: 1996
Purpose: Delineate wellhead protection plan, assess water supply vulnerability, develop strategies and implement.

Project: On-Farm Manure Management

Sponsor: Kandiyohi County
Funding: Section 319 (Grant) \$37,200 Awarded: 1996
Purpose: Assist farmers and compile information on implementing a manure management strategy.

Project: Osakis Lake Improvement Project

Sponsor: Sauk River Watershed District
Funding: CWP (Grant) \$183,000 Awarded: 1996
Purpose: Define water-quality goals, reduce pollutants, increase public awareness, improve coordination of nonpoint-source water pollution-prevention activities.

Project: Paynesville Wellhead Protection

Sponsor: City of Paynesville
Funding: CWP (Grant) \$12,000 Awarded: 1996
Purpose: Evaluate impacts on Paynesville water supply and develop a plan to protect ground-water resources.

Project: Phosphate Management II in the Blue Earth River Basin

Sponsor: U of M Office of Research and Technology
Funding: Section 319 (Grant) \$60,750 Awarded: 1996
Purpose: Increase adoption of best management practices to lower phosphorus inputs to the Blue Earth River.

Project: Pollution Reduction Payments Project

Sponsor: LeSueur County Soil and Water Conservation District
Funding: Section 319 (Grant) \$26,000 Awarded: 1996
Purpose: Develop grant agreements with land managers for best management practices implementation in LeSueur County.

Project: Prior-Spring Lakes Improvement Project
Sponsor: Prior Lake - Spring Lake Watershed District
Funding: Section 319 (Grant) \$67,200 Awarded: 1996
Purpose: Continue implementation activities begun in earlier Prior-Spring Lakes project.

Project: Redwood River Clean Water Project
Sponsor: Cotton River Clean Water Partnership
Funding: Section 319 (Grant) \$108,790 Awarded: 1996
Purpose: Continue implementation activities for the Redwood Watershed project.

Project: Rice Lake and Koronis Lake Restoration Project
Sponsor: North Fork Crow River Watershed District
Funding: CWP (Grant) \$57,500 Awarded: 1996
Purpose: Reduce phosphorus loadings through best management practices.

Project: Shoreland Vegetation Best Management Practices to Reduce Erosion and Runoff
Sponsor: Aitkin County
Funding: Section 319 (Grant) \$19,200 Awarded: 1996
Purpose: Continue establishing filter strip demonstration plots to protect water quality.

Project: Shoreland Vegetation II Best Management Practices
Sponsor: Aitkin County
Funding: Section 319 (Grant) \$15,000 Awarded: 1996
Purpose: Continuation of shoreland vegetation activities on Big Sandy Lake.

Project: Snake River Project
Sponsor: Snake River Watershed Management Board
Funding: Section 319 (Grant) \$60,000 Awarded: 1996
Purpose: Implement streambank protection, pollution abatement, erosion control and manure management.

Project: Tanner's Lake State Revolving Fund Loan
Sponsor: Ramsey-Washington Metro Watershed District
Funding: CWP (Loan) \$945,000 Awarded: 1996
Purpose: Provide loan assistance for best management practices in the Tanner's Lake watershed.

Project: Water Level Gage Installation Project
Sponsor: Minnesota Department of Natural Resources
Funding: Section 319 (Grant) \$54,000 Awarded: 1996
Purpose: Install and monitor water level gages on bridge piers or freestanding structures.

Project: Wetland Treatment of Mine Drainage
Sponsor: Minnesota Department of Natural Resources
Funding: Section 319 (Grant) \$20,000 Awarded: 1996
Purpose: Study two created wetland systems to determine lifetime for treating mine wastes.

Project: Whitewater Paired Watershed Monitoring
Sponsor: Robert Finley
Funding: Section 319 (Grant) \$1,800 Awarded: 1996
Purpose: Place water quality monitoring stations in two small watersheds to evaluate best management practices effectiveness.

Project: 1998 Minnesota Comprehensive Local Water Planners Conference
Sponsor: West Polk County Soil and Water Conservation District
Funding: Section 319 (Grant) \$3,000 Awarded: 1997
Purpose: Provide partial funding for the 1998 Minnesota Local Water Planners Conference.

Project: Accelerated Water Quality Improvement Program
Sponsor: Stearns County Soil and Water Conservation District
Funding: Section 319 (Grant) \$100,000 Awarded: 1997
Purpose: Provide technical and financial assistance to agriculture in the Sauk River watershed.

Project: Achieving Major Changes in Minor Watersheds
Sponsor: University of Minnesota Office of Research and Technology
Funding: Section 319 (Grant) \$78,000 Awarded: 1997
Purpose: Involve landowners and local units of government in developing tailor-made best management practices implementation plans.

Project: Anoka Sand Plain V -- Ground-Water Dating
Sponsor: U.S. Geological Survey
Funding: Section 319 (Grant) \$35,000 Awarded: 1997
Purpose: Determine the recharge age of the Anoka Sand Plain ground-water and evaluate agricultural effects.

Project: Biological Monitoring in the Whitewater Watershed Project

Sponsor: Winona State University
Funding: Section 319 (Grant) \$20,000 Awarded: 1997
Purpose: Site sampling and assessments of biological indicators in the Whitewater River watershed.

Project: Boy River II State Revolving Fund Loan - Environmental Subordinate Service Districts

Sponsor: Cass County
Funding: CWP (Loan) \$206,000 Awarded: 1997
Purpose: Provide loan funding to local subordinate service districts for sewage treatment.

Project: Comfort Lake Phase I Diagnostic Study

Sponsor: Wyoming Township
Funding: CWP (Grant) \$34,000 Awarded: 1997
Purpose: Monitor Big and Little Comfort Lakes to analyze nutrients.

Project: Designing Storm-Water Best Management Practices Workshop

Sponsor: University of Minnesota
Funding: Section 319 (Grant) \$27,000 Awarded: 1997
Purpose: Develop and present workshops on construction site erosion and storm-water detention.

Project: Horseshoe Chain of Lakes Improvement Project

Sponsor: Sauk River Watershed District
Funding: CWP (Grant) \$80,000; (Loan) \$320,000 Awarded: 1997
Purpose: Extend agricultural efforts, address on-site septic systems and shoreland erosion.

Project: Introduction to ArcView Course for MPCA Employees

Sponsor: Rowekamp Associates Inc.
Funding: Section 319 (Grant) \$8,800 Awarded: 1997
Purpose: Provide introduction to ArcView computer training for MPCA employees.

Project: Lake Sallie Restoration

Sponsor: Pelican River Watershed District
Funding: CWP (Grant) \$54,000; (Loan) \$385,000 Awarded: 1997
Purpose: Develop ecosystem management approach with alum treatment and biomanipulation.

Project: Long Prairie River Monitoring Project

Sponsor: Todd County Soil and Water Conservation District
Funding: CWP (Grant) \$35,000 Awarded: 1997
Purpose: Group efforts to depict water quality conditions and to maintain and improve water quality.

Project: Mountain Lake Watershed Project IV

Sponsor: City of Mountain Lake
Funding: Section 319 (Grant) \$50,000 Awarded: 1997
Purpose: Continue best management practices implementation activities.

Project: Old Sod Farm Wetland Enhancement and Storm-Water Management

Sponsor: Ramsey-Washington Metro Watershed District
Funding: Section 319 (Grant) \$40,400 Awarded: 1997
Purpose: Design/develop wetland learning center, improve storm-water quality, increase diversion of storm water.

Project: On-Farm Manure Management II

Sponsor: Minnesota Department of Agriculture
Funding: Section 319 (Grant) \$37,000 Awarded: 1997
Purpose: Continue educational program with livestock producers for precise manure management strategies.

Project: Pokegama/Cross Lake Erosion Project

Sponsor: Pine County Soil and Water Conservation District
Funding: Section 319 (Grant) \$72,000 Awarded: 1997
Purpose: Implement sediment control structures for ravines to Pokegama and Cross Lakes.

Project: Redwood River Watershed Project IV

Sponsor: Cotton River Clean Water Partnership
Funding: Section 319 (Grant) \$122,000 Awarded: 1997
Purpose: Continue implementation activities in the Redwood River watershed.

Project: Rice Lake and Koronis Lake Restoration Project

Sponsor: North Fork Crow River Watershed District
Funding: Section 319 (Grant) \$36,000 Awarded: 1997
Purpose: Develop, implement best management practices for the watershed, educate landowners.

Project: Shoreland Vegetation III - Best Management Practices to Reduce Erosion and Runoff

Sponsor: U of M Department of Horticultural Science
Funding: Section 319 (Grant) \$30,000 Awarded: 1997
Purpose: Continue reestablishing native vegetation to reduce erosion and runoff, evaluate impacts.

Project: Springbrook Subwatershed Resource Investigation Project

Sponsor: City of Fridley
Funding: CWP (Grant) \$30,000 Awarded: 1997
Purpose: Investigate and monitor water quality and land use, identify pollutants and develop best management practices.

Project: Tillage Transect Program

Sponsor: Minnesota Board of Water and Soil Resources
Funding: Section 319 (Grant) \$94,000 Awarded: 1997
Purpose: Establish baseline data on crop residue management and reduce soil erosion and sedimentation.

Project: Whitewater Watershed Biological Monitoring

Sponsor: Winona State University
Funding: Section 319 (Grant) \$30,000 Awarded: 1997
Purpose: Analyze the biological monitoring data collected for the Whitewater Watershed Project.

Project: Workshops for Designing Storm-Water Management Practices

Sponsor: University of Minnesota
Funding: Section 319 (Grant) \$27,000 Awarded: 1997
Purpose: Develop and present workshops on construction site erosion and storm-water detention.

Project: 1999 State Water Planning Conference

Sponsor: Southeast Minnesota Water Resources Board
Funding: Section 319 (Grant) \$3,000 Awarded: 1998
Purpose: Provide funds for the 1999 Minnesota State Water Planning Conference June 22-23, 1999.

Project: Alternative Wastewater Demonstration Project

Sponsor: Beltrami County SWCD
Funding: Section 319 (Grant) \$65,000 Awarded: 1998
Purpose: Replace 19 septic systems with a community activated sludge treatment system.

Project: Benefits and Impacts of Chemical Treatment of Lake Inflows

Sponsor: U of M Office of Research and Technology
Funding: Section 319 (Grant) \$40,000 Awarded: 1998
Purpose: Evaluate effectiveness of alum treatment for phosphorus removal at three sites.

Project: Bioavailable Phosphorus Credits in Pay for Pounds

Sponsor: U of M Office of Research and Technology
Funding: Section 319 (Grant) \$17,400 Awarded: 1998
Purpose: Determine relationships between soils, phosphorus and chemistry in the Minnesota River Basin.

Project: Best Management Practices Implementation in Lake Superior Drainage

Sponsor: Minnesota Board of Water and Soil Resources
Funding: Section 319 (Grant) \$21,200 Awarded: 1998
Purpose: Continue funding of half-time engineer in the BWSR Duluth Office.

Project: Buffering Drainage Ditches in Iosco Creek Watershed

Sponsor: Blue Earth River Basin Initiative
Funding: Section 319 (Grant) \$44,000 Awarded: 1998
Purpose: Establish vegetative buffer in Iosco Creek watershed drainage ditches.

Project: Cold Spring Wellhead Protection Project

Sponsor: City of Cold Spring
Funding: CWP (Grant) \$100,620 Awarded: 1998
Purpose: To develop a joint Wellhead Protection Plan taking in six public water suppliers.

Project: Environmental Protection through Shoreline Stewardship

Sponsor: Beltrami County SWCD
Funding: Section 319 (Grant) \$27,000 Awarded: 1998
Purpose: Provide information and education on the effects of traditional landscaping on water quality.

Project: Ground Water Disinfection Rule Requirements Implementation

Sponsor: Minnesota Department of Health
Funding: Section 319 (Grant) \$85,000 Awarded: 1998
Purpose: Conduct detailed age dating of public well water under water disinfection rule.

Project: Improved Implementation of Manure-Testing Practices on Minnesota Farms

Sponsor: Minnesota Department of Agriculture
Funding: Section 319 (Grant) \$17,100 Awarded: 1998
Purpose: To provide direct assistance and information to more than 106 Minnesota livestock producers for implementing manure-testing practices.

Project: Information and Education Coordinator

Sponsor: Minnesota Extension Service
Funding: Section 319 (Grant) \$66,000 Awarded: 1998
Purpose: Continue funding for nonpoint-source information and education coordinator.

Project: Lake Superior Shoreline Protection Program

Sponsor: Cook County
Funding: Section 319 (Grant) \$60,000 Awarded: 1998
Purpose: Work with landowners to solve erosion and sedimentation problems on the north shore of Lake Superior.

Project: Lake Volney Improvement Project, Phase II

Sponsor: Le Sueur County
Funding: CWP (Grant) \$175,000; (Loan) \$712,000 Awarded: 1998
Purpose: Improve watershed coordination, reduce lake loading, education for landowners, evaluate impacts.

Project: Lakeshed Erosion Control Cost-Share Program

Sponsor: Minnesota Board of Water and Soil Resources
Funding: Section 319 (Grant) \$50,000 Awarded: 1998
Purpose: Provide funds to demonstrate and apply lower-cost land treatment practices to sediment.

Project: LARS-LUG Annual Reporting System

Sponsor: Minnesota Board of Water and Soil Resources
Funding: Section 319 (Grant) \$91,000 Awarded: 1998
Purpose: Provide funds for LARS enhancements, information to local government.

Project: Minneapolis Chain of Lakes Continuation

Sponsor: Minneapolis Parks and Recreation Board
Funding: CWP (Grant) \$250,000; (Loan) \$1,000,000
Awarded: 1998
Purpose: Continue implementation activities begun in Minneapolis Chain of Lakes Phase II.

Project: Payment for Pounds Phosphorus Study -- Bioavailable Phosphorus Credits

Sponsor: U. of M. Department of Soil, Water and Climate
Funding: Section 319 (Grant) \$30,940 Awarded: 1998
Purpose: To determine the impact of Minnesota River soil characteristics and phosphorus absorption, the saturation point for phosphorus, and the bioavailability of phosphorus.

Project: Pollution Reduction Payments Projects

Sponsor: LeSueur County Soil and Water Conservation District
Funding: Section 319 (Grant) \$33,000 Awarded: 1998
Purpose: Implement the Pollution Reduction Payments Project.

Project: Redwood River Clean Water Project, Year 5

Sponsor: Cotton River Clean Water Partnership
Funding: Section 319 (Grant) \$122,000 Awarded: 1998
Purpose: Continue best management practices activities in the Redwood River watershed.

Project: South Branch Root River Watershed Phase I Diagnostic Study

Sponsor: Fillmore County
Funding: CWP (Grant) \$61,500 Awarded: 1998
Purpose: To complete a diagnostic study of the South Branch of the Root River.

Project: Square Lake Phase I Resource Investigation

Sponsor: Washington Conservation District
Funding: CWP (Grant) \$56,000 Awarded: 1998
Purpose: To find out how vulnerable Square Lake might be to pollution and develop protection strategies to maintain its conditions.

Project: Wastewater Facilitator

Sponsor: Blue Earth River Basin Initiative
Funding: Section 319 (Grant) \$92,000 Awarded: 1998
Purpose: Provide facilitator to work in Blue Earth watershed on wastewater problems.

Project: Whitewater Analysis of Biological Monitoring

Sponsor: Winona State University
Funding: Section 319 (Grant) \$50,000 Awarded: 1998
Purpose: Analyze prior biological monitoring data collected for the Whitewater Watershed Project.

Project: Whitewater River Watershed Project, Phase II

Sponsor: Whitewater River Joint Powers Board
Funding: CWP (Grant) \$218,000 Awarded: 1998
Purpose: To provide financial assistance, technical assistance, education, monitoring and incentives for landowners to reduce erosion, increase forest cover and improve water quality.

Project: Accelerated Water-Quality Improvement Program in Stearns County, Phase II

Sponsor: Stearns County Soil and Water Conservation District
Funding: Section 319 (Grant) \$200,000 Awarded: 1999
Purpose: To lower the total phosphorus concentration to the ecoregion average for tributaries of the Sauk River.

Project: Evaluation of the Potential Benefits and Adverse Effects of Alum Treatment to Remove Phosphorus from Lake Inflows

Sponsor: U. of M. Water Resources Center
Funding: Section 319 (Grant) \$81,781 Awarded: 1999
Purpose: To evaluate factors that can affect the success of alum treatment, including treatment design elements, chemical composition of lake inflows and lake characteristics.

Project: Grazing Land Improvement Project

Sponsor: Board of Water and Soil Resources
Funding: Section 319 (Grant) \$61,200 Awarded: 1999
Purpose: To assist landowners and operators to develop and maintain managed grazing systems and to provide technical support in pasture management.

Project: Lake Francis Diagnostic - Feasibility Study

Sponsor: Lake Francis Improvement Association
Funding: CWP (Grant) \$24,150 Awarded: 1999
Purpose: To develop a comprehensive strategy for reducing algal blooms and increasing clarity and fishery potential.

Project: Long/Spring Lakes Shoreline Stabilization Project

Sponsor: Dassel Area Environmental Association
Funding: CWP (Grant) \$26,689 Awarded: 1999
Purpose: To reduce shoreline erosion and nonpoint-source nutrient loading to the lakes.

Project: River-Friendly Farmer Program Expansion

Sponsor: U. of M. Extension Service
Funding: Section 319 (Grant) \$70,000 Awarded: 1999
Purpose: To provide recognition of farmers whose best management practices help maintain and improve water quality in Minnesota's rivers.

Project: Rush Lake Phase I Resource Investigation

Sponsor: Rush Lake Improvement Association
Funding: CWP (Grant) \$70,000 Awarded: 1999
Purpose: To determine the causes of the lakes' deteriorating water quality and design a program to improve the lakes.

Project: Small Community Wastewater Solutions

Sponsor: U. of M. Extension Service
Funding: Section 319 (Grant) \$11,750 Awarded: 1999
Purpose: To prepare a common-sense guidebook for communities seeking practical solutions to wastewater problems.

Project: Tillage Best Management Practices for Water-Quality Protection in Southeastern Minnesota

Sponsor: U. of M. Extension Service
Funding: Section 319 (Grant) \$44,000 Awarded: 1999
Purpose: To develop a publication to assist landowners with erosion control and other best management practices.

Project: Whitewater River Watershed National Monitoring Program

Sponsor: Minnesota Pollution Control Agency
Funding: Section 319 (Grant) \$48,780 Awarded: 1999
Purpose: To provide information required under the National Monitoring Program and provide long-term monitoring for evaluation of pollutant problems and potential solutions.

Project: Achieving Major Change in Minor Watersheds

Sponsor: University of Minnesota Extension Service
Funding: Section 319 (Grant) \$72,173 Awarded: 2000
Purpose: To achieve widespread adoption of land-use BMPs for four minor watersheds.

Project: Construction Site Erosion-Control Ordinance Implementation

Sponsor: Minnesota Erosion Control Association
Funding: Section 319 (Grant) \$60,000 Awarded: 2000
Purpose: To provide education and training to key groups, promoting expertise in erosion-control measures, and improving implementation of state programs and local ordinances.

Project: Minnesota River Basin: Promoting Best Management Practices

Sponsor: University of Minnesota Office of Technology and Research
Funding: Section 319 (Grant) \$55,200 Awarded: 2000
Purpose: Develop a resource guide that will combine the assessment and information aspects of the Cropland Assessment System.

Project: Shoreland Reclamation for Improved Water Quality

Sponsor: Washington County SWCD
Funding: Section 319 (Grant) \$23,250 Awarded: 2000
Purpose: To enlist landowners in reclaiming shoreline areas through best management practices.

Project: Upland Water Retention for Improving Drainage and Water Quality Video

Sponsor: Minnesota Pollution Control Agency
Funding: Section 319 (Grant) \$10,400 Awarded: 2000
Purpose: To prepare a 17-minute video on the impacts of drain tiling on both water retention and water quality.

Project: Redwood River Clean Water Project

Sponsor: Redwood-Cottonwood Rivers Control Area
Funding: Section 319 (Grant) \$50,000 Awarded: 2002
Purpose: To reduce sediments and nutrients, expand game fishery habitat and reduce peak flow.



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