MINNESOTA

NONPOINT SOURCE POLLUTION

MANAGEMENT PROGRAM

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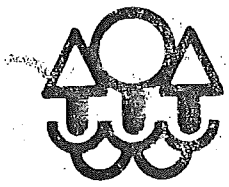

Minnesota Pollution Control Agency

Division of Water Quality

Preface

This document represents the second generation of assessment and planning for abatement of the nonpoint source pollution problem in Minnesota. As such, it builds upon and replaces the 1980 Water Quality Management Plan (208 Plan). This document is in two parts: 1) the Assessment Report and 2) the Management Program. This document was prepared by the State of Minnesota pursuant to Nonpoint Source Guidance published December 1987 by the U.S. Environmental Protection Agency and United States Code, title 33, section 1329.

MINNESOTA NPS MANAGEMENT PROGRAM

I. INTRODUCTION

RECOGNIZING NONPOINT SOURCE POLLUTION

In Minnesota, it is well known that nonpoint sources of pollution degrade water quality. In fact, water quality monitoring of rivers has shown that the majority of impaired uses are the result of nonpoint sources or a combination of point and nonpoint sources. The need for effective programs to control nonpoint sources of pollution is clear if Minnesota is to achieve its water quality goal of maintaining the chemical, physical and biological integrity of the State's waters. The Minnesota Pollution Control Agency (MPCA) has followed an extensive process of development in working towards this goal. This same process also assists the State in meeting the requirements for Section 319 of the 1987 Clean Water Act.

In 1967, the Minnesota Legislature established the Minnesota Pollution Control Agency, "To meet the variety and complexity of problems relating to water, air and land pollution in areas of the state affected thereby, and to achieve a reasonable degree of purity of water, air and land resources of the state consistent with the maximum enjoyment and uses . . ." Minnesota Statutes Chapter 116. In conjunction with the State's effort, a major national effort to combat water pollution began with the passage of the federal Clean Water Act of 1972. The basic goal of the Clean Water Act was to "restore and maintain the chemical, physical, and biological integrity of the nation's waters." This is a goal the State of Minnesota is committed to achieving and maintaining. This legislation created a variety of programs to study and regulate sources of water pollution. Most of the responsibility for carrying out these programs was assigned to state governments, under supervision of the federal Environmental Protection Agency (EPA).

Since passage of the legislation, MPCA and EPA have concentrated their water cleanup efforts on so called "point sources" of pollution: discharges of wastewater, usually via pipes, from municipal sewage systems and from industrial or commercial operations. In the mid-1970s, however, the Minnesota Pollution Control Agency (MPCA), in cooperation with state and federal agencies and local officials, initiated the Water Quality Management Planning effort required under Section 208 of the Clean Water Act. The purpose of the planning effort was to identify significant water quality problems due to nonpoint sources of water pollution and set forth effective programs to correct those problems.

A number of significant developments have occurred and impacted the original intent of the 1980 Minnesota Water Quality Management Plan. Fiscal, administrative and legislative constraints limited its implementation. Recognizing the seriousness of the nonpoint source (NPS) pollution problem, the Energy/Environment/Resources subcabinet approved the charge to the NPS Issues Team, "to develop recommendations for a state and local program to protect and improve the water quality of Minnesota's lakes, rivers and ground water through control of nonpoint sources of pollution." To accomplish this charge, the NPS Issues Team brought many of the agencies with responsibility and authorities for addressing the problem together to review past state and federal program recommendations, including the 1980 Water Quality Management Plan (208), current programs and activities, and provide current recommendations for a comprehensive program to solve water quality problems resulting from nonpoint source pollution.

The NPS Issues Team recommended a comprehensive water quality program be implemented through a variety of existing programs and a new program, the Clean Water Partnership (CWP) be established to protect and improve surface and ground water quality in Minnesota by providing state financial and technical assistance to local units of government. In 1987, the Clean Water Partnership was established by the Minnesota Legislature (Minnesota Statutes Sections 115.091 to 115.103).

Many of the activities, resources and accomplishments of the 208 planning process, the interagency NPS Issues Team, and the Clean Water Partnership provided the basis for Minnesota's NPS assessment for Section 319 of the 1987 Clean Water Act. This includes advisory assistance provided by the project Coordination Team, an advisory group made up of seventeen federal, state, and local agencies established for the Clean Water Partnership Program and a definition of nonpoint source.

Defining nonpoint source is, itself, a difficult problem because of the complex nature of the nonpoint source issue. For activities related to Section 319 of the 1987 Clean Water Act, a nonpoint source is defined as "a land management activity or land use activity that contributes or may contribute to ground and surface water pollution as a result of runoff, seepage or percolation and that is not defined as a point source in section 115.01, subdivision 15. Nonpoint sources include, but are not limited to rural and urban land management activities and land use activities and specialty land use activities such as transportation." (Section 115.093, Subdivision 6.) As a practical measure for Section 319, Minnesota considers:

agricultural runoff,
animal feedlots,
pesticide and fertilizer application,
urban runoff/infiltration,
construction,
on-site sewage systems,
hydrologic modifications,
forestry,
mining runoff,
highway runoff, and
special erosion problems

as nonpoint source, but excludes inplace pollutants and atmospheric acid deposition for which programs already exist.

In addition to the information provided by the above activities, the Minnesota NPS assessment requires specific information available from local resource management groups. This specific information was sought and obtained through a series of public participation meetings conducted as part of the development of Minnesota's Ground Water Protection Strategy and through a survey of over 350 local resource management groups.

In addition to the information provided by the above activities, the Minnesota NPS Management Program relies heavily on information gathered through a series of public participation meetings conducted as part of the development of the Rules for administration of the Clean Water Partnership Program (MN Rules chp. 7076) and information supplied by representatives of the:

Department of Health
Metropolitan Council
Board of Water and Soil Resources
Department of Agriculture
USDA - Soil Conservation Service
Minnesota Extension Service
State Planning Agency
Department of Transportation
Department of Natural Resources
Association of Minnesota Counties
League of Minnesota Cities
Minnesota Association of Townships
U.S. Army Corps of Engineers
U.S. Fish and Wildlife Service
USDA - Agricultural Stabilization and Conservation Service
Agriculture Experiment Station
Minnesota Geological Survey
U.S. Environmental Protection Agency
Minnesota Pollution Control Agency

II. PROCESS FOR DEFINING BEST MANAGEMENT PRACTICES

In order to effectively address nonpoint source pollution, it is necessary to identify those management solutions which are effective and useful as part of the statewide management program. To complete this process, the Minnesota Pollution Control Agency, with funding through the Legislative Commission on Minnesota Resources, established an intergovernmental personnel agreement with the USDA-Soil Conservation Service to develop a process to identify best management practices and prepare handbooks to catalog best management practices (BMPs) for four land uses; urban, agricultural, forestry and mining. Completion of these handbooks is scheduled for the summer of 1989.

The definition of a BMP to be used for the identification process is, "practices, techniques, and measures, that prevent or reduce water pollution from nonpoint sources by using the most effective and practicable means of achieving water quality goals. Best management practices include, but are not limited to, official controls, structural and nonstructural controls, and operation and maintenance procedures." Because of the very site specific nature of BMPs, the MPCA will not attempt to specify a single practice or set of practices to be used in a given situation. The approach taken is to identify a process where a resource manager can determine what practices are needed for their particular land use.

The BMPs included in the handbooks are based upon existing technology. Where necessary, practices are being tailored to conditions in Minnesota. As technology changes, the BMP handbooks will be updated.

These handbooks will be used as an informational and educational tool for Minnesota's nonpoint source pollution control program. Funding under Minnesota's Nonpoint Source Management Program will not be restricted to BMPs identified in these handbooks. The BMP identification process in the handbooks will be used for this Program.

The BMP Identification Process

The first step in the process is to identify the impacted water body and set reasonable goals for water quality. Water quality goals will vary from one part of the state to another. For example, a reasonable water quality goal in the Northern lakes and Forest ecoregion of Minnesota would probably not be attainable in the Western Cornbelt Plains ecoregion.

The second step is to identify nonpoint source pollutants responsible for water quality problems and the delivery processes (availability, detachment, transport). This is an important process to understand because some pollutants are best controlled at certain stages. For example, sediment is available for loss from soil and little can be done to reduce this in most situations. Sediment is best controlled by preventing detachment with erosion control practices. Nitrogen on the other hand is best controlled at the availability stage and is difficult to control after that.

The third step is to identify BMPs that can be used to prevent pollutants from entering a waterbody. The term "BMP" insinuates that there is one practice that will solve a particular problem. However, if the previously mentioned definition of BMP is reviewed it is apparent that it involves a combination of

practices or a "system." This "system" approach using several individual practices will be stressed.

In selecting the practices that constitute a BMP, there are many factors that must be considered other than water quality alone. The practice selection considerations include, but are not limited to, the following:

- Will the BMP achieve the desired level of water quality?
- Will the BMP solve a water quality problem or shift it to another waterbody? For all surface water BMPs, what are the effects on ground water?
- Are the costs such that a reasonable economic return can be expected from the land use where applicable? This includes both implementation costs as well as operation and maintenance costs.
- Does the practice meet the land users needs and operation?
- Is the practice well suited to the individual site?
- Are there proven standards or criteria with known results?
- Are there detrimental effects to the environment such as destruction of wildlife habitat, etc.
- If a practice is an educational program, will it be implemented so it is effective?
- If a practice is a local official control, will uniform enforcement be implemented along with it?

list of best management practices which will be used to reduce pollutant loadings resulting from nonpoint sources of pollution are summarized in Table 1.

TABLE 1.

BEST MANAGEMENT PRACTICES	Agricultural Crop Production	Animal Waste Management	Pesticide & Fertilizer Application	Urban/Runoff/ Infiltration	Construction	On-Site Wastewater Treatment	Hydromodification	Silviculture	Mining	Highway De-Icing Chemicals	Special Erosion Problems	Land Disposal	Atmospheric Deposition	Inplace Pollutants
Access Road	x				x									
Agricultural Waste Storage Facility		x												
Clean Water Collection Facilities		x												
Conservation Tillage	x													
Constructed Wetlands	x			x			x	x	x				x	x
Controur Farming	x													
Cover Crop	x							x	x					
Diversion	x			x	x			x	x		x			
Extended Detention Pond				x			x						x	x
Farm Pond	x						x							
Field Border	x							x						
Field Windbreak	x													
Filter Strip	x	x		x	x			x	x			x	x	
Flotation Silt Curtain					x		x							

TABLE 1. Continued

BEST MANAGEMENT PRACTICES	Agricultural Crop Production	Animal Waste Management	Pesticide & Fertilizer Application	Urban/Runoff/ Infiltration	Construction	On-Site Wastewater Treatment	Hydromodification	Silviculture	Mining	Highway De-Icing Chemicals	Special Erosion Problems	Land Disposal	Atmospheric Deposition	Inplace Pollutants
Grade Stabilization Structure	x			x	x		x	x	x		x			
Grass Waterway	x			x	x		x	x	x		x			x
Holding Pond		x												
Infiltration Basin				x			x						x	
Infiltration Trench				x			x						x	
Integraded Pest Management	x		x					x						
Irrigation Water Management	x		x											
Lakeshore Protection											x			
Land Use Controls				x	x	x	x		x					
Level Spreader	x			x	x									
Limiting Disturbed Areas					x			x	x					
Livestock Exclusion	x	x									x			
Lot Benching					x									
Mulching					x			x	x					
Nutrient Management	x	x	x	x				x						
Onsite Sewage Disposal Systems														
Outlet Protection				x	x		x	x	x		x			
Pasture and Hayland Management	x													
Permanent Seeding	x			x	x			x	x		x			x
Pesticide Management	x		x	x				x						
Porus Pavement				x			x						x	
Proper Community Planning				x			x						x	x
Proper Disposal of Household Haz. Waste				x	x	x						x		x
Proper Land Application of Septage							x					x		
Proper Salt Application				x						x				
Proper Salt Storage				x						x				
Proper Septic System Design						x						x		
Sealing Abandoned Wells	x	x	x	x	x				x			x		x
Silt Fence					x		x		x					
Sinkhole Protection	x		x	x								x		x
Stockpile Capping									x					x
Storm Drain Inlet Protection					x		x							
Stream Crossings	x						x	x	x		x			
Streambank Protection							x				x			
Street Sweeping				x										
Strip Cropping	x													
Temporary Diversion					x		x	x	x					
Temporary Rock Construction Entrance					x			x	x					
Temporary Row Diversion					x			x						
Temporary Sediment Basin					x			x	x					
Temporary Sediment Trap					x			x	x					
Temporary Seeding					x			x	x					
Temporary Slope Drain					x		x		x					
Temporary Stream Crossing					x		x	x	x					
Terrace	x													x
Water and Sediment Control Basin	x								x		x			x
Water Quality Inlets				x			x						x	
Wet Detention Pond				x			x		x				x	x
Wetland Protection	x			x			x	x	x				x	x

The Handbooks

The practices that are included in the handbooks will be evaluated based upon a very broad consideration of the factors for BMP selection. It would be impossible to try to make detailed evaluations for all situations. The practices will be described in such a manner that the planners can make their own decisions on practice suitability.

Each handbook will be slightly different based upon the intended audience. In handbooks such as Agricultural and Forestry, the practices and principles will be described in layman terms and the reader will be referred to appropriate technical experts for planning assistance, such as the USDA Soil Conservation Service. In the urban handbook, the material will be more technical and will include information such as recommended design criteria. The criteria will only be recommendations and not standards. It is anticipated that local units of government may refer to these recommendations and make appropriate changes or develop ordinances which would change the recommendations to requirements for their purposes.

III. LOCAL, STATE AND FEDERAL AUTHORITIES AND PROGRAMS FOR CONTROLLING NPS IN MINNESOTA

Achievement of Minnesota's water quality goals will require a comprehensive water quality program, implemented through a coordinated local, state and federal partnership. In Minnesota, this will be accomplished through a coordinated two tier strategy for controlling nonpoint sources of pollution. This two tier strategy includes:

TIER I: COMPREHENSIVE WATER QUALITY PROJECTS

A. Implementation of comprehensive water quality protection and improvement projects on a hydrologic unit basis, through the Clean Water Partnership (CWP) Program. The CWP is focused on protecting and improving the water quality of specific waterbodies - lakes, streams, wetlands and aquifers. This program, which builds on local water planning efforts, is Minnesota's highest priority for use of funds made available through the federal nonpoint source management program.

B. Implementation of comprehensive lake water quality protection and improvement projects through the federal Clean Lakes Program administered by the MPCA.

TIER II: STATEWIDE IMPLEMENTATION OF BEST MANAGEMENT PRACTICES

A. Implementation of best management practices through other local, state and federal programs, on a broad statewide basis, to protect resources from degradation by nonpoint sources of pollution. Within this group of programs, there are several which are secondary priorities for federal funds available through the federal nonpoint source management program.

B. This two tier strategy is supported by a structure that includes:

1. Ongoing monitoring and research to provide data and information, so water quality trends and facts guide program implementation;

2. Information and education efforts integrated into water quality projects and programs, so individual land managers have current and factual information on management practices;

3. Local Water Planning

4. Technical Assistance and Local Program Delivery System

5. State water planning, coordination and evaluation.

Throughout the program support structure, there are activities which are priorities for federal funds that may become available through the Nonpoint Source Management Program.

TIER I: COMPREHENSIVE WATER QUALITY PROJECTS

A. Clean Water Partnership Program

In 1987, the Minnesota Legislature established the Clean Water Partnership Program (CWP) (Minn. Stat. § 115.091) (Appendix A) to protect and improve surface and ground water in Minnesota, through financial and technical assistance to local units of government to control water pollution from nonpoint sources of pollution. This program builds on local water planning efforts established by the Metropolitan Surface Water Management Act and Comprehensive Local Water Planning Act.

The Clean Water Partnership Program will provide financial assistance through matching grants and technical assistance to local units of government to lead nonpoint source pollution control projects. The MPCA has developed a set of rules (Minn. Rules Chapter 7076) (Appendix B) to establish the criteria and procedural conditions under which the MPCA may award grants to local units of government.

The rules provide separate grants for fifty percent of the eligible costs of project development and project implementation. The project development grant is to complete a diagnostic study and implementation plan which meet the requirements defined in the rules. The project development activities identify the specific water quality problems and sources of pollution and the combination of best management practices, activities and protective measures that will be necessary to solve the identified problems. The project implementation grant is to install the best management practices and carry out educational and other activities identified in the implementation plan completed through the project development grant.

The rules also include the procedures and conditions for administration of the program. This includes the application requirements that provide the Agency with the information necessary to rank the projects in order of priority for funding. The rules spell out the criteria and procedures to be used by the Agency in ranking projects to receive funding, the allocation of funds between project development grants, project implementation grants and the continuation of ongoing projects. The rules also identify costs that are eligible for reimbursement, requirements for contracts between the Agency and project sponsor and procedures for reimbursement of grant eligible costs.

In Minnesota, the sheer number of waterbodies impacted by nonpoint sources of pollution make it impossible to identify a specific list of NPS priority waterbodies in the Assessment Report and Management Programs. Since successful demonstration of nonpoint source control efforts is dependent on local leadership and involvement, Minnesota will use the process established in the Clean Water Partnership Program for selecting projects to be funded. The CWP establishes the authority and mechanism for Minnesota to be implemented on a watershed by watershed basis using funds that become available through the federal Nonpoint Source Management Program.

B. Clean Lakes Program

Since the inception of the Clean Lakes Program, the MPCA has been designated as the state agency to administer grants awarded to the state from the U.S. Environmental Protection Agency (EPA). The purpose of the program is to preserve and protect Minnesota's lakes to increase and enhance their public use and enjoyment. This is done by providing federal matching grants to eligible local units of government to conduct specific lake water quality projects.

The Program has been and continues to be an important part of the MPCA's efforts to address lake water quality problems. To date, the MPCA has completed nine Clean Lakes projects and currently has 17 projects underway. Three of the ongoing projects are nonpoint source demonstration projects. The success of these demonstration projects has been instrumental in establishing the state's Clean Water Partnership Program.

The Agency's existing Clean Lakes projects include a variety of work ranging from limited dredging, hypolimnetic aeration, treatment of bottom sediments, biomanipulation and other in-lake measures to wetland restoration, artificial wetland creation, streambank erosion control and other watershed management measures. While in the past the program emphasized in-lake measures, the MPCA has reassessed the program's focus, shifting the emphasis from in-lake restoration measures to watershed management and nonpoint source pollution abatement. This approach concentrates on reducing the pollutants entering a lake prior to implementation of in-lake restoration measures.

The MPCA anticipates continuing its active participation in the Clean Lakes Program to the extent that federal funding allows.

CLEAN WATER PARTNERSHIP 4 year schedule of activities		Source of Funds
1. Application period	Sept.-Nov. 88	$1.3 million State dollars available for grants to local units of government. When matched locally, this will provide total around $2.6 million, plus administrative costs. The Agency will request the legislature to provide $10 million for the 90-91 biennium.
2. Prioritization, ranking and selection of projects	Nov. 88 - Jan. 89	
3. An estimated 10-12 projects will begin	Spring 1989	
4. Open application period		
5. Develop technical and administrative tools for managing NPS projects.		Ongoing

6.	Develop guidance documents so technical and administrative tools are readily available to project sponsors.	Ongoing
7.	Begin implementation of CWP projects funded through 319.	FY 89
8.	Provide administrative and technical assistance to projects.	Ongoing
9.	Assist project sponsors monitoring and evaluating BMP installation.	Beginning 1990
10.	Evaluate project success.	

CLEAN LAKES PROGRAM

1.	Continue administration of existing projects	Ongoing
2.	Assist local units of government prepare applications provide EPA guidance on candidate projects.	As necessary.

TIER II: STATEWIDE IMPLEMENTATION OF BEST MANAGEMENT PRACTICES THROUGH LOCAL, STATE AND FEDERAL PROGRAMS

The following is a listing of programs in Minnesota that are effective for controlling nonpoint sources of pollution, organized by the topical areas of Agricultural Crop Production, Animal Waste Management, Pesticide and Fertilizer Application, Urban Runoff/Infiltration, Construction, On-site Wastewater Treatment, Hydromodification, Silviculture, Mining, Highway De-icing Chemicals, Special Erosion Problems, Land Disposal.

A. AGRICULTURAL CROP PRODUCTION

1. Minnesota Cost Share Program

The Minnesota Cost Share Program provides cost-sharing contracts for erosion control and water management through the 91 Soil and Water Conservation Districts (SWCD) throughout the state.

Minn. Stat. Sec. 40.036 authorizes Soil and Water Conservation Districts, with grants from the Board of Water and Soil Resources, to contract for cost-sharing with land occupiers and state agencies permanent non-production oriented systems for erosion control and water quality improvement.

In providing financial incentives to land owner throughout Minnesota for the installation of permanent non-production oriented soil and water conservation practices, the Board of Water and Soil Resources and soil and water conservation districts will follow these steps:

a. SWCDs apply to the state for funds. The BWSR, within priorities established in their program plan, provides grants to SWCDs. These grants are used for providing cost-sharing assistance to land owners. In addition, grant monies are provided to assist SWCDs in the technical and administrative aspects of the program. The grants provided to SWCDs must be used in accordance with the needs and priorities reflected in their annual and long-range plans.

b. Upon receipt of grant monies, and within guidelines established by BWSR, SWCDs are responsible for making all local decisions concerning the program. SWCDs, after approving a project, are responsible for issuing payment.

c. All projects must be designed and constructed according to USDA Soil Conservation Service standards and specifications or plans approved by a registered professional engineer.

d. All installed practices will be monitored by SWCDs to insure that they will be properly maintained for a minimum of ten years.

Board of Water and Soil Resources rules provide that at least 70 percent of the cost-sharing funds available statewide for conservation practices be used to address high priority erosion, sediment or water quality problems. In years 1985, 1986 and 1987, the BWSR provided $600,000 each year for cost-share directed at water quality.

2. Soil Loss Limits

The Excessive Soil Loss Limits (Minn. Stat. §§ 40.19-40.28), provides local units of government with authority to adopt and administer an ordinance to reduce the amount of soil erosion on Minnesota land, to decrease the amount of off-site damages from sediment, retain the productivity of the soil and improve water quality. To date only one county has adopted an excessive soil loss ordinance.

3. Reinvest in Minnesota Reserve Marginal Agricultural Lands Program

The Reinvest in Minnesota Reserve Marginal Agricultural Lands Program (RIM Reserve) acquires marginal cropland for conversion to permanent grass or trees. The program offers landowners two payment options, a 20 year or perpetual easement with a discounted lump sum payment based on cash rent for cropland in the area. The program also provides perpetual easements for restoring wetlands on previously drained cropland. RIM Reserve also provides up to 100 percent of the expense of establishing permanent cover.

The state law sets up minimum enrollment requirements of landowners and their land, and designates the soil and water conservation district boards as the agents who will administer the program locally using state guidelines.

The landowner is responsible for the operation and maintenance of the vegetative cover and for ensuring that all easement restrictions are followed. Should the landowner fail to install or maintain the practices or comply with easement restrictions during their effective life, the landowner may be subject to penalties including repayment of financial assistance, mandatory court-imposed injunctions, or other actions directed at correcting the maintenance violation.

To date, over 25,000 acres have been idled through this program. RIM Reserve is part of a program administered by the Department of Agriculture and the Department of Natural Resources. The Board of Water and Soil Resources administers RIM Reserve via an agreement with the Department of Agriculture. The RIM Reserve was recently established in 1986. In 1987, the BWSR provided $80,000 for water quality purposes.

4. USDA Conservation Reserve Program

The Conservation Reserve Program authorized by the 1985 Food Security Act was established as a voluntary program to help farmers control erosion on marginal cropland by taking it out of annual crop production and put it into perennial grass, wildlife plantings, windbreaks or trees. USDA enters a 10 year contract with the farmer and provides annual rental payments in cash or commodities. USDA also provides half the expense of establishing permanent cover on the land and provides technical assistance to land owners.

In Minnesota, over 1.5 million acres have been taken out of production and permanent cover established. There are potentially over five million acres eligible for the program in Minnesota.

5. USDA Agricultural Conservation Program (ACP)

The Agricultural Conservation Program, provides financial assistance (cost-sharing) to farmers, ranchers, and woodland owners and tenants who wish to voluntarily apply soil, water, woodland, and wildlife conservation practices to their land. Soil erosion and nutrient runoff due to agricultural production is a major emphasis of the program. The Agricultural Conservation Program was authorized by the Soil Conservation and Domestic Allotment Act of 1936, as amended. The program is carried out by USDA Agricultural Stabilization and Conservation Services (ASCS) through a system of state and county committees. It is estimated that in 1986 and 1987, $200,000 were directed at water quality.

6. USDA Soil and Water Conservation Loan Program

The Farmers Home Administration conducts a large number of credit programs for the rural community, one of which is the Soil and Water Conservation Loan Program. This program provides either insured or guaranteed loans to farmers for the purpose of improving the management of their soil and water resources. The loans may be made to partnerships or corporations as well as to individual farmers.

7. USDA - Resource Conservation and Development (RC&D)

The Resource Conservation and Development Program administered by USDA Soil Conservation Service, primary objective is the improvement of rural areas including natural resources, economic development, and social measures. The particular objectives and the level and scope of activity are determined by the RC&D Area Council which is made up of the County Board of Commissioners, Soil and Water Conservation Districts, tribal councils, and at-large members. RC&D can provide financial assistance for soil and water management for agricultural-related pollution control in approved RC&D areas.

8. USDA - Watershed Protection and Flood Prevention (P.L. 566)

The Watershed Protection and Flood Prevention Program administered by USDA - Soil Conservation Service provides technical assistance, including project planning, design and construction assistance to watershed project sponsors. Funds are available to share the cost of watershed protection, flood prevention, irrigation, drainage, sedimentation control and public water based fish and wildlife and recreation programs.

9. USDA - River Basin Surveys

River Basin Surveys are carried out by the Soil Conservation Service in cooperation with federal, state and local agencies to inventory, analyze, and develop alternative solutions to resource problems.

River Basin Studies can provide a recommended course of action to be implemented by study sponsors, or produce technical information that is needed to assist in carrying out existing or new programs. Multi-disciplinary planning assistance is provided.

A. AGRICULTURAL CROP PRODUCTION

Program	4 Year Schedule of Activites Directed at Water Quality	Sources of Funds
1. MN State Cost Share Program	Continued implementation of water quality activities at $600,000 per year.	State General Fund
2. Soil Loss Limits	Continued promotion of land use controls.	State and Local
3. Reinvest in MN Reserve Marginal Agricultural Lands	Continued implementation of RIM Reserve and wetland restoration at $100,000 per year.	Proceeds from Bonding
4. USDA Conservation Reserve Program	Continued implementation.	Congressional appropriations
5. USDA Agricultural Conservation Program	Continued implementation of cost-share program with increased emphasis on water quality.	Congressional appropriations
6. USDA Soil and Water Conservation Program	Ongoing.	
7. USDA Resource Conservation and Development	Service ongoing and new RC&D project measures.	Congressional appropriations
8. USDA Watershed Protection and Flood Prevention	Continue planning and installation of existing authorized projects. At current level, 3 projects in planning stage and 3 in implementation stage in any given year.	Congressional appropriations

B. ANIMAL WASTE MANAGEMENT

1. Feedlot Permit Program

In 1971, the MPCA established a feedlot permit program. Revised in 1979, the feedlot rules (Minn. Rules Chapter 7020) require a farmer to apply for a permit when any of the following conditions exist:

a. a new animal feedlot is proposed; or
b. a change in operation, modification, or expansion of an existing animal feedlot is proposed; or
c. ownership of an existing animal feedlot is changed; or
d. a National Pollutant Discharge Elimination System (NPDES) permit is required under state or federal rules.

A farmer must also apply for a feedlot permit when an inspection by the MPCA staff or a county feedlot pollution control officer determines that the animal feedlot creates or maintains a potential pollution hazard. At the present time, an estimated 15,000 feedlots are permitted.

Approximately 400 feedlot permit applications are processed per year. Certificates of Compliance are issued for feedlots which are not identified as potential pollution hazards. Approximately, 90% of the applications processed receive certificates. Feedlots with a potential pollution hazard which can be corrected within one construction season (10 months) receive an Interim Permit. This permit is replaced with a Certificate of Compliance when the work is complete and the pollution problem is resolved. Sites on which the correction work takes more than one construction season due to economic or technical problems receive state feedlot permits. These permits are issued for a period of 5 years and contain special operating conditions and a schedule of compliance.

By requiring a farmer to apply for a permit whenever he is staring or purchasing animal facilities or investing in changes to his existing operation, the program can prevent the creation of new pollution problems from feedlots. Also, if a pollution problem does exist, the most appropriate time to ask for corrective action to be taken by the land owner is when an investment is being made in the operation.

The feedlot program rules provide for a cooperative program between counties and the MPCA, which allows the County Board to request authority to issue most feedlot permits. This provides an excellent mechanism to coordinate local zoning with the feedlot rules. The cooperative county-state program is effective because it enables local involvement and insight on problems, and provides close coordination between state and local programs. At the present time, 22 counties participate.

For the feedlot permit program to be effective, it requires not only good county-state cooperation, but also close coordination between other state and federal agencies involved in feedlot pollution control. The Agricultural Stabilization and Conservation Service (ASCS), Soil Conservation Service (SCS), Board of Water and Soil Resources (BWSR), and MPCA have entered into an interagency agreement to coordinate their animal waste control programs so that federal and state cost-share funds, technical assistance programs, and the state permit program will work together efficiently. The ASCS and BWSR each have cost-share programs to provide incentives to install pollution control equipment for animal waste management. The SCS and Soil and Water Conservation Districts (SWCD) provide technical assistance. The MPCA permit program acts as a catalyst to bring farmers into these programs by adding a regulatory incentive.

2. National Pollutant Discharge Elimination System (NPDES) Permit Program

The NPDES Permit Program is administered by the MPCA and applies to all facilities containing over 1,000 animal units (i.e. 1,000 beef cattle, 700 dairy cattle, 2,500 hogs) and to smaller facilities of wastes which are discharged directly into water through manmade conveyance or, if water passes through a facility so that animals may come in direct contact with the water. As of January 1988, nine confined animal facilities have NPDES permits.

3. Minnesota Cost Share Program

The Minnesota Cost Share Program provides cost-share contracts for pollution control systems for animal waste management through the 91 Soil and Water Conservation Districts throughout the state.

Minn. Stat. Sec. 40.036 authorizes cost-share assistance, to a maximum of 75% of the total cost of the pollution control systems for confined animal facilities: which are within shoreland areas, have been cited by the MPCA, or are otherwise considered to be potential pollution hazards.

4. USDA - Agricultural Conservation Program (ACP)

The Agricultural Conservation Program, provides financial assistance (cost-sharing) to farmers who wish to install animal waste control facilities. The program is carried out by USDA. Agricultural Stabilization and Conservation Service (ASCS) through a system of state and county committees. Animal waste control facilities within shoreland areas, that have been cited by MPCA or are considered to be a potential water pollution hazard, are high priorities for receiving ACP assistance. The program has a set maximum amount that anyone landowner can receive in one year is $3,500, under ACP rules.

5. Farm Ownership, Farm Operating and Soil and Water Conservation Loan Programs

The Farmers Home Administration provides loans which may be used by land owners to improve confined animal facilities, including water pollution control practices.

B. ANIMAL WASTE MANAGEMENT

Program	4 Year Schedule of Activites Directed at Water Quality	Sources of Funds
1. Feedlot Permit Program	Two additional saff will be necessary to issue permits, inspect and provide permit compliance, over the next two years as a result of current nonpoint activites and projects.	Funding needed.
2. National Pollutant Discharge Elimination System Permit Program	Continue the current level of effort on Feedlot NPDES.	State funds.
3. Minnesota Cost Share Program	Continue implementation of feedlot controls for water quality at $150,000 per year.	State General Fund
4. USDA Agricultural Conservation Program	Continue at current levels.	Congressional appropriations
5. Farm Ownership, Farm Operating and Soil & Water Conservation Loan Program	Ongoing.	

C. PESTICIDE AND FERTILIZER APPLICATION

1. Federal Insecticide, Fungicide, and Rodenticide Act Minnesota Pesticide Control Act

The Federal Insecticide, Fungicide, and Rodenticide Act (FIFRA) establishes procedures for classification, registration, sale, use, research, monitoring, and disposal of pesticides. The U.S. EPA is required to promulgate regulations for registration of pesticides and certification of applicators. Upon weighing the benefits of use against the risk, EPA may deny or cancel registration or place restrictions on use of pesticides which cause unreasonable adverse effects on humans or the environment. Until recently, pesticides were reviewed on the basis of their toxicity to humans exposed through application or food consumption. EPA now considers ground water to be a potential source of human exposure to pesticide residues and is requiring leaching data for new pesticide registration as well as pesticide re-registration.

The Minnesota Department of Agriculture (MDA) is responsible for regulation of the distribution, use, storage, handling, and disposal of pesticides, rinsates, and pesticide containers. MDA is responsible for registration of pesticides and administration of certification, licensing, and training programs for pesticide applicators under FIFRA.

Approximately 7,900 pesticides are registered for use in Minnesota. The department is authorized to collect fees for registration of pesticides and for applicator and dealer licenses. MDA has the authority to deny or cancel registration or restrict use of pesticides in addition to those restricted or banned by EPA; in the past, this authority was used to ban DDT and other pesticides prior to EPA action. In addition, in 1987 the Minnesota Legislature passed legislation banning chlordane and heptachlor. MDA does not have a formal procedure for evaluating pesticide registrations with respect to the potential for ground water contamination; at present, the state relies upon EPA review.

MDA is the lead agency for response to a release of pesticides, fertilizers and soil or plant amendments. MDA must notify MPCA if the release may cause pollution of state waters. The 1987 Pesticide Control Law gives MDA authority to recover the costs of cleanup from the party(ies) responsible for the release. MPCA is responsible for incidents involving pesticide wastes. At present, the two agencies are developing a formal procedure or agreement for responding to pesticide incidents. MDA, MPCA, MDH, MDNR, Minnesota Department of Public Safety (Division of Emergency Services) and Minnesota Department of Transportation has responsibilities for emergency response in the event of a hazardous materials release.

The Minnesota Department of Natural Resources (MDNR) approves registered aquatic herbicides and algicides for use in protected waters. MDNR also issues aquatic nuisance control permits for application of herbicides and other chemicals to protected waters; the

Minnesota Department of Health (MDH) approves these permits when the treatment of public drinking water is involved. Under a Memorandum of Understanding with the MDA, MDNR enforces regulations for use of pesticides in public waters. Although MDA administers exams for certification of pesticide applicators, MDNR prepares written exams for aquatic pesticide applicators and the Minnesota Department of Transportation prepares a portion of the exam for aerial applicators.

2. Federal Safe Drinking Water Act (SWDA)
Minnesota Safe Drinking Water Act

Minnesota Department of Health regulates public drinking water supplies for the purpose of protecting public health. MDH has authority under the federal and Minnesota Safe Drinking Water Acts to set maximum contaminant levels and monitoring frequencies for public water supply systems which are at least as stringent as the federal requirements under the Safe Drinking Water Act. To date, EPA has set standards for only six pesticides. Of these, only 2,4-D is commonly used in Minnesota. In a survey of wells located primarily in areas of Minnesota which are vulnerable to contamination, atrazine was detected in more than 35 percent of the wells, while alachlor was detected in approximately five percent. Maximum contaminant levels have not been established for either of these pesticides.

Congress amended the SWDA in 1986, making several changes significant for public water supplies and ground water quality protection. Amid concern over the paucity of drinking water standards set by EPA, Congress specified eighty-three contaminants which EPA must regulate by June of 1989, including twenty-one pesticides. Prior to amendment, monitoring was required for only 23 regulated contaminants. The 1986 amendments require EPA to promulgate regulations requiring monitoring of public water supply systems for certain unregulated contaminants, as well. These provisions should provide for the expansion of the presently limited database on the scope and severity of ground water contamination.

A new provision of the SDWA authorizes states to establish wellhead protection areas around public drinking water wells on a voluntary basis. The new legislation authorized, but did not appropriate, funding to states for the development and implementation of plans for the protection of ground water quality in critical areas within designated Sole Source Aquifers.

3. Minnesota Water Well Construction Code

The Minnesota Department of Health administers the water well construction and abandonment program. Proper siting, construction and maintenance of water wells can reduce the potential for drinking water contamination by nonpoint sources of pollution. Sealing abandoned wells can eliminate potential routes of contaminate movement between aquifers.

4. The Resource Conservation and Recovery Act (RCRA)

The Resource Conservation and Recovery Act authorizes EPA to regulate hazardous wastes "from the cradle to the grave" as well as solid waste disposal. Ground water monitoring is required as disposal sites. Regulatory authority is delegated to states with approved programs.

The MPCA regulates storage and disposal of waste (discarded) pesticides under RCRA and Minnesota statute. Farmers are exempt from hazardous waste regulations as long as they triple-rinse each empty pesticide container and dispose of pesticide residues according to label instructions and on their own farm. The rinsate must be used and not discarded.

5. Household Hazardous Waste Management

Legislation enacted in 1987 requires MPCA to establish a household hazardous waste management program. The program must include the following components: establishment and operation of waste collection sites, and information, education, and technical assistance regarding the proper management of household hazardous wastes, including pesticides.

The same act established a Waste Pesticide Collection Pilot Project, to be implemented by MPCA, in cooperation with MDA.

6. Regulation of Fertilizers, Soil and Plant Amendments

Under the Fertilizer, Soil Amendment and Plant Amendment Law, MDA has authority to regulate registration, storage, and handling of fertilizers. Applicants for liquid fertilizer storage permits must provide information on the distance from the facility to surface water and to wells. Adequate containment in the event of a leak must be assured; a dike is required in most cases. Dry fertilizer storage piles are prohibited in locations where surface water runoff could enter storm or sanitary sewers, and surface or ground water.

C. PESTICIDE AND FERTILIZER APPLICATION

Program	4 Year Schedule of Activites Directed at Water Quality	Sources of Funds
1. MN Pesticide Control Act	MDA will determine the impact of pesticides on surface and ground water in Minnesota	Regulatory Fees
	MDA required to develop best management practices (BMPs) for pesticides distribution, use, storage, handling, and disposal	Regulatory Fees
	MDA provide assistance to other state agencies and local governments to protect public health and the environment from harmful exposure to pesticides	Regulatory Fees

Program	4 Year Schedule of Activites Directed at Water Quality	Sources of Funds
	MDA will issue regulations necessary to prevent ground water contamination caused by pesticides leaching or flowing directly into ground water or through chemigation	Regulatory Fees
	MDA will require secondary containment device for bulk storage of pesticides	Regulatory Fees
	MDA will increase fees for pesticide registration, dealer and applicator licensing and and certification	Regulatory Fees
	Permits will be required for chemigation with pesticides (fertlizers not covered); antisiphon devices or check valves required; application fee $50 per well	Regulatory Fees
	MDA establish a pesticide regulatory account to fund administration and enforcement of the law; funding from fees and penalties assessed	Regulatory Fees
	MDA and MPCA will develop a pesticide container deposit and return program for triple-rinsed containers	Regulatory Fees
2. Safe Drinking Water Act MN Safe Drinking Water Act	MDH currently monitor public water supplies for up to 23 different water quality parameters. The list of parameters will be expanded to 83 within the next two years and will include several pesticides, e.g. atrazine and alachlor.	Regulatory Fees are proposed
3. Water Well Construction Code	MDH has submitted a 1989 Departmental Legislative initiative to significantly expand the Water Well Construction and Abandonment Program and to develop and Implement a Wellhead Protection Program	Regulatory Fees are proposed
4. Resource Conservation and Recovery Act	Ongoing.	
5. Household Hazardous Waste Mgmt.	MPCA and MDA will develop a waste pesticide collection project.	
6. Regulation of Fertilizers, Soil and Plant Amendments	Will establish certification system for Soil Testing Laboratories	Tonnage Fees on Fertilizer

D. URBAN RUNOFF/INFILTRATION

1. National Pollutant Discharge Elimination System (NPDES) Permit Program

The NPDES Permit Program is administered by the MPCA and is applied to discrete, identifiable sources of water pollutants. NPDES Permit requirements have been applied to certain instances to urban storm sewers in Minnesota.

2. Local Ordinances, Planning and Zoning Controls

The counties may develop planning and zoning programs, which may include countywide zoning, subdivision controls, sanitary code, shoreland ordinances, and floodplain ordinances. These ordinances and subdivision regulations serve to regulate land use within the county and may require and control development of urban runoff management practices. Development of shoreland management and floodplain management ordinances is required of each county. Counties bordering streams designated as Wild and Scenic Rivers by the Department of Natural Resources must also develop ordinances which give special protection to such streams. These ordinance may be more restrictive of land use activities within the designated areas. Most Minnesota counties have also established countywide zoning programs. These county planning and zoning programs serve to regulate development within the county, and control the location of land-using activities.

Many Minnesota municipalities have established planning programs which may include official maps, zoning ordinances, and subdivision regulations. These provisions of a municipal plan control development and establish standards and guidelines for land use. Municipal ordinances may establish controls for urban runoff.

Urban townships (1,200 or more people in platted portions) or other townships which obtain voter approval may establish township planning and zoning programs. The authority of a township is similar to that of a municipality -- the only difference being that where a county has established ordinances and regulations, a township cannot implement less restrictive ordinances and regulations.

By state law, SWCDs, may construct, maintain, and operate any facilities necessary for carrying out their legislated functions. Under this authority, SWCDs may be able to construct urban runoff control facilities.

Watershed districts are authorized to adopt rules that provide for public health and prevent pollution of waters within the district. These rules may apply to the construction of urban runoff facilities and other land disturbances within the district. Watershed districts may take enforcement action against violators of their rules; or they may refer violations to other agencies, such as the MPCA.

Watershed districts may construct drainage ditches, sewers, or any other facility related to urban runoff within the district.

D. URBAN RUNOFF/INFILTRATION

Program	4 Year Schedule of Activites Directed at Water Quality	Sources of Funds
1. National Pollutant Discharge Elimination System Permits	To be developed.	
2. Local Ordinances, Planning and Zoning Controls	To be developed.	

E. CONSTRUCTION

1. Shoreland and Flood Plain Management Program

Minn. Stat. sec. 105.485 and 104.01 to 104.98 requires the Minnesota Department of Natural Resources to promulgate regulations, implemented through county and municipal land use control ordinances, which provide minimal dimensional and performance standards to protect and enhance the quality of surface waters and conserve the economic and natural resource values of shorelands of public water. These ordinances control some aspects of construction activities near public waters.

2. Work in Beds of Public Waters

Minn. Stat. sec. 105.42 authorizes the Minnesota Department of Natural Resources to require permits for changing the "course, current, or cross-section of public waters." Examples of projects requiring these permits are filling, excavation, breakwaters, retaining walls, certain types of riprap, bridge crossings, and storm sewer outfalls.

Although the physical jurisdiction of M.S. 105.42 permits extends only from the ordinary high water mark to the bed of a public water, upland activities of the permitted project which result in adverse effects on the beds of the public waters may also be regulated. Bridge construction, for example, would be subject to a permit under Chapter 105 not only to minimize direct effects on the streambed but also to ensure that proper erosion control techniques are used. Erosion and sedimentation control in situations like this are concerns of the program.

3. Local Ordinances, Planning and Zoning Controls

Watershed Districts are legally authorized to issue rules and construction permits with conditions to control activities on and uses of lands that may adversely affect public waters. About three-fourths of the districts have adopted rules, and some of these have provisions requiring permits for construction activities.

By law, all such permits must be coordinated with other state, county, and local agencies having environmental control authority.

All counties are required to adopt and enforce shoreland and floodplain management ordinances. The DNR may use its authority and resources to assist, if necessary.

Each county may also develop a planning and zoning program which may include countywide zoning, subdivision controls. Provisions of these ordinances may require some measures of erosion control for construction activities.

In addition, counties are required to administer the Uniform Building Code. The Code contains provisions for some erosion control measures when buildings are being constructed.

All municipalities are required to adopt and enforce shoreland and floodplain management ordinances, the provisions and requirements of which are similar to county ordinances.

Municipalities may also adopt comprehensive land use plans and local zoning and subdivision ordinances. Provisions of these ordinances may require some measures of erosion control for construction activities.

In addition, municipalities are required to administer the Uniform Building Code. The Code contains provisions for erosion control measures when building construction is carried out.

Urban townships (1,200 or more people in platted portions), or other townships that obtain voter approval, may establish township planning and zoning programs. Township zoning programs would regulate the location of new developments and can include provisions that require measures for erosion control during construction activities. Township zoning ordinances may be more restrictive, but not less restrictive, than county zoning ordinances.

E. CONSTRUCTION

Program	4 Year Schedule of Activites Directed at Water Quality	Sources of Funds
1. Shoreland & Flood Plain Mgmt. Program	1) Promulgate the revised shoreland rules in FY 1989. 2) Develop training materials and conduct training sessions for officials of local units of government, state and federal agencies personnel. 3) Provide technical assistance to local units of government to adopt shoreland ordinances.	State
2. Works in Beds of Public Waters	Continue to evaluate and issue or deny permit applications.	State
3. Local Ordinances, Planning & Zoning Controls	Ongoing.	Local

F. INDIVIDUAL SEWAGE TREATMENT SYSTEMS

1. Standards and Criteria for Individual Sewage Treatment Systems

Improper design, location, installation, use, and maintenance of individual sewage treatment systems adversely affects the public health, safety, and general welfare by discharge of inadequately treated sewage to surface and ground waters. Minnesota Rules Chapter 7080 provide the minimum standards and criteria for the design, location, installation, use and maintenance of individual sewage treatment systems (ISTS). The Minnesota Pollution Control Agency administers Minn. Rules Chapter 7080, which are then voluntarily adopted and administered by local units of government. At the present time approximately 40 counties have adopted Minn. Rules 7080. There is growing public support for making these standards mandatory statewide. Limited administrative resources hamper the effectiveness of these rules.

2. Training and Technical Assistance

The MPCA and the Minnesota Extension Service cooperatively present a number of three day Onsite Sewage Treatment workshops throughout the State each year. The workshops are designed for people involved in the site evaluation, design, construction, inspection and maintenance of individual sewage treatment systems. Over 500 people attend the workshops each year. This demand is growing. MPCA staff and Specialists from the Minnesota Extension Service offer technical assistance to the public on questions regarding individual sewage treatment systems. Staff receive over 100 such requests each month.

3. Certification for Installers of Individual Sewage Treatment Systems

The MPCA administers a voluntary certification program for persons involved in the site evaluation, design, installation, inspection and maintenance of individual sewage treatment systems. This program is designed to promote the employment of knowledgeable and experienced personnel to prevent water quality and public health problems associated with the improper design, location, installation, or maintenance. The MPCA does not require that such persons be certified, however, a growing number of counties and cities do.

F. INDIVIDUAL SEWAGE TREATMENT SYSTEMS

Program	4 Year Schedule of Activites Directed at Water Quality	Sources of Funds
1. Standards and Criteria for Individual Sewage Treatment Systems	1) Currently revising MN Rules 7080, will be completed 1989	State
	2) Study the need to make MN Rules 7080 mandatory statewide	Unknown

Program	4 Year Schedule of Activites Directed at Water Quality	Sources of Funds
2. Training and Technical Assistance	1)Expand workshops 2)Technical assistance 3)Assist counties with model ordinance and administrative guidance.	State (Additional Resources necessary to do identified work)
3. Certification for Installers of Individual Sewage Treatment Systems	1)Develop and adopt rules requiring certification. 2)Implement mandatory certification for inspectors. 90 - on 3)Implement mandatory certification for site evaluators, designers, installers and pumpers. 91 - on	Unknown

G. HYDROMODIFICATION

1. Protected Waters and Wetland Permit Program

The Minnesota Department of Natural Resources administers a program regulating works in the beds of protected waters. Protected waters are those lakes, wetlands and watercourses specifically identified on county maps by an inventory procedure specified by statute. All activities require a permit except for certain types of projects if constructed under specified guidelines. Activities subject to the permit program include dredging, filling, installation of permanent structures, water level control structures, bridges and culverts and intakes and outfalls.

2. State Waterbank Program

The Waterbank Program as administered by the Minnesota Department of Natural Resources is designed to compensate farmers for not converting qualifying wetland to cropland. Payments are based on appraised land values to provide incentives to help keep qualifying wetlands in their natural state. For protected wetlands, the landowner must have been denied permission to drain the wetland and must show that drainage of the areas would not violate any property agreements, that outlet rights can be obtained, that the proposed drainage would be profitable and that the area, if drained, would make high quality cropland.

3. Federal Waterbank Program

The Federal Waterbank Program administered by the USDA-Agricultural Stabilization and Conservation Service (ASCS) provides ten year lease contracts with landowners to protect qualifying wetlands. The landowners must agree not to drain, burn, fill or otherwise destroy the wetland character of such areas nor to use the areas for agriculture. Thirty-eight Minnesota counties are eligible for this program. Payment rates typically are $10 per acre per year for wetland and may range from $20 to $55 per acre for adjacent upland. Upland payment rates are based on cropland capability classes and a percent of the documented corn yield. Upland acres are planted to permanent grass-legume cover.

4. Wetland Acquisition Program (WAP)

The federal Wetland Acquisition Program administered by U.S. Department of the Interior, Fish and Wildlife Service, uses two methods of acquisition, fee title and easement. Specified counties in northwestern, west central and southern Minnesota are eligible for this program. Eligible wetlands are primarily wetlands with associated uplands managed to provide water fowl habitat.

5. RIM Reserve - Wetland Restoration Program

The RIM Reserve - Wetlands Restoration Program pays landowners to restore their previously derained wetlands. It offers landowners perpetual easements, reimburses the cost of cover seeding and helps pay for any structure needed to restore the wetlands.

G. HYDROMODIFICATION

Program	4 Year Schedule of Activites Directed at Water Quality	Sources of Funds
1. Protected Waters and Wetland Permit Program	Continue to evaluate, issue, modify or deny permit applications.	State
2. State Waterbank Program	Continue to evaluate and fund qualifying applications.	State Bonding
3. Federal Waterbank Program	To be developed.	
4. Wetland Acquisition Program	To be developed.	
5. RIM Reserve Wetland Restoration	2,000 acres per year.	State Bonding.

H. SILVICULTURE

1. Minnesota Forestry Incentives Program (MFIP)

The Minnesota Forestry Incentives Program administered by soil and water conservation districts provides cost sharing for forestry related practices not covered by other state and federal programs such as pest control, fire break establishment, forest road construction, etc.

2. Private Forest Management (PFM)

The Private Forest Management Program provides technical assistance to land owner participants in state and federal cost-share program and state tax laws. This assistance includes inventory, multiple use management planning, timber harvesting and restoration.

3. USDA - Agricultural Conservation Program

The Agricultural Conservation Program administered by USDA - Agricultural Stabilization and Conservation Service provides financial assistance to woodland owners who wish to voluntarily apply soil, water, woodland and wildlife conservation practices to their land. Soil erosion and nutrient runoff are major emphasis of the program.

4. Works in Beds of Public Waters

The Minnesota Department of Natural Resources program regulating works in the beds of public waters requires a permit for intended stream crossings, including those for logging roads. Structures for such crossings must be constructed according to conditions specified in the permit.

5. U.S. Forest Service (USFS) Lands

The USFS regularly conducts timber sales in which stands of timber of varying sizes (usually less than 40 acres) are harvested by wood products corporations, small independent businesses, and private individuals. Harvesting must be done according to a contract; conditions may include such requirements as leaving an uncut buffer at shorelines, leaving aesthetic buffers at road edges, slash disposal requirements, specifications for logging road construction, culvert construction, and stream crossing prohibitions. Water quality preservation is one consideration addressed in this policy. Many contract conditions are based on evaluations made at selected timber sale sites by a USFS forest hydrologist and a wildlife biologist. The sites are occasionally inspected during the course of the harvesting project; the discovery of failure to observe requirements may result in immediate closing of the project.

6. State Lands

Minnesota Statutes require notification of intent to cut timber on any state-owned lands. A contract is then written that contains extensive

conditions similar to those outlined for the USFS. Requirements may include specific management practices, setbacks from roads, and slash disposal techniques. DNR district foresters are assigned to inspect timber-cutting operations on state land and may halt work if contract conditions are not being met. These contract harvesting guidelines are mainly for aesthetic purposes, but by their nature also contribute to water quality maintenance.

H. SILVICULTURE

Program	4 Year Schedule of Activites Directed at Water Quality	Sources of Funds
1. MN Forestry Incentives Program	Continue implementation of the program at $20,000 per year.	General Fund
2. Private Forest Management	To be developed.	
3. USDA Agricultural Conservation Program	Continue cost-share of Forestry Practices	Federal
4. Works in Beds of Public Waters	Continue to evaluate, issue or deny permit applications.	State.
5. U.S. Forest Service Lands	To be developed.	
6. State Lands	To be developed.	

I. MINING

1. National Pollutant Discharge Elimination System (NPDES) Permit Program and State Disposal System (SDS) Permits

The NPDES and SDS Permit Programs are administered by the MPCA and applies to all discrete, identifiable sources of water pollutants related to mining. NPDES Permit requirements are applied to mine pit dewatering, stock pile runoffs, tailings basin construction, operation and discharges, drainage from peat operations and mining deactivation.

2. Mineland Reclamation

The Mineland Reclamation Program administered by MDNR provides for reclamation of lands disturbed by mining after August 1980, including the siting, design, construction, operation and deactivation of all mining facilities

3. Works in Beds of Public Waters

The Minnesota Department of Natural Resources program regulates works in beds of public waters and requires a permit for any alteration of protected waters.

I. MINING

Program	4 Year Schedule of Activites Directed at Water Quality	Sources of Funds
1. National Pollutant Discharge Elimination Systen Permit Program	To be developed.	
2. Mineland Reclamation Program	To be developed.	

J. HIGHWAY DE-ICING CHEMICALS

In 1977, Minnesota Department of Transportation (MnDOT) established a policy regarding their storage of salt and sand/salt mixtures in order to reduce the potential for surface and ground water contamination near its stockpile sites. This policy is based on recognized best management practices and requires that:

1. all salt and sand/salt mixtures be placed on bituminous pads which must be sloped to prevent surface water from draining through the stockpiles;

2. all salt piles be covered with polyethylene if not stored in a shed, and all sand/salt mixtures be moved to empty salt sheds of covered during spring and summer;

3. any runoff from the stockpiles be contained.

The Minnesota Legislature enacted Statutes 160.215 in 1971 in an attempt to minimize damage from application of de-icing chemicals. This statute established guidelines for the application of de-icing chemicals. MnDOT believes that their current application rates and procedures are in compliance with the established guidelines and cannot be significantly improved given current technological and fiscal contraints without detrimental decrease in the level of service provided.

The MPCA has no explicit authority to directly regulate the highway de-icing operations of state or local road authorities. The application and storage of de-icing salts have not generally been subject to MPCA permit requirements which are aimed at controlling point sources of wastewater. The MPCA does have general authority to investigate water pollution problems and to take appropriate action against those responsible for specific water pollution problems when the responsible parties can be clearly identified. Violations of water quality regulations which are clearly and directly attributable to application of de-icing chemicals have not yet been identified and prosecuted by the MPCA. However, the MPCA has received and investigated several complaints of ground and surface water contamination caused by the storage of de-icing chemicals. MPCA regulations (WPC-22) prohibit depositing any pollutant in such a manner that it would reach ground waters and actually or potentially preclude their use as drinking water. The MPCA may direct the party responsible for such sources of potential pollutants to monitor ground water quality at its own expense. The MPCA has responded to de-icing chemical storage problems as such problems have been reported to the MPCA. In those cases where water quality problems have been identified, the MPCA has required that corrective measures be taken.

J. HIGHWAY DE-ICING CHEMICALS

Program	4 Year Schedule of Activites Directed at Water Quality	Sources of Funds
	To be developed.	

K. SPECIAL EROSION PROBLEMS

1. Streambank, Lakeshore, and Roadside Sediment and Erosion Control Program

The Streambank, Lakeshore, and Roadside Sediment and Erosion Control Program administered by the Board of Water and Soil Resources through Soil and Water Conservation Districts. The funds are available to provide grants to assist soil and water conservation districts and local units of government in solving sediment and erosion control problems. Grants may not exceed 50 percent of the total cost or 50 percent of the local share if federal funds are used. Priority is given to projects eligible for federal matching funds and projects designed to solve streambank, lakeshore, and roadside erosion. Although the funding of a project is done on a case by case basis by the Board of Water and Soil Resources, soil and water conservation districts are responsible for all local administration, including issuance of checks.

2. Resource Conservation and Development Program (RC&D)

The RC&D Program administered by USDA Soil Conservation Service may provide up to 65% of actual costs of approved roadside erosion control programs, with 35% local match. Unforeseen critical area problems that develop after construction, not the result of improper design or installation, or through lack of maintenance are eligible for assistance. Costs are determined through the RC&D Measure Plan. As much as $2.3 million of RC&D funds have been used for roadside erosion control programs.

While no agency has specific authority for regulating erosion on roadsides, road authorities are responsible for construction, stabilization and maintenance of roadsides under their control. In addition, the FHWA, in providing funds for state and local highway construction, does require the receiving agency (in Minnesota the MnDOT) or local unit of government to follow standard construction specifications. In general, these specifications are based upon the American Association of State Highway and Transportation Officials (AASHTO) model specifications. MnDOT design specifications and local highway department specifications are very similar though each may be modified to meet specific or unusual problems. All highway design specifications are intended to promote stable and safe highways. Any resulting roadside erosion pollution abatement is generally the result of efficient design and planning, with protecting the environment a concern rather than a response to a regulatory act.

The MnDOT has established several procedures within its highway construction and maintenance programs to ensure first prevention, and if needed, control of roadside erosion. During the preliminary stages of a highway construction projects, various environmental documents are prepared. The potential for erosion is one of the topics studied. The MnDOT's construction manual, design manual, and construction specifications book contain procedures for both permanent and temporary erosion control. For normal maintenance on geological erosion, the MnDOT has a manual on maintenance repair.

K. SPECIAL EROSION PROBLEMS

Program	4 Year Schedule of Activites Directed at Water Quality	Sources of Funds
1. Streambank, Lakeshore and Roadside Sediment & Erosion Control Program	Continue implementation at $100,000 per year	General Fund
2. Resource Conservation & Development Program	Continue implementation at existing level.	Congressional appropriation

L. LAND DISPOSAL

State Disposal System (SDS) Permits

The State Disposal System Permit Program is administered by the MPCA and requires the issuance of permits for the disposal of wastes on land. Certain residual wastes fall under the SDS permit program. The permits are supported by a compliance and enforcement program which investigates complaints about water quality problems.

SUPPORTING PROGRAMS

The Clean Water Partnership and other state programs are supported by: ongoing monitoring and research, information and education, local water management planning and program delivery system and state water planning, coordination and evaluation.

A. MONITORING

1. Minnesota Pollution Control Agency (MPCA)

The Minnesota Pollution Control Agency conducts a variety of monitoring programs under the authorities granted by federal and state legislation. These programs collect and evaluate data which define the water quality of the state. the data are used to identify pollution, assess abatement programs, enforce environmental regulations, and report the changes in the state's water quality.

The Routine Water Quality Monitoring Program was the first monitoring program established, and it continues to be the cornerstone of the monitoring efforts conducted by the Agency. The program began in 1953 and monitors surface water quality throughout the state. In addition to this fixed ambient network, a variety of special monitoring programs also exist. Lake monitoring is conducted in conjunction with special lake studies, the Clean Lakes Program, a Lake Assessment Program, and a volunteer Citizen Lake-Monitoring Program. Additional stream information is collected by the Intensive Survey Program, the Border Waters Program, and the Nonpoint Source Pollution Program. Specialized data are collected by the Toxic Substances Monitoring Program, the Acid Rain Program, the Biomonitoring Program, and the Dredge and Fill Program. Data on permitted dischargers is collected by the Compliance Monitoring Program. Because much of this information is related and important to more than one program, a Data Management Program was established to computerize the data and make it available in a usable format to everyone. A Quality Assurance-Quality Control Program insures that the samples are collected, preserved, shipped, and analyzed by approved methods. All water quality samples collected are analyzed at the Minnesota Department of Health Chemical Laboratories and the resulting data are entered in STORET, the U.S. EPA computerized national water quality data bank.

2. Minnesota Department of Health

The Minnesota Department of Health (MDH) routinely monitors public water supplies for up to 23 different parameters. The list of parameters will be expanded to 83 over the next two years. The MDH requires that all new wells have samples collected and analyzed for nitrogen and total coliform bacteria.

3. Minnesota Department of Agriculture

The Minnesota Department of Agriculture monitors designated well locations within agricultural production areas to determine effects of pesticide and fertilizer use on ground water. The Environmental

Quality Section conducts pesticide, area and problem specific monitoring to provide information on trends for possible regulatory response. Surface water studies are anticipated to assess pesticide impacts of erosion, runoff and ground water.

4. Metropolitan Council

The Metropolitan Council monitors approximately 100 lakes on a three- to five-year rotating basis. The lakes are sampled for physical, biological and chemical character semi-monthly throughout the open water season. On occasion, lakes are sampled more intensively; for example, several cooperative diagnostic studies with year-round sampling have been done on select, high interest lakes. Data from the lake studies are maintained in data management systems, including STORET, and analyzed for regional trends, as well as lake-specific uniqueness. The Metropolitan Council is currently focusing its surface water monitoring on the water quality effectiveness of runoff management practices. The program underway is sampling on an event basis the runoff into, and out of, five detention and/or wetland treatment systems. Samples are analyzed for solids, nutrients, oxygen demand and lead. The Metropolitan Council in the past has sampled the effects of nonpoint source pollution on a watershed level. The programs were designed to obtain data on the nature and effects of nonpoint source pollution. The Metropolitan Waste Control Commission, in cooperation with the Metropolitan Council, has begun a long-term monitoring program of the major creeks discharging to the Minnesota River within the Metropolitan Area. This program is designed to identify the pollution load discharged by each of these creeks.

5. Minnesota Department of Natural Resources

The MDNR's Division of Fish and Wildlife, Ecological Services Section, conducts special surveys and investigations to determine the effects of various activities upon fish and wildlife. The Section also conducts routine water quality sampling at selected lakes.

6. Minnesota Department of Transportation

The MnDOT operates a water quality monitoring program intended to establish the relationship of highway construction projects and highway runoff to water quality. One portion of this program is collecting water quality samples from streams and lakes, both above and below the sites of new highway projects. This sampling is done to assess the existing background conditions of the stream or lake. Sampling is conducted over a period of 1-2 years, and the results of the analysis are reported in the draft environmental impact statement required for highway projects.

The second part of the MnDOT water quality monitoring program is the sampling of highway runoff from selected highway locations. This program, which began in 1976, is seeking to establish the flow and quality of highway runoff under various climatic conditions.

7. U.S. Department of the Interior, U.S. Geological Survey (USGS)

The general objectives of the USGS are to perform surveys, investigations, and research covering topography, geology, and the mineral and water resources of the United States; to classify land as to mineral character and water and power resources; to enforce departmental regulations applicable to oil, gas, and other mining leases, permits, licenses, development contracts, and gas storage contracts; and to publish and disseminate data about these activities.

The USGS has an office in Minnesota and conducts several water monitoring programs in cooperation with various state, federal, and local agencies. The principal agencies working with or providing financial support to the USGS efforts are the MDNR, the Minnesota Department of Transportation, the MPCA, and the U.S. Army Corps of Engineers.

The USGS maintains a stream water quality monitoring network of ____ stations sampled on a quarterly or monthly basis and stream sediment monitoring network of ____ stations sampled on a daily, periodic, or monthly basis. These monitoring networks are designed to give a broad overview of water quality and sediment conditions in the streams of the state.

8. U.S. Department of Interior, U.S. Fish and Wildlife Service (USFWS)

The USFWS conducts field investigations as needed to determine the nature, extent, and causes of localized pollution problems involving fish and wildlife. Some field investigations are joint studies with other federal or state agencies.

9. U.S. Forest Service (USFS)

As a normal procedure, the USFS monitors water quality at all sites prior to the commencement of a timber harvest and again upon completion of the project. Monitoring has been continued for five years after one such cut and the data used to refine cutting and land management policies. Also, national forest hydrologists are responsible for having a general understanding of the nature of water quality in their areas. Lakes and streams are monitored to meet this need.

A. MONITORING

Agency	4 Year Schedule of Activities	Sources of Funds
Pollution Control Agency	See Water Quality Monitoring Strategy (Appendix C)	
Department of Health	1)88-91 The list of monitoring parameters for public water supplies will be expanded from 23 to 83, including some pesticides, during this time period.	

Agency	4 Year Schedule of Activities	Sources of Funds
	2)Increase non-community water supply sampling program.	
Department of Agriculture	1)Pesticide impacts on unconsolidated aquifers and karst.	
	2)Atrazine concentration trends in central sand plains	
	3)Aldicarb impact on ground water	
	4)Pesticide impacts on ground water near the Pomme de Terre River.	
Metropolitan Council	88-92 Lake Survey in Metro	
Metropolitan Waste Control Commission	88-92 Assessment of impacts and abatement of NPS on the Minnesota River	
Department of Natural Resources	To be developed.	
Department of Transportation	To be developed.	
U.S. Geological Survey	To be developed.	
U.S. Fish & Wildlife Service	To be developed.	
U.S. Forest Service	To be developed.	

B. RESEARCH

1. University of Minnesota (U of M) - Agricultural Experiment Station

The Agricultural Experiment Station has a mission to organize and support basic and applied research in agriculture, forestry, home economics, veterinary medicine and related areas for the benefit of the state's economy and the well-being of its citizens. A major area of research is the production, processing, marketing and distribution of food and other agricultural products. Research is also directed at examining and improving public policies, at forests and forest products, other natural resources, human nitrition, family life, rural development, recreation and tourism and overall environmental quality. The program of the station is closely integrated with that of the Minnesota Extension Service, with the latter serving as a primary disseminator to the public of the applied research results.

This special appropriation, entitled "General Agricultural Research," from the State of Minnesota to the Agricultural Experiment Station is the station's major funding source. Combined with federal formula funds, gift, grant and contract funds (federal, state, and private), and income and fees, this funding permits the station to conduct research to address both the short- and long-term needs of Minnesota and its citizens.

2. University of Minnesota (U of M) - Center for Agricultural Impacts on Water Quality

The Center for Agricultural Impacts on Water Quality was formed to provide a coordinated interdisciplinary research approach to the impacts of agricultural management practices on water quality. The Center is within the Institute of Agriculture, Forestry, and Home Economics at the University of Minnesota. Funding is provided from research grants and a line item in the Agriculture Experiment Station budget.

3. University of Minnesota (U of M) - Water Resources Research Center

The Water Resources Research Center funds research projects to faculty at academic institutions in Minnesota on a wide range of subjects related to the state's natural waters, including transport and fate of pollutants from nonpoint sources to surface and ground waters.

4. U.S. Department of Agriculture (USDA) - Agricultural Research Service (ARS)

The ARS conducts basic, applied, and developmental research on a wide variety of topics related to agriculture. One of the ARS's primary concerns is the relationship between agricultural production and soil erosion and nutrient runoff. ARS has conducted research on the basic processes that control soil erosion and nutrient runoff. That research has included developing models for evaluating and prioritizing the pollution potential for livestock feedlots in the state and routing sediment and nutrients through a watershed.

5. Minnesota Department of Transportation (MnDOT)

The MnDOT conducts in-house staff research, administers research contracts, enters into cooperative research agreements, and provides financing for research related to highway de-icing chemicals, roadside erosion, and other road water quality projects.

6. U.S. Forest Service (USFS)

There are two national forests in Minnesota: the Chippewa and the Superior. These forests are divided into nine areas, each of which may field-test forest management techniques. All Forest Service experimental work in Minnesota is coordinated and supervised by the North Central Forest Experiment Station.

In general, the Experiment Station evaluates and improves forest management practices. Attention is largely focused on timber-harvesting techniques, including forest road construction, use of heavy machinery, and disposal of logging residuals. Also included is fire control, which may also imply soil structure maintenance and hence prevention of sediment effects on water. Other studies have been conducted to determine the effects of clear-cutting on water quality and to correlate changes in water quality with seasonal changes and storms.

B. RESEARCH

Agency	4 Year Schedule of Activities	Sources of Funds
1. University of MN Agricultural Experiment Station	*Research aimed at determining best management practices for nutrient and pesticide management.	State Legislative appropriation
	*Research on basic water resources of Minnesota related to rural communities and agricultural practices.	Research grants Contract funds
	*Research on the use of onsite sewage treatment systems.	
	*Research on the utilization of organic waste (manure, sewage sludge, compost).	
	*Research on the basic soil resource.	
	*Research on soil and water conservation practices as they relate to water quality.	
	*Research on water management in agriculture and forestry (drainage, irrigation).	

2. University of MN Center for Agricultural Impacts on Water Quality	*Research on best management practices for nutrient and pesticide management. *Research the management and utilization of organic waste (manure, sewage sludge, compost).	Line item appropriation. Grants and contracts.
3. University of MN Water Resources Research Center	To be developed.	
4. USDA Agricultural Research Service	To be developed.	
5. Department of Transportation	To be developed.	
6. U.S. Forest Service	To be developed.	

C. INFORMATION AND EDUCATION

1. Minnesota Extension Service

The Cooperative Extension Service is the educational arm of the national land grand University system. It is a cooperative effort relying on funding from federal, state, and local sources.

2. University of Minnesota, Center for Agricultural Impacts on Water Quality

The Center for Agricultural Impacts on Water Quality was formed to promote and coordinate interdisciplinary approach to research and education on the impacts of agricultural management practices on water quality. The Center is within the Institute of Agriculture, Forestry and Home Economics at the University of Minnesota. Funding is provided to the research and education programs through research grants and a line item in the agricultural Experiment Station budget.

3. University of Minnesota - Water Resources Research Center

The Center supports graduate education in water resources through a grant program and is active in information dissemination by sponsoring conferences and publishing reports related to water quality.

4. Board of Water and Soil Resources

The Board of Water and Soil Resources has responsibility for developing and implementing a comprehensive public information program of the Soil and Water Conservation Districts (SWCDs) and the problems and preventive practices related to erosion, sedimentation, and agriculturally-related pollution.

5. Soil and Water Conservation Districts

The SWCDs, in cooperation with the SCS, distribute information (brochures, pamphlets, exhibits) and conduct educational programs (talks, tours, workshops) on the subject of soil erosion and agriculturally related pollution as a regular part of their operations. The amount and type of activity that is conducted depends on the desires and resources of the individual district.

6. U.S. Department of Agriculture (USDA), Soil Conservation Service (SCS)

The SCS develops and distributes a wide variety of information on soil and water conservation to individuals, SWCDs, and the news media throughout the state. SCS personnel, often in conjunction with SWCDs, conduct workshops and make presentations to schools, at 4-H meetings, and to other interested groups. Educational tours are also periodically conducted by SCS personnel.

7. Minnesota Department of Agriculture

The Minnesota Department of Agriculture provides information and education through its pesticide training and certification programs. These programs are undergoing revision with inclusion of ground and surface water sections.

8. Minnesota Pollution Control Agency

The MPCA has developed general information booklets on NPS and Lake Protection.

C. INFORMATION AND EDUCATION

Agency	4 Year Schedule of Activities	Sources of Funds
MN Extension Service	*Educational programs will be provided for three priority subissues across program areas: 1. Agricultural impacts on water quality. 2. Safe drinking water for small communities and families. 3. Waste management and utilization. *Cooperate with the Minnesota Department of Agriculture to conduct educational programs on pesticide handling and use. *Inform the population about the extent and nature of Minnesota's water resources. *Increase awareness about the relationships between land use and effects on surface and ground water quality. *Illustrate best management practices in urban, agricultural and forest environments to reduce the impacts on water quality. *Encourage proper, new well construction and proper sealing of unused wells. *Joint programs will be conducted with other water resource agencies and private foundations. *Will continue the joint educational program with Minnesota Pollution Control Agency for onsite sewage treatment systems. *Contribute to public policy development on land use controls and chemical regulation.	Federal, State and Local

	*Conduct evaluations of water quality programs for effectiveness in leading to practice change. *Cooperate and coordinate with other water resource agencies the dessimination of informational items related to water quality. *Work with local water planning organizations to provide research data in the local water planning process.	
2. Univ. of MN, Ctr. for Agricultural Impacts on Water Quality	*Coordinate educational programs on agricultural management practices related to water quality. *Provide leadership in the development of waste management and utilization related to agriculture and rural communities.	
3. Univ. of MN, Water Resources Center		
4. Board of Water & Soil Resources	Continue to conduct ongoing and special activities about $50,000 statewide.	State Local
5. Soil and Water Conservation Districts	Continue at $250,000 per year statewide, increasing at ten percent per year.	State Local
6. USDA, Soil Conservation Service	To be developed.	
7. MN Dept. of Agriculture	To be developed.	
8. MN Pollution Control Agency	To be developed.	

D. LOCAL WATER PLANNING

1. Comprehensive Local Water Management

In 1986, the Minnesota Legislature enacted the Comprehensive Local Water Management Act (Minn. Stat. section 110B.01 (1986)). Under this Act, each county outside the Metro area is encouraged to develop and implement a comprehensive water plan. The county is responsible for preparing, adopting, and assuring implementation of the Comprehensive Water Plan, but it may delegate all or part of the preparation to a local unit of government, a regional commission, or a resource conservation and development committee. The county may not delegate its authority for the exercise of eminent domain, taxation, or assessment to a local unit which does not possess those powers.

Each county will be responsible for coordinating local and inter-county efforts to resolve water resource problems. They will incorporate existing plans and rules adopted by a watershed district or Intercounty Joint Powers Board into its own comprehensive water plan.

After a plan is completed, but before it is adopted, it must be submitted for approval to local governments, the regional development commission, any contiguous county or watershed management organization, and any other governmental unit affected by the plan's proposals. These governmental units will then review the plan and relate any possible conflicts to their own plans. After a local review period and hearing, the Board of Water and Soil Resources will review and approve the plan. If the plan is adopted, the affected local governments must conform to the county's plan.

When a county develops a plan, it must address several requirements established in Minn. Stat. § 100B. A local water plan must:

a. cover the entire area within a county;
b. address problems within the context of watershed units and ground water systems;
c. be based upon principles of sound hydrologic management of water, effective environmental protection and efficient management;
d. be consistent with comprehensive water plans prepared by counties and watershed management organizations wholly or partially within a single watershed unit or ground water system; and
e. apply to every year through the year 1995 or any later year that is evenly divisible by five, and be updated before the period covered expires.

Fifty-four counties outside the Metro area are currently in the process of developing local water plans.

2. Metropolitan Surface Water Management Act

The Metropolitan Surface Water Management Act of 1982 (Minn. Stat. 473.878), assigned water resources planning and management responsibilities to local government units in the Minneapolis/St. Paul Metropolitan area.

The legislature's philosophy that prevention of water problems through sound planning and management is better public policy than allowing water problems to develop. Therefore, the act requires that stormwater management plans shall be prepared and implemented over the seven county metropolitan area. To effectuate the purposes of the Act, the Board of Water and Soil Resources requires the watershed management organizations responsible for preparing the watershed plans do the following:

a. assess existing water quantity and quality problems;
b. assess potential water problems and opportunities for natural resource enhancement in view of projected watershed development;
c. and formulate practical strategies to correct existing problems, to prevent potential problems, and to take advantage of opportunities to enhance water related natural resources.

The Act recognizes that management of a body of water or water course requires control of the contributing drainage area. Therefore, the Act requires, as a first step the preparation of a water management plan for each and every watershed unit in the metropolitan area.

After a watershed management organization or county has drafted a watershed plan, it must submit the plan for review and comment to every affected soil and water conservation district, county, city and township.

The Metropolitan Council must review the plan for compatibility with other local plans, and consistency with other metropolitan plans, the Department of Natural Resources and Pollution Control Agency review and comment on the plan's consistency with state laws and rules. The Board of Water and Soil Resources reviews the watershed plan for conformance with the requirements of the Act.

a. description of existing and proposed physical environment and land use;
b. definition of drainage areas and the volumes, rates and paths of stormwater runoff;
c. identification of areas and elevations for stormwater storage adequate to meet performance standards established in the watershed plan;
d. definition of water quality and water quality protection methods adequate to performance standards established in the watershed plan;
e. identification of regulated areas; and
f. an implementation program, outlining a description of official controls and, as appropriate, a capital improvement program.

Forty-six water management organizations are currently developing local water plans in the metropolitan area.

D. LOCAL WATER PLANNING

Agency	4 Year Schedule of Activities	Sources of Funds
1. Comprehensive Local Water Management	Completion of the 54 plans started and work toward their implementation.	
2. Metropolitan Surface Water Management	Completion of the 46 plans and work toward their implementation.	

E. LOCAL PROGRAM DELIVERY SYSTEM AND TECHNICAL ASSISTANCE

1. Counties

Counties are general purpose local units of government with broad authorities to implement nonpoint source pollution control programs. Most of Minnesota's 87 counties have comprehensive land use planning programs and ordinances controlling land use and development. Within established state requirements, counties can organize their comprehensive land use planning programs according to local circumstances and the judgement of local officials.

As the legislative branch of county government, the county board establishes the land use planning program. The county board appoints members of the planning commission and hires a county planning staff. The county board has five commissioners elected to four-year terms from five separate districts that are approximately equal in population. The county board has a authority to prepare, and adopt by ordinance, a comprehensive land use plan that is the basis for county zoning ordinances.

Since county boards have many other responsibilities, state law encourages them to appoint planning commissions to advise them in formulating, implementing, and administering land use policies. If appointed, the planning commission must have from 5 to 11 regular members. The responsibilities delegated to the planning commission by the county board generally fall into four categories: (1) helping to develop a comprehensive land use plan; (2) recommending specific ordinances and amendments for adoption by the county board; (3) conducting hearings on proposed ordinances and amendments, and transmitting findings and conclusions to the board; and (4) being actively involved in land use control programs, including the review of applications for conditional use permits.

Each county, through the county extension committee appointed by the county board and in cooperation with the Minnesota Extension Service, establishes a county extension service program and hires the county extension director and county extension agents. The county extension director and agents spend a great deal of time providing one-to-one counseling services, ranging on a variety of water quality and land use management issues.

2. Watershed Districts

Watershed Districts are public corporations, created to assist in the conservation of Minnesota's natural resources, and to protect public health and welfare, and natural resources.

A watershed district may be established to control flooding, improve stream channels for drainage or navigation, reclaim or fill wet or overflowed lands, and provide irrigation water. A district may be formed to regulate stream flow and conserve stream waters, divert water courses, provide and conserve water supply for domestic, industrial, recreational, agricultural or other public use. It may

provide for sanitation and regulation of waterbodies. Furthermore, a district may regulate improvements by riparian landowners, generate hydroelectric power, protect or enhance water quality, and regulate ground water.

To establish a watershed district, a nominating petition must be filed with the Minnesota Board of Water and Soil Resources. The petition must be signed by at least half of the counties within the proposed District, or by a county with at least fifty percent of the area within the proposed District, or a majority of cities within the proposed District. Alternatively, the petition must have the signatures of at least fifty freeholders in the proposed District, exclusive of the resident freeholders within the corporate limits of any city on whose behalf the authorized official has signed the petition. This is significant because it allows groups of concerned citizens an opportunity to organize with significant authority, where the general purpose units of government are not responsive to their concerns.

The Board of Managers has power to make necessary land and water surveys and cooperate or contract with other governmental bodies. It may regulate, conserve, control, and change waterways, waterbodies and water uses. The Board may acquire by gift or eminent domain real and personal property within the District or outside the District, if necessary, for a water supply system. The Board of Managers may take over county drainage systems when directed by the county board. It may provide for sanitation, and borrow funds from federal, state or county governments. Finally, the Board may mandate flood controls and preserve open spaces and greenbelts.

Because of its public corporation status, a district has perpetual existence with the power to sue and be sued, and incur debts, liabilities, and obligations. A district may exercise the power of eminent domain, provide for assessments, and issue certificates, warrants and bonds. It may also levy taxes. Violations of Chapter 112 or rules, orders or permits issued by a board of managers of a watershed constitute misdemeanors. Violations may be enforced through criminal prosecution, injunction, action to compel performance, restoration, abatement or other appropriate action.

3. Soil and Water Conservation Districts

Soil and Water Conservation Districts are created to conserve soil and water resources through the implementation of practices which prevent erosion, sedimentation, siltation, and agriculturally related pollution. The conservation practices will preserve natural resources and wildlife, insure continued soil productivity, control floods, prevent impairment of dams and reservoirs, assist in maintaining the navigability of rivers and harbors, and protect public lands. SWCDs prepare and implement erosion control and soil and water conservation plans and practices on individual properties. SWCD programs and suggestions are implemented by affected persons on a voluntary basis.

Originally formed to address soil erosion problems for the purpose of sustaining productivity, SWCDs are currently giving increased emphasis and attention to off-farm impacts including water quality protection, especially from agricultural sources. The strength of SWCD is their expertise and experience in addressing soil and water management, especially on agricultural lands. The primary limitations are they have neither taxing authority nor the authority to initiate official controls.

SWCDs have close relationships with county boards, the Board of Water and Soil Resources (BWSR), and the United States Department of Agriculture-Soil Conservation Service (SCS). The board of the county in which the SWCD is located may provide the SWCD with funds to operate district programs. BWSR reviews annual plans prepared by SWCDs and must approve the plans before SWCDs can receive operation assistance funds from BWSR. SWCD employees work closely with SCS employees in identifying soil and water conservation needs and in encouraging implementation of soil and water conservation control practices.

The annual budgets of SWCDs vary greatly. Funds for SWCD programs generally come from the county board, BWSR, and from income from local projects, such as tree planting.

SWCDs have broad responsibilities to encourage and assist in implementing soil and water conservation practices by landowners. They may provide analysis, data, and design assistance to landowners upon request. Prevention of soil erosion and water quality management is strongly emphasized in these programs.

4. USDA-Soil Conservation Service (SCS)

SCS programs are directed towards the achievement of conservation and wise use of soil, water and related land resources. Priority program goals are 1) to reduce the damage caused by excessive soil erosion and 2) protect the quality of ground and surface water against contamination by nonpoint sources of pollution.

SCS provides, through its Soil and Water Conservation Operations Program, technical assistance to individuals, groups, and units of government through local Soil and Water Conservation Districts including the planning and application of Land Management Systems, providing for quality assurance of installed practices and BMPs, technology development to assure latest research and methodology is utilized in addressing priority concerns, and training in the application of existing and newly developed techniques for addressing soil and water resource problems and concerns.

5. Metropolitan Council

The Metropolitan Council, a regional agency created under the laws of Minnesota, is charged with the authority to coordinate the planning and development of the seven county metropolitan area. The metropolitan area generally includes the Counties of Anoka, Carver,

Dakota, Hennepin, Ramsey, Scott and Washington. The Metropolitan Council is authorized by state and federal laws to plan for highways and transit, sewers, parks and open space, airports, land use, air and water quality, waste management, health, housing and aging. The Metropolitan Council will continue to collect data on lakes and document nonpoint source pollution problems, with the assistance of the Metropolitan Waste Control Commission, and document the effectiveness of commonly used management practices. It provides this information to municipalities, governmental agencies and watershed management organizations. The Metropolitan Council prepares and implements policy for watershed management organizations on nonpoint source pollution and reviews activities that are likely to cause an increase in nonpoint pollution loading. Such reviews include environmental assessment worksheets, environmental impact statements and watershed plans prepared under the Metropolitan Area Surface Water Management Act.

5. Regional Development Commissions (RDCs)

Authorized by the Regional Development Act of 1969, RDCs were established for all areas of Minnesota. Three of the twelve RDC have been dissolved.

The nine remaining RDCs are authorized to: (1) receive grants from various state and federal programs that provide funds for multi-county planning, coordination, and development purposes; (2) prepare and adopt, after study and public hearings, a comprehensive development plan for the region; (3) review and comment upon any comprehensive plan prepared by any local unit of government within the region; (4) review applications for state or federal assistance made by any local government unit, and comment upon the relationship of the application to the comprehensive plans and priorities of the region; (5) conduct special studies of programs and problems relevant to the region, including water pollution programs and problems; and (6) contract with local units of government to assist them with local planning and development activities.

Most RDCs form executive committees. Subject to approval by the entire commission membership, these committees conduct much of the RDCs' business. RDCs may also appoint special advisory committees to assist them in specific subject areas or planning programs.

The RDC chairman is responsible for recommending an executive director for appointment by the commission. The executive director is responsible for supervising the commission staff and for implementing commission programs.

RDCs were required to develop Comprehensive Development Plans for their respective regions; these plans included land use-related policies and objectives. RDCs follow these policies when assisting local government planners and when reviewing federally financed local projects for consistency with the Comprehensive Development Plan.

7. Townships

A township may develop a planning and zoning program if it is an urban town or if, under most circumstances, the township's residents vote to develop such a program. Townships which choose to exercise zoning authority may undertake planning programs in order to develop zoning ordinances and to ensure orderly development within the townships. The town board may appoint an advisory planning and zoning commission and employ a planning staff when necessary. Zoning programs developed to implement township plans regulate land use, including development of confined animal facilities.

8. Community Health Services

The Minnesota Department of Health provides funding to community health service (CHS) agencies which can be used for environmental health related activities at CHS discretion. The activities may include private water well testing, public non-community water well supply testing and inspection, on-site sewage disposal system permitting and inspection, water well construction and abandonment.

E. LOCAL PROGRAM DELIVERY SYSTEM AND TECHNICAL ASSISTANCE

Agency	4 Year Schedule of Activities	Sources of Funds
Metropolitan Council	Each year will identify and assist development of priority NPS Abatement projects in Metro Area	
	- Study financing alternatives for NPS abatement 88-89	
	- Study adequacy of institutions for NPS abatement 88-89	
	- Evaluation of BMPs 88-90	
	- Study land use phosphorus export values 89-92	
	- Lake use impairment definition 88-89	
	- Evaluate lake data collection 89-90	
	- Survey of streambank erosion 90-91	

F. STATE WATER PLANNING, COORDINATION AND PROGRAM EVALUATION

1. Minnesota Environmental Quality Board (MEQB)

The principal function of MEQB is to review and coordinate the environmental policies and programs of state agencies.

EQB is composed of the heads of nine state agencies (State planning, Pollution Control, Health, Natural Resources, Agriculture, Public Service, Transportation, Board of Water and Soil Resources and Waste Management Board), plus a representative of the governor's office and five members from the general public.

By Minnesota Statute, the Environmental Quality Board is charged with:

a. Determining environmental problems of interdepartmental concern and initiating interdepartmental investigations;
b. Reviewing and coordinating state agency programs that are interdepartmental in nature and ensuring compliance with state environmental policy;
c. Reviewing environmental regulations and criteria for granting and denying permits by state agencies and resolving interagency conflicts with regard to programs, regulations, permits and procedures;
d. Evaluating proposed legislation and reporting findings to the governor and legislature;
e. Coordinating public water resources management and regulation activities among state agencies;
f. Initiating, coordination and continuing to develop comprehensive long-range water resources plans;
g. Coordinating water planning activities of local, regional and federal bodies with state planning; and,
h. Administer federal water resources planning with multiagency interests.

EQB established the Water Resources Committee (WRC) in 1985 to assist it in carrying out the water resources aspects of its charge. WRC is composed of five EQB agency members, or their designees (Agriculture, Health, Natural Resources, Pollution Control and Board of Water and Soil Resources), two EQB citizen members, and a representative from the University of Minnesota. The Waste Management Board will be added on 7/1/88. WRC is assisted by an interagency technical committee.

WRC's primary purpose is to provide the focus necessary for effective integration of water programs and policies through monitoring water-related activities of EQB and other agencies engaged in public water management and advising EQB on a comprehensive water strategy for the state. Specific responsibilities of WRC include:

a. Review of legislative initiatives to ensure interagency discussion, coordination, elimination of duplication, and responsiveness to and consistency with the state's water resources strategies and priorities;
b. Review agency budget requests to ensure coordination, eliminate duplication and identify areas of highest funding priority;

c. Prepare and recommend to EQB a comprehensive water resources strategy for the state, including biennial water resources priorities and a ten year agenda for meeting the goals of the strategy; and,
d. Coordinate and facilitate activities necessary to achieve the goals of the strategy.

State strategies under development include:

a. Water Resources Strategy for Control of Pests and Management of Nutrients - WRC is leading an interagency effort to evaluate Minnesota's current activities related to pesticide and nutrient contamination and developing a state strategy to ensure that pests are controlled and nutrients managed in a manner that safeguards Minnesota's water resources. The strategy will be finalized for adoption by EQB in August 1988.
b. Minnesota Ground Water Protection Strategy - Development of this strategy by the Pollution Control Agency is being coordinated through WRC and EQB. The strategy will be finalized for adoption by EQB in August 1988.
c. A Control Strategy for Nonpoint Source Ground Water Pollution Development of this strategy by the Pollution Control Agency is being coordinated through WAC and MEQB.
d. Minnesota Nonpoint Source Management Program - Pollution Control Agency development of this program is being coordinated through WRC and EQB.

2. Minnesota Pollution Control Agency

The MPCA was established to address the various complex problems relating to water, air and land pollution and to achieve for water, air and land resources a degree of quality consistent with maximum public enjoyment and use.

Minn. Stat. 115.101 requires the MPCA to coordinate the programs and activities used to control nonpoint sources of pollution to achieve Minnesota's water quality goals, by:

a. developing a state plan for the control of nonpoint source water pollution in order to meet the requirements of the federal Clean Water Act;
b. working through the environmental quality board to coordinate the activities and programs of federal, state, and local agencies involved in nonpoint source pollution control and, where appropriate, develop agreements with federal and state agencies to accomplish the purposes and objectives of the state nonpoint source pollution control plan. To date, several memoranda of agreement have been completed.

    1) Strategy for Planning for the Abatement of Nonpoint Sources of Pollution in the Metropolitan Area - MPCA, Metropolitan Council and Metropolitan Waste Control Commission.
    2) Control of Nonpoint Sources - MPCA and MDNR.
    3) Procedures for Cooperative Involvement in Regulation of Mining Industries - MPCA and MDNR.

4) Coordination and Cooperation of Activities and Programs Related to Protection, Management and Conservation of Lake Associated Natural Resources - MPCA and MDNR; and

c. evaluating the effectiveness of programs in achieving water quality goals and recommend to the legislature, under section 3.195, subd. 1, any necessary amendments to sections 115.091 to 115.102.

Minnesota River Strategy. The Minnesota Pollution Control Agency is leading an interagency effort focusing on development of a strategy for control of nonpoint source pollution in the Minnesota River. The activities associated with this effort involved the following:

- Twenty-four of thirty-seven counties in the Minnesota River Basin are involved in Comprehensive Local Water planning. Staff at the Minnesota Pollution Control Agency have been very active in assisting in the development of these plans including staff attendance at approximately fifty local meetings.

- A comprehensive monitoring program between the Minnesota Pollution Control Agency, the U.S. Geological Survey, the U.S. Environmental Protection Agency ERL-Duluth, the U.S. Fish and Wildlife Service, the Board of Water and Soil Resources, the South Central Minnesota Planning Project, and Mankato State University is being developed. The proposed program will establish a monitoring network throughout the entire Minnesota River basin.

- A demonstration effort between the U.S. Environmental Protection Agency ERL-Duluth, the Minnesota Pollution Control Agency, the Minnesota Department of Natural Resources, and Mankato State University is also being developed. The goal of this project is to demonstrate and evaluate the application of land use and habitat management alternatives to enhance water quality and other environmental objectives in a designated watershed.

- The Metropolitan Council and the Metropolitan Waste Control Commission are doing detailed studies of seven tributaries to the Minnesota River near the Metropolitan area. This effort started in 1988 and will continue for at least five years.

3. State Planning Agency, Land Management Information Center (LMIC)

The LMIC provides information about land and its characteristics to state agencies, RDCs, and local governments. Information such as soil type and erodibility, soil nutrient factors, water resources, and land-use patterns can be used in the analysis of potential for NPS pollution problems.

F. STATE WATER PLANNING, COORDINATION AND PROGRAM EVALUATION

Agency	4 Year Schedule of Activities	Sources of Funds
Environmental Quality Board	1) Water Resources Ten-Year Agenda - The agenda will be established to address the state overall water resources strategy, and will be reviewed and revised on a two year basis. 1989-1999 agenda - completed fall '88 1991-2001 agenda - completed fall '90 2) Water Resources Priority Recommendations - Water resources issues and the Ten-Year Agenda will be evaluated and priority recommendations developed on a two year basis to coincide with the state biennium. 1989-1991 recommendations report - completed fall '88 1991-1993 recommendations report - completed fall '90 3) Water Resources Budgetary and Legislative Initiative Review - Agency budgetary and legislative initiatives will be reviewed annually, with recommendations provided to the governor and legislature prior to the beginning of each legislative session. 4) Strategy Development and Implementation a. Comprehensive Lake Management Program - Development of this program by DNR will be coordinated through EQB for adoption in 1989. b. Ground Water Protection Strategy, Water Resources Strategy for Control of Pests and Management of Nutrients, and Nonpoint Source Management Program. Efforts will begin in fall of 1988 to coordinate development of necessary legislative and budgetary initiatives for the 1989 action include: 5) Environmental Congresses - EQB will sponsor congresses at least every other year to facilitate public input into the identification of prior environmental issues and concerns.	
MN Pollution Control Agency	1) Set up tracking system to evaluate impacts of Minnesota NPS Management Program on Water Quality. 2) Identify and develop memorandum of agreement to implement Minnesota Nonpoint Source Management Program. 3) Prepare grant proposals and reports as required to meet requirement of 319.	
MN River Strategy	To be developed.	

APPENDIX A

Minnesota Statute Section 115.091 through 115.103

Minnesota Clean Water Partnership Act

115.091 CITATION

Sections 15.091 to 115.102 may be cited as the "Minnesota clean water partnership act."

History: 1987 c 392 s 1

115.092 PURPOSE

(a) It is the purpose of the legislature in enacting the Minnesota clean water partnership act to protect and improve surface and ground water in Minnesota, through financial and technical assistance to local units of government to control water pollution associated with land use and land management activities.

(b) It is also the purpose of the legislature to:

(1) identify water quality problems and their causes;

(2) direct technical and financial resources to resolve water quality problems and to abate their causes;

(3) provide technical and financial resources to local units of government for implementation of water quality protection and improvement projects;

(4) coordinate a nonpoint source pollution control program with elements of the existing state water quality program and other existing resource management programs; and

(5) provide a legal basis for state implementation of federal laws controlling nonpoint source water pollution.

History: 1987 c 392 s 2

115.093 DEFINITIONS

Subdivision 1. Applicability. The definitions in this section apply to sections 115.091 to 115.102.

Subd. 2. Agency. "Agency" means the pollution control agency.

Subd. 3. Best management practices. "Best management practices" means practices, techniques, and measures, that prevent or reduce water pollution from nonpoint sources by using the most effective and practicable means of achieving water quality goals. Best management practices include, but are not limited to, official controls, structural and nonstructural controls, and operation and maintenance procedures.

Subd. 4. Director. "Director" means the director of the pollution control agency.

Subd. 5. Local unit of government. "Local unit of government" means a statutory or home rule charter city, town, county, soil and water conservation district, watershed district, an organization formed for the joint exercise of powers under section 471.59, and any other special purpose district or

authority exercising authority in water and related land resources management
at the local level.

Subd. 6. Nonpoint source. "Nonpoint source" is a land management activity or land use activity that contributes or may contribute to ground and surface water pollution as a result of runoff, seepage, or percolation and that is not defined as a point source in section 115.01, subdivision 15. Nonpoint sources include, but are not limited to rural and urban land management activities and land use activities and specialty land use activities such as transportation.

Subd. 7. Official controls. "Official controls" means ordinances and regulations that control the physical development of the whole or part of a local government unit or that implement the general objectives of the local government unit.

Subd. 8. Project. "Project" means the diagnostic study of water pollution caused by nonpoint sources water pollution, a plan to implement best management practices, and the physical features constructed or actions taken by a local unit of government to implement best management practices.

Subd. 9. Water pollution. "Water pollution" means water pollution as defined in section 115.01, subdivision 5.

Subd. 10. Waters of the state. "Waters of the state" means waters as defined in section 115.01, subdivision 9.

History: 1987 c 392 s 3

115.094 CLEAN WATER PARTNERSHIP PROGRAM ESTABLISHED

A clean water partnership program is established as provided in sections 115.091 to 115.102. The agency shall administer the program in accordance with those sections. As a basis for the program, the agency and the metropolitan council shall conduct an assessment of waters in accordance with section 115.095. The agency shall then provide financial and technical assistance in accordance with section 115.096 to local units of government for projects in geographical areas that contribute to surface or ground water flows. The projects shall provide for protection and improvement of surface and ground water from nonpoint sources of water pollution.

History: 1987 c 392 s 4

115.095 STATEWIDE RESOURCE ASSESSMENT

The agency shall conduct an assessment of waters of the state that have been polluted by nonpoint sources and of geographical areas with waters of the
state that have a high potential for water pollution caused by nonpoint sources. The metropolitan council shall conduct the assessment in the metropolitan area, as defined in section 473.121, subdivision 2, in cooperation with the agency. The assessment shall be completed by July 1, 1988.

History: 1987 c 392 s 5

115.096 FINANCIAL AND TECHNICAL ASSISTANCE: ELIGIBILITY

Subdivision 1. Financial assistance. The agency may award grants for up to 50 percent of the eligible cost for (1) the development of a diagnostic study and implementation plan, and (2) the implementation of that plan. The agency shall determine which costs are eligible costs and grants shall be made and used only for eligible costs.

Subd. 2. Technical assistance. The agency may provide technical assistance to local units of government in order to ensure efficient and effective development and implementation of projects and coordination of projects with other water management activities.

History: 1987 c 392 s 6

115.097 ELIGIBILITY FOR ASSISTANCE

Subdivision 1. Generally. To be eligible for the financial or technical assistance or both as provided in section 115.096, a local unit of government applying for assistance must (1) have authority to coordinate and enter into contracts with local, state, and federal agencies and private organizations, raise funds, and adopt and enforce official controls; and (2) provide the agency with those documents required in subdivision 2.

Subd. 2. Documents required. (a) An applicant for assistance shall submit the following to the agency:

(1) an application form as prescribed by the agency;

(2) evidence that the applicant has consulted with the local soil and water conservation districts and watershed districts, where they exist, in preparing the application; and

(3) one of the following documents:

(i) the comprehensive water plan authorized under chapter 110B;

(ii) a surface water management plan required under section 473.878;

(iii) an overall plan required under chapter 112; or

(iv) any other local plan that provides an inventory of existing physical and hydrologic information on the area, a general identification of water quality problems and goals, and that demonstrates a local commitment to water quality protection or improvement. After July 1, 1991, only projects that are a part of, or are responsive to a local water plan under chapters 110B, 112, or sections 473.875 to 473.883 will be eligible under this clause.

(b) The document submitted in compliance with paragraph (a), clause (3) must identify existing and potential nonpoint source water pollution problems and must recognize the need and demonstrate the applicant's commitment to abate or prevent water pollution from nonpoint sources in the geographic areas
for which the application is submitted.

History: 1987 c 392 s 7

115.098 AGENCY REVIEW OF APPLICATIONS; RANKING OF PROJECTS

The agency shall rank applications for technical and financial assistance in order of priority and shall, within the limits of available appropriations, grant those applications having the highest priority. The agency shall be rule adopt appropriate criteria to determine the priority of projects.

The criteria shall given the highest priority to projects that best demonstrate compliance with the following objectives:

(a) The project demonstrates participation, coordination, and cooperation between local units of government and other public agencies, including soil and water conservation districts or watershed districts, or both those districts.

(b) The degree of water quality improvement or protection is maximized relative to the cost of implementing the best management practices.

(c) Best management practices provide a feasible means to abate or prevent nonpoint source water pollution.

(d) The project goals and objectives are consistent with the state water quality management plans, the statewide resource assessment conducted under section 115.095, and other applicable state and local resource management programs.

History: 1987 c 392 s 8

115.099 PLAN IMPLEMENTATION

Subdivision 1. Implementation according to law and contract. A local unit of government receiving technical or financial assistance or both from the agency shall carry out the implementation plan approved by the agency according to the terms of that plan, any contract or grant agreement made with the agency and according to sections 115.091 to 115.102, the rules of the agency, and applicable federal requirements.

Subd. 2. Review by agency. The director or the director's designee may, at any reasonable time, inspect any project and review the expenditure of financial assistance funds granted by the agency in order to determine whether the local unit of government has complied with subdivision 1.

Subd. 3. Enforcement of agreements. The agency may bring a civil action in district court to recover from a local governmental unit any financial assistance funds used in violation of subdivision 1.

History: 1987 c 392 s 9

115.10 RULES

The agency shall adopt permanent rules necessary to implement sections 115.091 to 115.102. The rules shall contain at a minimum:

(1) procedures to be followed by local units of government in applying for technical or financial assistance or both;

(2) conditions for the administration of assistance;

(3) procedures for the development, evaluation, and implementation of best management practices;

(4) requirements for a diagnostic study and implementation plan;

(5) criteria for the evaluation and approval of a diagnostic study and implementation plan;

(6) criteria for the evaluation of best management practices;

(7) criteria for the ranking of projects in order of priority for assistance;

(8) criteria for defining and evaluating eligible costs and cost-sharing by local units of government applying for assistance; and

(9) other matters as the agency and the director find necessary for the proper administration of sections 115.091 to 115.102, including any rules determined by the director to be necessary for the implementation of federal programs to control nonpoint source water pollution.

History: 1987 c 392 s 10

115.101 NONPOINT SOURCE POLLUTION CONTROL PLAN AND PROGRAM EVALUATION

For the purpose of coordinating the programs and activities used to control nonpoint sources of pollution to achieve Minnesota's water quality goals, the agency shall:

(1) develop a state plan for the control of nonpoint source water pollution in order to meet the requirements of the federal Clean Water Act;

(2) work through the environmental quality board to coordinate the activities and programs of federal, state, and local agencies involved in nonpoint source pollution control and, where appropriate, develop agreements
with federal and state agencies to accomplish the purposes and objectives of the state nonpoint source pollution control plan; and

(3) evaluate the effectiveness of programs in achieving water quality goals and recommend to the legislature, under section 3.195, subdivision 1, any necessary amendments to sections 115.091 to 115.102.

History: 1987 c 392 s 11

115.102 INTEGRATION OF DATA

The data collected for the activities of the clean water partnership program that have common value for natural resources planning must be provided
and integrated into the Minnesota land management information system's geographic and summary data bases according to published data compatibility guidelines. Costs associated with this data delivery must be borne by this activity.

History: 1987 c 392 s 12

115.103 PUBLIC AGENCY COORDINATION

Subdivision 1. Project coordination team; membership. The director shall establish and chair a project coordination team made up of representatives of the pollution control agency, department of natural resources, soil and water conservation board, department of agriculture, department of health, state planning agency, Minnesota extension service,

University of Minnesota agricultural experiment stations, United States Army Corps of Engineers, United States Environmental Protection Agency, United States Department of Agriculture Agriculture Stabilization and Conservation Service, United States Department of Agriculture Soil Conservation Service, water resources board, metropolitan council, Association of Minnesota Counties, League of Minnesota Cities, Minnesota Association of Townships, and other agencies as the director may determine.

Subd. 2. Duties. The project coordination team shall advise the agency in preparation of rules, evaluate projects, and recommend to the director those projects that the team believes should receive financial or technical assistance or both from the agency. After approval of assistance for a project by the agency, the team shall review project activities and assist in the coordination of the state program with other state and federal resource management programs.

History: 1987 c 392 s 13

APPENDIX B

Minnesota Rules Chapter 7076

9/19/88

Adopted Permanent Rules Relating to Clean Water Partnership

CHAPTER 7076
MINNESOTA POLLUTION CONTROL AGENCY
WATER QUALITY DIVISION
CLEAN WATER PARTNERSHIP GRANTS

7076.0100 PURPOSE

This chapter provides for the administration of the state clean water partnership grant program and the federal nonpoint source management program as provided by United States Code, title 33, section 1329. Parts 7076.0100 to 7076.0290 implement these programs by establishing the substantive criteria and procedural conditions under which the agency may award state matching grants and provide technical assistance for the development and implementation of nonpoint source projects.

7076.0110 DEFINITIONS

Subpart 1. Scope. The terms used in Parts 7076.0100 to 7076.0290 have the meanings given them in Minnesota Statutes, chapters 115 and 116 and rules adopted under those chapters and the meanings given them in this part. If terms defined in this part conflict with the definitions in Minnesota Statutes, chapters 115 and 116 and the rules adopted under those chapters, the definitions in this part govern.

Subp. 2. Agency. "Agency" means the Pollution Control Agency.

Subp. 3. Best management practices. "Best management practices" has the meaning given it in Minnesota Statutes, section 115.093, subdivision 3.

Subp. 4. Commissioner. "Commissioner" means the Commissioner of the Pollution Control Agency.

Subp. 5. Land occupier. "Land occupier" means a person, who possesses lands in the project area whether as owner, lessee, renter, tenant, or otherwise, including successors of a land occupier who received a payment during the minimum effective life of a best management practice.

Subp. 6. Local share. "Local Share" means the contributions of a local unit of government to the eligible cost of a project, including the value of cash expenditures and in-kind contributions of labor, equipment, material and real property used for and expended on eligible project activities.

Subp. 7. Local unit of government. "Local unit of government" has the meaning given it in Minnesota Statutes, section 115.093, subdivision 5.

Subp. 8. Local water plan. "Local water plan" means a comprehensive water plan authorized under Minnesota Statutes, ch. 110B, a surface water management plan required under Minnesota Statutes, section 473.878, an overall plan, required under Minnesota Statutes, ch. 112, or until July 1, 1991 any other local plan that provides an inventory of existing physical and hydrologic information on the area, a general identification of water quality problems and goals, and that demonstrates a local commitment to water quality protection or improvement.

Subp. 9. Nonpoint source. "Nonpoint Source" has the meaning given it in Minnesota Statutes, section 115.093, subdivision 6.

Subp. 10. Official controls. "Official controls" has the meaning given it in Minnesota Statutes, section 115.093, subdivision 7.

Subp. 11. Person. "Person" has the meaning given to it in Minn. Stat. section 115.01 Subd. 10.

Subp. 12. Project. "Project" has the meaning given it in Minnesota Statutes, section 115.093, subdivision 8.

Subp. 13. Project area. "Project area" means the area identified as hydrologically contributing to the water of concern for which the diagnostic study and implementation plan are developed and implemented.

Subp. 14. Project continuation grant amendment. "Project continuation grant amendment" means an amendment to an existing project implementation grant, to provide funds to continue implementation of activities identified in an approved diagnostic study and implementation plan that were not funded in the initial project implementation grant.

Subp. 15. Project coordination team. "Project coordination team" means the public interagency group established in Minnesota Statutes, section 115.103, subdivision 1.

Subp. 16. Project development. "Project development" means the development of a diagnostic study and implementation plan.

Subp. 17. Project development grant. "Project development grant" means a grant from the agency to the project sponsor for the preparation of a diagnostic study and implementation plan.

Subp. 18. Project implementation. "Project implementation" means the implementation of an approved diagnostic study and implementation plan or their equivalent.

Subp. 19. Project implementation grant. "Project implementation grant" means a grant from the agency to the project sponsor for the implementation of a diagnostic study and implementation plan or their equivalent.

Subp. 20. Project sponsor. "Project sponsor" means the local unit of government that applies for a grant, enters into a grant contract and is responsible for development and implementation of the project.

Subp. 21. Water pollution. "Water pollution" has the meaning given it in Minnesota Statutes, section 115.01, subdivision 5.

Subp. 22. Waters of the state. "Waters of the state" has the meaning given it in Minnesota Statutes, section 115.01, subdivision 9.

Subp. 23. Water of concern. "Water of concern" means the specific water of the state which the project is focused on improving or protecting.

7076.0120 AVAILABLE ASSISTANCE

Subpart 1. Financial assistance. There are two types of grants available or nonpoint source projects: (1) project development grants, and (2) project implementation grants. The grants are for a maximum of 50 percent of the eligible cost of the project. Grants must be awarded, within the limits of available appropriations, to those applicants having the highest priority.

Subp. 2. Technical assistance. The agency may provide technical assistance to local units of government in order to ensure efficient and effective development and implementation of projects. Technical assistance must be given to local units of government that receive grants, within the limits of available resources.

7076.0130 ELIGIBILITY CRITERIA

Subpart 1. Eligible applicants. Only local units of government are eligible to apply for grants and receive technical assistance. A local unit of government is eligible to apply for state matching grants and request technical assistance if they have the following:

A. the authority to coordinate and enter into contracts with local, state and federal agencies and private organizations for the purpose of carrying out a project;

B. the authority to generate cash revenues and in-kind contributions for the local share of a project; and

C. the authority to adopt, implement and enforce official controls.

Subp. 2. Eligible costs. Project costs are eligible for state matching grants if the costs are reasonable and necessary and allocable for the development of a diagnostic study and implementation plan, or for the implementation of the plan, and if the costs are related to any of the following activities:

A. water quality monitoring, water resource and project area data and information collection, data and information analysis and assessment, and related tasks;

B. fiscal and management activities including report preparation;

C. selection, design, layout and installation of best management practices;

D. development, review and inspection of installation, operation and maintenance procedures for best management practices;

E. development and implementation of public education materials and activities;

F. development and implementation of official controls;

G. acquisition of easements and property; and

H. other activities determined by the agency or established by federal regulation to be necessary to develop and implement the project.

Subp. 3. Ineligible costs. Ineligible costs include any costs that are not related to the activities in subpart 2. In addition, the following costs are ineligible whether or not they relate to the activities in Subpart 2:

A. installation of best management practices prior to the grant award;

B. operation and maintenance of best management practices;

C. activities regulated by the National Pollutant Discharge Elimination System permit program, Minnesota Rules, Parts 7001.1000 to 7001.1100, the State Disposal System permit program, the Petroleum Tank Release Clean-up Act, Minnesota Statutes, chapter 115C, the Environmental Compensation and Liability Act, Minnesota Statutes, chapter 115B, the Comprehensive Environmental Response, Compensation and Liability Act, United States Code, title 42, section 9601 to 9675; and the Resource Conservation and Recovery Act, United States Code, title 42, section 6901 to 6991;

D. activities regulated by a condition of a solid waste or hazardous waste permit or the agency solid waste rules, Minn. Rules chapter 7035, or the agency hazardous waste rules, Minn. Rules chapter 7045;

E. activities funded by state or federal grants for wastewater treatment facilities;

F. regulated practices to control spills of pesticides, fertilizer, petroleum and related materials from bulk storage facilities;

G. regulated practices to manage toxic or hazardous materials;

H. commercial operations and industrial processes and land use and land management activities directly related to commercial operations and industrial processes including plant yards, access roads, drainage ponds, refuse piles, storage piles and material product loading areas;

I. active and inactive mining activities;

J. building and utility construction;

K. highway and road construction;

L. dredging of harbors, lakes and ditches;

M. activities intended primarily for flood control; and

N. activities that violate local, state and federal statutes, rules and regulations.

Subp. 4. Eligible local share. At least 30 percent of the project costs must be derived from nonstate and nonfederal sources. Costs incurred by a land occupier for the installation of best management practices may be considered a part of the local share paid by the local unit of government provided the following conditions are met:

A. the primary purpose of the best management practices is for improvement and protection of water quality;

B. the best management practices must be designed for a minimum effective life of ten years;

C. the best management practices are a part of an approved implementation plan; and

D. there must be an operation and maintenance plan for the minimum effective life of the best management practices.

7076.0140 NOTICE OF GRANT AVAILABILITY

Subpart 1. Notice. The agency will publish in the State Register a notice that applications for project development grants and project implementation grants will be accepted whenever the agency determines that funds are available to award such grants. The notice will contain a deadline for application submittal, which must be no less than 60 days from the date of publication.

Subp. 2. Notification list. The agency shall maintain a list of those local governmental bodies that wish to be notified of grant application periods. Any local governmental body that wishes to be placed on the list shall notify the agency by writing to the director of the public information office. Whenever the agency publishes notice in the State Register, the agency shall mail notice of the grant application period to those local governmental bodies on the list.

Subp. 3. Grant application periods. The agency may establish a grant application period from time to time but there must be at least one application period each calendar year if funds are available.

7076.0150 GRANT APPLICATION

Subpart 1. General requirements. The grant application shall be submitted by the local unit of government that will be the project sponsor. A grant application must be submitted in a timely fashion to be considered. The grant application must be submitted on a form provided by the agency and must contain the information required in the form and by this part.

Subp. 2. Project development grant. Any applicant submitting an application for a project development grant must submit the following information:

A. a resolution by the local unit of government that will be the project sponsor, authorizing the filing of the application and designating an official authorized to execute the grant application, the grant contract and other related project documents;

B. written documentation that the project sponsor has consulted with soil and water conservation districts and watershed districts in the project area, in preparing the grant application;

C. identification of agencies and organizations that will be involved in project development;

D. resolutions from each participating local unit of government which identifies their role in project development and identification of their contribution to the local share of project development costs;

E. the amount of grant funding requested;

F. a list identifying the amount, type, and source of the local share;

G. a work plan and schedule that contain the following:

(1) the identification of each water of the state that will be affected by the project;

(2) a description of the existing or potential surface and ground water problems that are to be addressed in the project;

(3) a workplan listing the activities that the grant would make possible; and

(4) a schedule containing milestones for project development.

H. a local water plan that provides an inventory of existing physical and hydrologic information on the project area, a general identification of water quality problems, and goals for resource use, and demonstrates a local commitment to water quality protection or improvements; and

I. documents required by state or federal statutes, rules and regulations.

Subp. 3. Project implementation grant. Any applicant submitting an application for a project implementation grant shall submit the following information:

A. a resolution by the local unit of government that will be the project sponsor, authorizing the filing of the application and designating an official authorized to execute the grant application, the grant contract and other related project documents;

B. written documentation that the project sponsor has consulted with soil and water conservation districts and watershed districts in the project area, in preparing the grant application;

C. a diagnostic study and implementation plan that has been approved under Part 7076.0260, or an equivalent study and plan that addresses the requirements of a diagnostic study and implementation plan and that has been approved under Part 7076.0260 and which contains a local water plan that provides an inventory of existing physical and hydrologic information on the project area, a general identification of water quality problems, and goals for resource use, and demonstrates a local commitment to water quality protection or improvements;

D. resolutions from each participating local unit of government that identify their role in project implementation and their contribution to the local share of project implementation costs;

E. a detailed work plan and schedule for project implementation during the grant period;

F. a detailed budget for the grant period including the identification of the amount requested in the grant;

G. a list identifying the amount, type, and source of the local share;

H. a description of the work and the budget for project implementation beyond the grant period, including an indication of whether the project sponsor anticipates applying for a project continuation grant amendment; and

I. documents required by state or federal statutes, rules and regulations.

7076.0160 REJECTION OF GRANT APPLICATION

Subpart 1. Grounds. An application for a project development grant or a project implementation grant shall be rejected by the Commissioner for the following reasons:

A. an ineligible applicant;

B. ineligible costs;

C. a late submittal; or

D. failure to comply with any requirement of statute or rule.

Subp. 2. Procedure. The commissioner shall review each grant application within 30 days after the deadline for application submittal. The commissioner shall notify each rejected grant applicant of the rejection of its application and the reasons for the rejection.

Subp. 3. Effect of rejection. A grant applicant whose application is rejected for a reason other than for late submittal has 14 days from receipt of the notice of rejection to correct any deficiencies, if correction is possible. If the application is corrected within the 14 days, the application must be accepted and the project must be ranked with other approved grant applications. An application that cannot be or is not corrected must not be further considered. A grant applicant whose application is rejected and not corrected must reapply in a subsequent application period in order to be considered for a grant.

7076.0170 PROJECT RANKING

Subpart 1. Process of ranking. Upon completion of the commissioner's review of the grant applications for acceptability, the agency shall proceed to rank the acceptable grant applications in order of priority. Each project for which an acceptable grant application has been submitted must be awarded the number of priority points the project is entitled to under subparts 2 and 3. The project with the highest number of priority points will be given the highest priority. All projects will be given a ranking depending on the number of points awarded. The project development grant applications shall be ranked separately from the project implementation grant applications.

Subp. 2. Priority points for project development grant applications. The following criteria must be used to determine the number of priority points to beawarded in the evaluation of each project development grant application. The agency shall award each project between zero and ten points under each of the following criteria, depending on how well the project satisfies the criterion. The number of points awarded under each criterion must be added together to determine the project's total point value. This total number must be used to determine the project's overall ranking and priority. The criteria are as follows:

A. the extent to which the proposed project demonstrates a high potential for project success based on community support and involvement as well as participation, coordination and cooperation of federal, state and local agencies and units of government for water quality protection and improvement;

B. the extent to which the proposed project takes place where local units of government have adopted and implemented authorities or official controls to abate or prevent water pollution from nonpoint sources;

C. the extent to which the water of concern is identified as a priority water in the local water plan;

D. the extent to which the proposed project affects waters identified in the statewide resource assessment conducted under Minnesota Statutes, section 115.095, as waters that could not be expected to attain or maintain compliance with applicable water quality standards or goals without additional control of nonpoint sources;

E. the extent to which the project demonstrates a likelihood of transferability to similar resources;

F. the extent to which the project is of a size and scale to promote successful project management and water quality protection and improvement; and

G. the priority placed on each project by the project coordination team.

Subp. 3. Priority points for project implementation grant applications. The following criteria must be used to determine the number of priority points to be awarded in the evaluation of each project implementation grant application. The agency shall award each project between zero and ten points under each of the following criteria, depending on how well the project satisfies the criterion. The number of points under each criterion must be added together to determine the project's total point value. This total number must be used to determine the project's overall ranking and priority. The criteria are as follows:

A. the extent to which the project demonstrates a high potential for successful water quality protection and improvement based on a comparison of existing water quality and the project's goals and objectives with maximum contaminant levels and recommended allowable limits for drinking water, water quality standards and regional lake and stream water quality criteria published by the agency, the Minnesota Department of Health and the United States Environmental Protection Agency;

B. the extent to which the project employs best management practices which provide a technically and economically feasible means to abate or prevent water pollution from nonpoint sources;

C. the extent to which the project maximizes water quality protection or improvement relative to the cost of project implementation;

D. the extent to which the project goals and objectives are consistent with state water quality management plans and other applicable state and federal resource management programs;

E. the extent to which the project demonstrates a high potential for project success based on community

support and involvement as well as participation, coordination and cooperation of federal, state and local agencies and units of government for water quality protection and improvement;

F. the extent to which the project demonstrates a significant degree of transferability to similar local units of government; and

G. the priority placed on each project by the project coordination team.

Subp. 4. Project coordination team. The project coordination team has 60 days from the close of the application period to assign points to each project seeking a grant. In the event that the project coordination team fails to assign points to all projects with approved grant applications, the projects must be ranked without considering any points under the category for the project coordination team. The project coordination team must use the criteria established in Minnesota Statutes, section 115.098, to assign points to each project seeking a grant.

7076.0180 ALLOCATION OF FUNDING

Subpart 1. Project continuation grant amendments. Each year by March 1, the agency shall determine how much of the available funds will be set aside to meet that year's anticipated requests for project continuation grant amendments. If the agency subsequently determines that the amount set aside for project continuation grant amendments is more than is required for grant amendments in that year, the agency may reallocate this money to other project development grants and project implementation grants or carry over the money to another grant application period.

Subp. 2. Grant fund allocation. Within 90 days of the close of an application period, the agency shall determine how much of the remaining funds, after setting aside funds for project continuation grant amendments, will be made available for project development and project implementation grant awards. In deciding how much money to make available for new grant awards, the agency shall consider the necessity to have money available for subsequent grant periods, the necessity to have money available for anticipated project continuation grant amendments in the next year, and other factors relating to the agency's ability to ensure that money will be available for upcoming projects.

Subp. 3. Development; implementation split. Within 90 days of the close of an application period, the agency shall determine how much of the funds available for new grants in that application period will be available for project development and project implementation grants. In determining the allocation of funds between project development and project implementation grants, the agency shall consider:

A. the availability and conditions for use of federal funds; and

B. the phasing in and continuity of projects in the program.

If the money intended for project development or project implementation grants, or both, is not awarded during a grant period, the agency may reallocate the funds to the other kind of grant or to a subsequent grant period.

7076.0190 SELECTION OF PROJECTS FOR GRANT AWARD

Subpart 1. Ranking. The agency shall complete its ranking of all projects for which an acceptable grant application has been submitted within 90 days of the close of the application period. The agency shall rank development projects separately from implementation projects.

Subp. 2. Projects funded. The agency shall select those projects that will be awarded grant funds by awarding grants to the highest priority project development and project implementation applications within the limits of available funds established under 7076.0180 subpart 2. A project that receives less than 40 points will not be considered for award of grant funds.

Subp. 3. Agency decision. All decisions of the agency in ranking projects and awarding grants must be made at a regular or special board meeting.

Subp. 4. Timing. The agency shall make its decision on fund allocation, project ranking, and projects to which grants will be awarded within 90 days of the close of the application period.

Subp. 5. Reapplication. A grant applicant whose application is not awarded grant funds must reapply in a subsequent application period to be considered for a grant.

7076.0200 PROJECT CONTINUATION GRANT AMENDMENT

Subpart 1. Eligibility. A project sponsor who has been awarded a project implementation grant is eligible for a project continuation grant amendment to continue the project after the expiration of the initial grant. The requirements that

applied to the initial grant apply to the project continuation grant amendment. A project sponsor is eligible for one project continuation grant amendment on a particular project.

Subp. 2. Request. A project sponsor who seeks a project continuation grant amendment shall submit a request for the grant amendment in the year that the activities funded through the initial project implementation grant will be completed and additional funds will be required to continue project implementation. The request shall be submitted on a form provided by the agency and may be submitted at any time during the calendar year the funds will be needed. A project sponsor who fails to submit a request for a project continuation grant amendment in the year the funds are required forfeits the right to an amendment. That project sponsor may apply in a subsequent grant period to continue the project and compete with other applicants for a project implementation grant.

Subp. 3. Approval. The agency shall approve the project sponsor's request for a project continuation grant amendment if it meets the following conditions:

A. the project sponsor has satisfied the terms and conditions of the grant to date; and

B. the project sponsor has identified the source of the local share of funds necessary for the project continuation grant amendment.

7076.0210 GRANT CONDITIONS

Subpart 1. Amount. A grant that is made must be for the amount requested by the applicant, up to a maximum of 50 percent of the eligible cost of project development or project implementation.

Subp. 2. Grant period. The grant period for a project development grant will be for a period of two years. The grant period for a project implementation grant will be for a period of three years and may be extended an additional three years with agency approval of a request for a project continuation grant amendment in accordance with part 7076.0200.

Subp. 3. Grant contract. The project sponsor must enter into a contract with the agency before a grant will be awarded. The contract must include the provisions established in Part 7076.0220.

Subp. 4. Records. The project sponsor shall maintain all records relating to the receipt and expenditure of grant funds for a period of at least three years from the date of termination of the grant contract.

Subp. 5. Audit. The project sponsor must agree that the books, records, documents and accounting procedures and practices of the project sponsor relevant to this program may be examined at any time by the commissioner or commissioner's designee.

Subp. 6. Annual progress report. The project sponsor shall submit an annual progress report to the commissioner by February 1 of each year the grant in effect. The report must include the following information:

A. a discussion of work progress relative to the schedule, and difficulties encountered meeting the schedule during the year;

B. a discussion of the project findings appropriate to the work conducted during the year;

C. a report of expenditures in the year and those anticipated during the upcoming year;

D. a discussion and summary analysis of monitoring data and a discussion of the changes in water quality that appear to have resulted from the protective and restorative activities implemented during the year; and

E. water quality monitoring data collected during the year must be included in the format required by the agency.

Subp. 7. Mid-year update. The project sponsor shall give the commissioner a mid-year update by August 1 of each year the grant is in effect. The mid-year update shall include a brief report on project progress and difficulties encountered in meeting the project schedule.

Subp. 8. Monitoring plan. The project sponsor shall submit a monitoring plan to the commissioner within 60 days of the award of the grant. The monitoring plan must be revised annually and submitted to the commissioner by January 31. The monitoring plan must comply with the requirements of Part 7076.0230.

Subp. 9. Diagnostic study and implementation plan. The project sponsor for a project development grant shall submit to the commissioner before the final grant payment is made a diagnostic study and implementation plan that meets the requirements of Parts 7076.0240 and 7076.0250.

Subp. 10. Eligible costs. No grant funds shall be used to reimburse the project sponsor for costs incurred after the end of the contract period.

7076.0220 GRANT CONTRACT

Subpart 1. Contents. The agency and the project sponsor shall enter into a grant contract. The grant contract must:

A. establish the term and conditions of the grant;

B. provide that the project sponsor may enter into contracts, under terms and conditions specified by the agency, to complete the work specified in the contract;

C. provide that the cost overruns are the sole responsibility of the project sponsor;

D. require that that project sponsor submit periodic progress reports and a final report to the agency in a format prescribed by the agency; and

E. incorporate terms and conditions required by federal or state statutes, rules and regulations.

Subp. 2. Amendments. A grant contract may be amended upon agreement of the agency and the project sponsor.

Subp. 3. Contract period. Grant contracts for project development will be for a period of up to two years. Grant contracts for project implementation will be for a period of up to six years. The agency may allow one year extensions of either of these grant contracts.

7076.0230 MONITORING PLAN

Subpart 1. Requirements. The monitoring plan required to be submitted to the commissioner as a condition of the grant must:

A. identify and provide rationale for the selection of monitoring sites, monitoring frequency and parameters to be monitored; and

B. identify laboratories that will do analyses and explain their quality assurance and quality control procedures.

Subp. 2. Review. The commissioner will review the monitoring plan and approve it or identify deficiencies in writing within 45 days of its receipt. The project sponsor shall have 15 days to correct any deficiencies.

Subp. 3. Grant payment. No grant payments shall be paid after March 31 in any year in which a monitoring plan has not been approved.

7076.0240 DIAGNOSTIC STUDY

Subpart 1. General requirements. The diagnostic study required to be submitted by a project sponsor under part 7076.0210, subpart 9, must include:

A. a detailed description of the water of concern;

B. a detailed description of the project area;

C. an analysis and assessment of the data and information collected as a requirement of subparts 2 and 3; and

D. the identification and documentation of the methods, procedures, model and other tools used to prepare and complete the diagnostic study.

Subp. 2. Description of water of concern. The diagnostic study must contain a detailed description of the water of concern that includes:

A. a summary of historical uses and changes resulting from water quality degradation;

B. a discussion of previous studies and other historic baseline physical, chemical and biological data; and

C. current data or information for the following:

(1) if the water of concern is a lake, the description shall include the following:

(a) identification or measurement of lake surface area, maximum depth, average depth, one in ten year low and high as well as average hydraulic residence time, temperature profiles, secchi disk transparencies, the area of the watershed draining to the lake, its tributaries, their estimated contribution to inflows and a hydrologic budget including ground water flow;

(b) measurement of dissolved oxygen, total phosphorus, dissolved inorganic phosphorus, total Kjeldahl nitrogen, nitrite plus nitrate nitrogen, total suspended solids, total alkalinity, chloride concentrations, color, pH, conductivity; determination of mass loadings of total phosphorus, total Kjeldahl nitrogen, and total suspended solids from major tributaries and completion of nutrient and sediment budgets for the lake.

(c) measurement of average summer epilimnetic chlorophyll a, a description of predominant phytoplankton, zooplankton and submerged, floating and emergent vascular plant communities; measurement of fecal streptococcus and fecal coliform bacteria where human health may be impacted; and

(d) a summary of available fisheries information.

(2) if the water of concern is a stream, the description shall include the following:

(a) identification or measurement of stream length, sinuosity, order, substrate, estimated maximum high flow for 24 consecutive hours that has a recurrence interval of 25 years, mean flow for the available period of record, and annual minimum flow for seven consecutive days that has a recurrence interval of ten years;

(b) measurement of flow and biochemical oxygen demand, total phosphorus, nitrite plus nitrate nitrogen, ammonia nitrogen, organic nitrogen, total dissolved solids, total suspended solids, and diurnal dissolved oxygen concentrations, turbidity, pH, and conductivity;

(c) measurement of fecal streptococcus and fecal coliform bacteria where human health may be impacted; and

(d) completion of invertebrate and fishery assessments using standard benthological and ichthyological techniques; identification of significant biological habitats including riparian vegetation and spawnings areas; and

(3) if the water of concern is an aquifer, the description shall include the following:

(a) identification or measurement of the aquifer physical type, size, temperature, saturated thickness, recharge sources, discharge sources, transmissivity, hydraulic residence time, range of hydraulic gradients and underlying lithology and stratigraphy;

(b) measurement of chemical oxygen demand, total organic carbon, total Kjeldahl nitrogen, ammonia nitrogen, nitrite plus nitrate nitrogen, total phosphorus, chloride, sulfate, calcium, magnesium, iron, manganese, potassium,sodium, bicarbonate, and alkalinity concentrations, oxidation potential, pH, and specific conductance;

(c) measurement of organic compounds, pesticides and metals in areas where they are pollutants of concern;

(d) measurement of fecal streptococcus and fecal coliform bacteria where human health may be impacted; and

(4) if the water of concern is water other than a lake, stream or aquifer, the data and information requirements will be determined jointly by the agency and the project sponsor.

Subp. 3. Description of project area. The diagnostic study must contain a detailed description of the project area that includes:

A. a map of the project area;

B. an aerial photo of the project area;

C. maps of general topographic relief based on United States Geological Survey topographic maps;

D. a map of the project area divided into subunits on a hydrologic basis including boundaries and flow directions for each subunit;

E. a description of important aquifer systems, confining layers, and flow characteristics;

F. a description of ground and surface water interconnections, such as recharge and discharge areas;

G. a description of known geologic conditions, such as karst areas, buried valleys or sand plains that may pose concerns relating to water quality;

H. a description of waters of the state and public drainage ditches including dams and control structures;

I. soil:

(1) a general soils map and description of soils infiltration characteristics; and

(2) a map of erosion-prone soils.

J. land use:

(1) existing and future land uses;

(2) areas served by storm sewers, sanitary sewers, and public water system;

(3) the location of community public water supply, intakes and wells;

(4) irrigated acreage;

(5) domestic animal density and feedlots;

(6) on-site wastewater treatment systems;

(7) existing management practices;

(8) known tiling and drainage systems;

(9) estimates of pesticide and fertilizer use;

(10) known closed and open sanitary landfills, closed and operating open dumps and hazardous waste sites;

(11) known abandoned wells not sealed in accordance with state statutes and rules;

(12) underground storage tank sites;

(13) permitted wastewater disposal systems and discharges under Minnesota Rules Chapter 7001;

(14) wetlands identified under the National Wetlands Inventory and a summary of applicable management plans;

(15) areas delineated as floodplain;

(16) areas with known flooding problems;

(17) a summary of the state ecological and management classifications;
(18) a summary of state management plans for fish and wildlife;
(19) unique features and scenic areas with relationships to water including state designated natural and scientific areas outstanding resource value waters, areas containing county, state and federal rare and endangered speciesand other features such as waterfalls and springs;
(20) the ownership of local, state and federal and Indian tribal lands;
(21) lands with easements that relate to water resources;
(22) population characteristics; and
(23) a summary of recreational land uses;

K. precipitation:
(1) a map and list of the location of precipitation gaging stations in the project area;
(2) a map showing isolines of normal annual total precipitation;
(3) a map showing isolines of normal precipitation in inches for the period May through September; and
(4) a summary of precipitation information for the project area; and

L. hydrology:
(1) an estimate of the maximum high flow for 24 consecutive hours that has a recurrence interval of 25 years, mean flow for the available period of record, the annual minimum flow for seven consecutive days that has a recurrence interval of ten years;
(2) a description of permitted withdrawals from lakes and streams, including location, source, use and amounts withdrawn;
(3) a description of protected levels or flows that have been established for lakes and streams;
(4) a description of known water use conflicts, including those caused by ground water pumping that affect surface waters;
(5) a description of wells covered by state appropriation permits including location, amounts of water appropriated, type of use and aquifer source;
(6) a description of known well interference problems and water use conflicts; and
(7) a list of state observation wells including location, unique well number, aquifers measured, years of record and average monthly levels.

Subp. 4. Analysis and assessment. The diagnostic study must contain an analysis and assessment of the data and information collected as a requirement of subparts 2 and 3 including the following:
A. the identification of existing and potential water quality problems;
B. the identification of water quality goals for the water of concern;
C. the identification of project objectives in terms of:
(1) specific water chemical, biological and physical measurements; and
(2) economic, recreational and health factors.
D. an estimate of the pollutants coming from the subunit of project area defined on hydrologic basis and the identification of the target levels of pollutant reduction necessary to meet the project objectives and water quality goals; and
E. the identification and ranking of the subunit of project area defined on a hydrologic basis into priority management areas on which to focus implementation of best management practices.

Subp. 5. Exemption. Upon written request from the project sponsor, the agency may allow an exemption from a specific diagnostic study requirement that does not provide data or information useful for diagnosis of the problem or solutions.

7076.0250 IMPLEMENTATION PLAN

The implementation plan required to be submitted by a project sponsor under Part 7076.0210 subpart 9 must include:

A. an analysis of the need for best management practices that will aid in the achievement of target levels of pollutant reduction in the areas identified as priority management areas, that includes:
(1) identification of best management practices;
(2) an estimate of costs for practice installation;
(3) a schedule for implementation;
(4) an estimate of engineering and other assistance needs, including best management practice design, and inspection of installation, operation and maintenance;
(5) an estimate of pollutant reduction; and

(6) identification of the standards and criteria for best management

B. a project implementation water quality monitoring and evaluation plan identifying procedures and schedules for determining project progress and accomplishments, that includes:

(1) a monitoring plan that includes the chemical, physical and biological parameters that will be measured to enable comparisons with goals an objectives established in the diagnosticstudy;

(2) a procedure to document and evaluate the implementation of best management practices; and

(3) a procedure to identify effectiveness of the best management practices on water quality, and their impact on water resources in the project area;

C. a plan and schedule to implement an information and education program in the project area;

D. an identification of roles and responsibilities of the project sponsor, its representatives, and cooperating agencies in implementing the project;

E. a proposed schedule for project implementation, segmented into three- year periods;

F. an estimated budget for project implementation segmented into three-year periods;

G. a plan to maintain project goals and accomplishments and prevent further nonpoint source pollution;

H. a list of any federal, state, or local permits and approvals required to complete the project; and

I. an opinion and supporting documentation from the project sponsors attorney that the project sponsor and participating local units of government have the legal authority to implement the project.

7076.0260 DIAGNOSTIC STUDY AND IMPLEMENTATION PLAN APPROVAL

Subpart 1. Review and decision. The commissioner shall review and approve or disapprove of the diagnostic study and implementation plan within 90 days of its receipt. The commissioner shall approve the diagnostic study and implementation plan if the commissioner determines that:

A. the diagnostic study and implementation plan meet the requirements for a diagnostic study and implementation plan identified in Parts 7076.0240 and 7076.0250;

B. the diagnostic study provides information in sufficient detail to technically define the water quality problems, sources of pollution, and project goals and objectives for water quality protection and improvement;

C. the implementation plan provides a technically feasible means to abate nonpoint sources of water pollution and achieve project objectives; and

D. the diagnostic study and implementation plan are consistent with state and federal statutes, rules and regulations.

Subp. 2. Reasons for disapproval. If the diagnostic study and implementation plan are disapproved, the commissioner shall provide the project sponsor with a written statement of reasons for disapproval.

Subp. 3. Resubmittal. A disapproved diagnostic study and implementation plan must be revised by the project sponsor and resubmitted to the commissioner. Upon receipt of the revised diagnostic study and implementation plan, the commissioner shall review the revised diagnostic study and implementation plan.

7076.0270 BEST MANAGEMENT PRACTICE EVALUATION

In selecting best management practices for inclusion in an implementation plan, the project sponsor shall consider the following factors in evaluating the best management practices:

A. whether the best management practice will achieve the desired project objectives;

B. whether the best management practice implementation would create other water quality or environmental problems;

C. the degree of nonpoint source control achieved for the amount ofresources allocated for that control;

D. whether a less costly best management practice could achieve a similar result; and

E. whether the best management practice is reasonably suited for the individual site.

7076.0280 GRANT PAYMENTS

Subpart1. Reimbursement. The project sponsor may submit a request for reimbursement of expenditures for each of the standard calendar quarters ending March 31st, June 30th, September 30th and December 31st. The agency shall pay the reimbursement within 45 days of the request if the grantee is in compliance with conditions of the grant contract and requirements of parts 7077.0100 to 7075.0290.

Subp. 2. Final payment. The agency shall withhold reimbursement on the final ten percent of the grant contract amount until such time as the agency is satisfied that the project has been completed in accordance with the terms of the grant contract and parts 7076.0100 to 7076.0290.

Subp. 3. Withholding of reimbursement. The agency shall withhold reimbursement if the project sponsor has failed to comply with any requirements of the grant contract or parts 7076.0100 to 7076.0290. The funds will not be released until the agency determines that the project sponsor has corrected the deficiencies causing noncompliance.

Subp. 4. Advance. The project sponsor may submit a request for an advance of grant funds after the commissioner approves the project monitoring plan. The advance is limited to ten percent of the grant award or $50,000, whichever amount is less.

7076.0290 GRANT RECISSION

The agency may rescind a grant if the project is not being completed in accordance with the terms and conditions of the grant, including time schedules.

APPENDIX C

Water Quality Monitoring Strategy

Minnesota Pollution Control Agency

MINNESOTA POLLUTION CONTROL AGENCY
WATER QUALITY MONITORING STRATEGY
Division of Water Quality
1988

SEPTEMBER 30, 1988

FINAL DRAFT

TABLE OF CONTENTS

(1) INTRODUCTION

The Minnesota Pollution Control Agency conducts a variety of monitoring programs under the authorities granted by federal and state legislation. These programs collect and evaluate data which define the water quality of the state. The data are used to indentify pollution, assess abatement programs, enforce environmental regulations, and report the changes in the state's water quality.

The Routine Water Quality Monitoring Program was the first monitoring program established, and it continues to be the cornerstone of the the monitoring efforts conducted by the Agency. The program began in 1953 and monitors surface water quality throughout the state. In addition to this fixed ambient network, a variety of special monitoring programs also exist. Lake monitoring is conducted in conjuction with special lake studies, the Clean Lakes Program, a Lake Assessment Program, and a volunteer Citizen's Lake Monitoring Program. Additional stream information is collected by the Intensive Survey Program, the Border Waters Program, and the Nonpoint Source Pollution Program. Specialized data are collected by the Toxic Substances Monitoring Program, the Acid Rain Program, the Biomonitoring Program, and the Dredge and Fill Program. Data on permitted dischargers is collected by the Compliance Monitoring Program. Because much of this information is related and important to more than one program, a Data Management Program was established to computerize the data and make it available in a usable format to everyone. A Quality Assurance-Quality Control Program insures that the samples are collected, preserved, shipped, and analyzed by approved methods.

The Division of Water Quality has monitoring priorities and management goals which reflect the Agency's legislative authorities and responsibilites and which, in turn, have become part of the program plan. The Monitoring Strategy relates these goals back to the organizational structure of the Agency. Each program is examined in depth to define its monitoring objectives, the types of data collected and the ways in which those data are used. Since data and the professional expertise used to evaluate and interpret that data are often shared between programs, the cooperation with other programs and agencies is listed. The future needs for each program are also discussed. These needs define what remains to be done in each of the monitoring programs to fully meet the objectives of the program and the goals of the Division.

A schedule of activities is also included as part of the Monitoring Strategy. Ongoing activities are identified for each of the monitoring programs in the Division of Water Quality. Specific tasks are listed for Fiscal Year 1988 and Fiscal Year 1989 for each of the programs. These tasks define what each program will accomplish during the two fiscal years.

The appendix includes lists of monitoring stations for each of the specific programs where such locations have been identified. Also included are the parameter lists for those programs.

(2) PRIORITIES AND MANAGEMENT GOALS

Priority

* Manage water quality program activities with emphasis on restoration and maintenance of priority water bodies (PWB) including Great Lakes areas of concern and ground water.

* Develop and implement a watershed management program that provides adequate protection for surface impoundments, wetlands, and PWBs.

    > Develop and implement nonpoint source strategies to control nonpoint sources of pollutants discharged to surface and ground waters where point source controls are insufficient to meet water quality objectives:

        1) Point/Nonpoint Trading Strategy
        2) Clean Water Partnership
        3) Section 319 of the CWA Amendments

    > Continue to manage Clean Lakes projects and update lake classification surveys and use them as a basis to develop new Clean Lakes projects.

    > Review and update the Section 401 certification process to minimize the loss or degradation of wetlands through vigorous implementation of Section 401 of the Clean Water Act.

    > Develop and implement a sediment criteria program that coordinates the activities of pesticide application programs, urban runoff programs, and water quality standards.

Priority

* Control the discharge of toxic pollutants to surface and ground waters and the environment to protect human health and aquatic life.

    > Incorporate water quality criteria and sediment criteria for toxic pollutants into water quality standards.

    > Use bioassesments to measure water quality conditions, establish water quality standards, determine effluent limitations, and control toxic discharges.

    > Develop and implement an in-place toxic pollutant control strategy.

    > Continue to clean up existing problems, using federal and state superfunds and other state authorities.

    > Implement a statewide sludge management strategy.

Priority

* Continue to implement a monitoring program to ensure adequate collection and utilization of environmental data that will facilitate program decision-making.

> Evaluate current point source monitoring programs using the Water Quality Management Plan. Identify reaches where point source water quality monitoring data are needed.

> Coordinate the development of the monitoring strategy among the programs to eliminate duplication of effort and meet data needs for decision making.

> Coordinate the development of the monitoring strategy among other state and federal agencies to eliminate duplication of effort and meet data needs for decision making.

> Develop a revised surface water ambient monitoring station network and parameter list based on the reach evaluation and data needs of all monitoring programs.

> Revise the ambient ground water quality monitoring program to provide more meaningful information on ground water quality trends and current parameters of concern, such as pesticides.

Combined Priority With Ground Water and Solid Waste Division

* Improve ground water protection by developing and implementing a state ground water protection strategy which will:

> Recommend modifications in existing rules (7050.220,7060) governing ground water quality to make them more clear, applicable and enforceable.

> Recommend programatic changes for more effective control of ground water pollution sources.

> Examine data collections and work toward establishing standards to ensure data compatibility.

> Seek to coordinate programs of different groups and agencies to minimize duplication and promote efficient use of resources.

Combined Priority With Division of Air Quality

* Continue to assess the sensitivity of Minnesota's resources to acid deposition and establish long term data bases for evaluating acid deposition impacts on sensitive resources.

> Monitor water chemistry of select low alkalinity lakes on a long term basis to evaluate lake response to changes in acidic deposition.

> Maintain compatibility with similar lake sampling being conducted in Wisconsin and Michigan to assess lake chemistry response to changing deposition on a regional basis.

> Address the potential for acid snowmelt impacts in streams along the North Shore of Lake Superior.

> Investigate the relationship between acid deposition and mercury contamination of fish in nothern Minnesota lakes.

- Obtain preoperational "background" samples for new county and municipal incinerators (fish, sediment, water).

Program Development Section: Units and Programs	Goals
Standards Development Unit Water Quality Standards Team Wasteload Allocations Team Standards Program Intensive Surveys Program	To develop water quality standards that protect the designated water uses To develop wasteload allocations for pollutants to ensure that water quality standards are met
Water Monitoring and Data Management Unit Water Monitoring Team Data Management Team Routine Monitoring Program National Fixed Station Network Program Data Management Program Border Waters Program Citizen Lake-Monitoring Program (CLMP) Water Quality Management Program	To provide valid water quality data that can be used to identify water quality problems and evaluate the success of the water pollution control program in solving those problems To insure that the data are in a computerized format so that evaluations on Minnesota's water quality can be accomplished accurately and efficiently
Watershed and Nonpoint Program Unit Program Team Technical Assistance Team Clean Lakes Program Nonpoint Source Pollution Program Dredge and Fill Program	To continue to develop and implement a program to deal with nonpoint sources of pollution through the Clean Water Partnership and Section 314 and 319 of the CWA amendments

Program Development Section: Units and Programs	Goals
Toxic Abatement and Lake Evaluation Unit Toxics Abatement Team Lake Evaluation Team Toxic Substances Monitoring Program Lakes Studies Program Bioassay Program Lake Assessment Program (LAP)	To continue to develop and implement a program to deal with special toxic pollutants through toxic substances monitoring, bioassays, research, literature searches, and Remedial Action Plan (RAP) To continue to develop and and implement a program to evaluate lake conditions and develop standards for lakes To provide valid water quality data on MN lakes and technical assistance to citizens, local state and federal officials so that lake water quality problems are identified, and mitigated or resolved.

Additional Water Monitoring Programs Outside of the Program Development Section

Program	Responsible Division/Section
Compliance Monitoring Program	Water Quality/Regulatory Compliance
Emergency Response Program	Hazardous Waste/Tanks and Spills
Acid Rain Program	Air Quality/Program Development and Air Analysis
Ambient Ground Water Monitoring Program	Ground Water and Solid Waste/Program Development
Site Specific Ground Water Monitoring	
- Site Response	Ground Water and Solid Waste/Site Response
- Solid Waste Facilities	Ground Water and Solid Waste/Solid Waste
- Underground tanks	Hazardous Waste/Tanks and Spills
- Hazardous Waste	Hazardous Waste/Hazardous Waste

(4) PROGRAM OBJECTIVES, DATA TYPES, DATA USES, COOPERATION WITH OTHER PROGRAMS, NEEDS, AND SCHEDULE OF ACTIVITIES

Biomonitoring Program

Objectives:

* Detect NPDES permitted dischargers which are toxic to aquatic life.
* Provide valid water quality data that can be used in the program evaluation and decision-making process.
* Use biomonitoring tests to determine effluent limitations and control toxic discharges, determine if controls have abated toxic discharges and measure water quality conditions; and establish water quality standards. Send appropriate reports to EPA's Region V Clearinghouse.
* Review biological monitoring as it relates to future RAP activities.

Data Types:

* Screening acute static test
* Definative acute static test
* Definative acute flow-through test
* Definative chronic static test
* Acute test

Data Usage:

* Determination of the acute and chronic toxicity of permitted discharges.
* Determination of compliance with existing state rules and NPDES Permits.
* Determination of the toxic component of the effluent.

Cooperation:

* USEPA
* Regulatory Compliance Section, MPCA
* Minnesota Department of Natural Resources
* University of Minnesota (fish)
* Data Management Program, MPCA
* Municipalities
* Industries

Needs:

* Determine the responsible toxic agent for those assessments where they have not already been determined or where conditions have changed.
* Determine which discharges need a toxicity assessment in order to justify an effluent standard for toxicity.
* Continue to determine if site specific water quality standards, for selected parameters, are appropriate or should be changed.
* Develop capability to perform bioaccumulation tests.

Schedule of Activities

Ongoing:

* Investigate and prepare reports on significant fish and wildlife kills due to pollution.
* Develop the capability to conduct effluent chronic bioassays. to measure toxic substances in point source discharges.
* Participate in the Regional Biomonitoring Task Force.
* Utilize biomonitoring data in toxic control program.

FY88:

* Conduct 25 static bioassays on point source dischargers. Submit a list to EPA of facilities targeted for biomonitoring by March 1, 1988, including the number and location of 7-day static renewal bioassays.
* Conduct 1 flow-through bioassay on a point source discharger.

FY89:

* Conduct 12 static bioassays on point source dischargers.

Submit a list of targeted dischargers to EPA by April 30, 1989.
* Screen one point source discharger for toxicity using 7-day fathead and cerriodaphnia tests. Schedule the test by February 28, 1989.
* Send completed toxicity reports to Region V Clearinghouse and enter data into CETIS.

Lakes Studies

Objectives:
* To propose, initiate and develop a methodology to determine lake water quality nutrient eutrophication standards or criteria for lake water quality protection or restoration.
* To investigate the effects of acid rain impacts on lakes.
* To verify water quality changes after lake restoration efforts have ended.
* To investigate lake water quality trends accross the state
* To verify impacts from point and nonpoint sources in order to
* develop control programs.

Data Types:
* Chemical characteristics
* Hydrological characteristics
* Physical characteristics
* Biological characteristics

Data Usage:
* Determination of water quality and trophic state of the lake.
* Determination of point source effluent discharge standards for phosphorus
* Determination of nutrient budgets for lakes.
* Modeling

Cooperation:
* Nonpoint Source Program, MPCA
* Standards Program, MPCA
* Toxics Abatement and Lake Evaluation (TALE)
* Citizens
* Data Management Program, MPCA
* Minnesota Department of Natural Resources
* Division of Air Quality, MPCA
* Regulatory Compliance Section, MPCA
* Ground Water and Solid Waste Division, MPCA
* Hazardous Waste Division, MPCA
* Lake Associations
* Municipalities
* USEPA

Needs:
* Conduct regional water quality surveys to fill in data gaps.
* Establish a network of routine lake stations in various regions in the state to: 1) provide a basis for assessing year to year fluctuations in water quality, 2) provide valuable information for modelling lake responses on a regional basis, and 3)provide data which can aid in the development of lake water quality criteria for the various regions in the state.
* Explore the possibility of obtaining quality assured data from various sources, such as University of Minnesota, Minnesota Department of Natural Resources, counties, etc. which is not currently in STORET. In particular, data which may be computerized on different systems and could lend itself to efficient transfer.
* Conduct post lake restoration studies to verify water quality changes.
* Increase the use of existing lake models, and research and develop the use of additional lake models.

Schedule of Activities

Ongoing:
* Plan and initiate three sewage-impacted lakes studies as needed.
* Special investigations as necessary - generally related to enforcement issues or cooperative ventures with DNR. (Number of lakes sampled range from 10 in 1985, to 30 in 1986)

FY88/FY89:
* Sample 25 lakes to further define and refine ecoregion concept.
* Three sewage impacted lake studies will be planned and initiated as needed.
* Develop basis and support for establishing phosphorous standards for lakes by ecoregion.

Citizen Lake-Monitoring Program

Objectives:
* To provide a good long term data base for numerous lakes around the state.
* To allow Minnesotans an opportunity to become actively involved in the collection of water quality data and help them learn more about the quality of their lakes, while at the same time providing MPCA with needed lake information.
* To prepare lake associations, etc. to develop means to protect or restore lake resources through local initiatives.

Data Types:
* Secchi disc (water clarity)

Data Usage:
* Used as an index of lake water quality that helps to determine whether a lake has water quality problems by defining the changes that may occur in summer water clarity.
* Used to track changes in water quality over time.
* Provide baseline data for future water quality studies.

Cooperation:
* Lake Assessment Program, MPCA
* Lake Studies, MPCA
* Data Management Program, MPCA
* Citizens
* Minnesota Department of Natural Resources

Needs:
* Double or triple the number of lakes in the CLMP to increase the state-wide data base by involving more people, especially in those areas of the state that are not currently or have never been represented.
* Make sure participation continues so that long term trends can be measured.
* Improve the ability of citizen groups to collect water quality data.

Schedule of Activities

Ongoing:
* Work to increase citizen participation and increase the number of lakes monitored each year.
* Continue to operate the Citizen Lake-Monitoring Program for obtaining water quality data.

FY88/89:
* All data collected by volunteers and submitted to the MPCA will be entered in STORET.
* The CLMP report for the previous year's work will be completed and mailed to participants by the May 30th of each year.

Lake Assessment Program (LAP)

Objectives:
* Assist lake associations or local units of government in the collection of baseline lake water quality data.
* Provide a basis for defining protection, improvement or restoration needs.
* Build local responsibility to implement future protection and restoration efforts.

Data Types:
* Chemical characteristics
* Physical characteristics
* Hydrologic characteristics

Data Usage:
* Serves as a basis for assessing the current trophic status of the lake.
* Provides an opportunity to assess changes in the lake water quality as a function of changes in land use practices in the watershed.
* Provides LAP or local unit with basic knowledge necessary to more adequately protect or improve water quality of lake.
* Recommends follow up actions leading to future protection and restoration activity.

Cooperation:
* Citizen Lake-Monitoring Program
* Clean Water Partnership/Clean Lakes Program
* Data Management Program
* Regional offices, MPCA
* Local units of government
* Citizens

Needs:
* Establish a program to assist lake associations and other groups interested in collecting water quality information, functioning on a cost share or match basis (volunteer).
* Integrate LAP activities with CWP, 314, 319 and local water quality management planning.

Schedule of Activities

Ongoing:
* Complete 4-5 LAP reports and consult with local units of government and the public on the need for follow up action.

FY88/89:
* All LAP reports for the previous year's sampling will be completed by June 30th of each year.

Acid Rain Program - Division of Air Quality

Objectives:
* Monitor compliance with the acid deposition standard of 11 kilograms per hectare per year wet sulfate.
* Adequately characterize acid deposition (wet and dry) to determine impacts on lake, stream, and wetland resources.
* Determine spatial and temporal trends in the composition of atmospheric deposition in Minnesota.
* Determine the response of low alkalinity lakes to changing patterns of deposition in Minnesota (trend analysis).
* Develop and formalize a process to track state-wide and utility emissions for compliance with the Acid Rain Control

Plan.
* Review and modify permits for two utility-owned, coal-fired power plants in the state to meet emission limits set in the Acid Rain Control Plan.
* Document chemical and discharge characteristics of selected Lake Superior tributaries during snowmelt to assess their sensitivity to episodic impacts.
* Document snowpack chemistry in selected Lake Superior tributary watersheds and determine the relative contribution and source of sulfates and nitrates in the intensively studied watersheds.
* If declines in stream alkalinity and pH are found in the intensively studied watersheds, assess the importance of sulfate and nitrate to these declines.

Data Types:
* Ambient precipitation for volume
* Precipitation chemistry
* Stream flow measurements
* Lake levels
* Water chemistry
* Fish samples for tissue analysis
* Filterpack chemistry (dry deposition)

Data Usage:
* Long-term trend analysis of selected anions and ion ratios in selected lakes.
* Monitoring for toxic levels of selected metals.
* Identification of acid sensitive lakes.
* Correlation with acidic deposition data gathered by MPCA and USEPA.

Cooperation:
* Lake Studies, MPCA
* Toxic Substances, MPCA
* Citizen Lake-Monitoring Program, MPCA
* Minnesota Department of Natural Resources

Needs:
* Broaden studies to address: 1) episodic acidification due to snow melt, 2) impacts to aquatic life making up the food chain in lakes and streams, 3) sensitivity of wetlands and small lakes, and 4) the relationship of mercury contamination to acid rain.
* Continue acid rain long term lake monitoring.

Schedule of Activities

Ongoing:
* Continue wet deposition monitoring at 5 locations.
* Continue dry deposition monitoring at 7 locations.
* Monitor compliance with the acid deposition standard in the sensitive areas and implement the control plan.
* Annual workplan and budget submitted to MPCA Board and to Legislative Commission on Minnesota Resources for approval.
* Semiannual progress reports to utility companies, environmental groups and other interested parties.
* Monitor ambient air quality at 50 sites throughout the state.

FY88/FY89:
* New funding was recieved for monitoring 13 low alkalinity lakes and to investigate chemistry of 7 streams during snowmelt.
* Prepare biennial report to the Minnesota Legislature.
* Prepare annual report on wet and dry deposition for calandar year 1987.
* Prepare special report on stream chemistry during the spring 1988 snowmelt.

Toxic Substances Monitoring Program

Objectives:

* Determine potential impacts to human consumers.
* Discover sources and locations of contaminants that aren't readily measured in other media.
* Determine impacts on aquatic life.
* Establish baseline levels which can be evaluated in the future for trend analysis.
* Collect data to support restoration, remedial action, and maintenance of designated uses.
* Assist in developing an in-place toxicant strategy that will enhance the ability to control point and nonpoint sources of in-place toxicants.

Data Types:

* Chemical characteristics of water and sediment
* Physical characteristics of water and sediment
* Chemical and physical characteristics of fish tissue
* Chemical and physical characteristics of limited wildlife tissue

Data Usage:

* To protect human consumers of fish which may be contaminated with toxic pollutants (edible portion samples).
* To provide investigations with a "warning system". Because fish can bioaccumulate trace amounts of some environmental contaminants, pollution problems may be detected early (edible portion and whole fish samples).
* To define geographical areas of toxic pollutant contamination. (edible portion or whole fish samples).
* To establish base line levels of toxic pollutant contamination that can be used for trend analysis (sediment, whole fish, or specific organ samples).
* To evaluate the effectiveness of toxic pollutant control measures (edible portion, sediment, whole fish or specific organ samples).

Cooperation:

* Regulatory Compliance, MPCA
* Minnesota Department of Natural Resources
* Great Lakes Program Office, USEPA
* Minnesota Department of Health
* International Joint Commission
  - Ontario Ministry of Environment
  - Environment Canada
* North Dakota
* Wisconsin

Needs:

* Develop sensitive analytical scanning techniques in tissue samples. As the number and variety of chemicals discharged to waterways increase, it becomes increasing difficult to monitor their levels in the environment. A sensitive scanning technique could identify chemicals at a level of concern which then could be worked on separately in more detail.
* Develop field manuals to identify fish tumors for fish managers. The manuals should also include techniques for preserving specimens for lictological study and techniques to determine when the frequency of tumors is significant.
* Develop regional fish tissue banks. Trend analyses are expensive and require years of study. If fish tissue samples were regularly banked, trend analysis for new chemicals could be established quickly with less expense.
* Develop standard techniques for calculating fish consumption advisories throughout the nation. Several waterways which form boundaries receive different advisories depending upon the

approach taken by each state. National and international guidance in this area is needed.
* Develop statistical guidance to determine the appropriate number of sites and fish samples to characterize a waterway.
* Monitor fish-eating wildlife to determine if they are accumulating contaminants to deliterious levels.
* Develop sediment standards that relate the levels in the sediment to impacts on the aquatic environment.
* Research to determine the antagonistic or synergistic actions of contaminants along with quick scanning techniques to characterize the water samples.
* Coordinate efforts with Health Department and Department of Natural Resources State Fisheries Managers.

Schedule of Activities

Ongoing:
* Provide one copy of all toxics reports within 30 days of publishing to Region 5 Clearing House.

FY88:
* Participate in Regional Work Group on strategy development as resources allow.
* Review and comment on sediment quality criteria documents under development by USEPA and other reports and data.
* Collect 3 fish samples from 4 sites on Lake Superior for PCBs and mercury. One sample from each location will be analyzed for pesticides.
* Collect 1 whole fish sample for dioxin analysis from 1 site on the Mississippi River and from 5 lake sites. Twelve fillet samples will be analyzed for mercury and PCBs.
* Four fish samples from 7 locations on the Mississippi River will be analyzed for PCBs to determine PCB trends.
* Three fish samples from twelve lakes will be analyzed for mercury.
* Three mine pit lakes will have two fish samples analyzed for mercury and one sample analyzed for PCBs.
* Four waterbodies or waterways receiving present or past municipal effluent will have 2 fish samples collected and analyzed for PCB and mercury analysis. One sample will be analyzed from each for pesticides.
* Three fish samples from 5 lakes will be analyzed for mercury, cadmium, and lead for the acid rain program.
* Two fish samples will be taken from 10 sites and analyzed for PCBs, mercury, or pesticides for screening, followup investigation or other reasons. Parameter analysis will be on a case by case basis.
* Sediment samples from 10 locations on the St. Croix River will be analyzed for PCBs.
* Feathers and livers from 8 loon carcasses will be analyzed for mercury.
* Sediment samples from 8 St. Louis Bay sites will be analyzed for mercury, metals and PCBs.

FY89:
* Collect 20 fish samples from 2 Mississippi River sites for PCB's and mercury. Two samples will be analyzed for pesticides.
* Collect 85 Fish samples from 7 northeastern Minnesota lakes for mercury. Data will be compared to previous data for trend analysis.
* Collect 80 fish samples from 8 popular northeastern Minnesota lakes for mercury. Three Voyageurs National Park lakes are included.
* Forty fish samples from 4 Lake Superior sites will be collected and analyzed for PCB's and selected pesticides if funded

through USEPA.

Compliance Monitoring Program

Objectives:
* To ensure that water quality standards are met by verifying the quality of point source dischargers.
* To ensure that point source dischargers are meeting permitted effluent limits.

Data Types:
* Chemical characteristics
* Flow measurements

Data Usage:
* To determine compliance of permitted discharges with permit requirements and water quality standards.

Cooperation:
* USEPA
* Regulatory Compliance Program, MPCA
* Wastewater Treatment Section, MPCA
* Regional offices, MPCA
* Municipalities
* Industries

Needs:
* Valid and accurate data collected by dischargers that follows proper QA/QC procedures.
* Storage and retrieval capability for all data through PCS and STORET.

Schedule of Activities

Ongoing:
* Improve compliance of facilities.
* Improve effectiveness of compliance inspection activities.
* Increase use of the PCS system as the primary source of NPDES program data.
* Oversee effectiveness of federal pretreatment program implementation.
* Prepare and implement an annual inspection schedule for
* for major dischargers to be incorporated into the annual program plan.

FY88:
* Use and maintain PCS for all required data elements for all majors, priority P.L. 92-500 facilities, and NMP.
* Monitor and track compliance of all federally approved pretreatment programs.
* Identify existing compliance problems.
* Identify toxic discharges.

FY89:
* Identify existing compliance problems, noting priority and toxics-impacted waterbodies.
* Maintain PCS as the primary source of NPDES program information and compliance data.
* Prepare and implement an annual inspection schedule.
* Monitor and track compliance of all federally-approved pretreatment programs.

Standards Program

Objectives:
* Maintain an adequate and sufficient WQS program.
* Assure that waterways are properly classified in terms of beneficial uses and where attainable, as part of the triennial standards review process. Upgrade uses consistent with the goals of Section 101 of the CWA.

* Review and, where appropriate, revise water quality standards within the context of Section 303(c) of the Clean Water Act and 40 CFR Part 130 and 131.
* Develop WQS for toxic pollutants and procedures for applying narrative toxic criteria for water quality based permit limits.
* Assist in developing a toxicant control strategy that will enhance the ability to control point and nonpoint sources of toxicants.
* Complete the development and begin to implement anti-degradation procedures and policies.
* Develop a comprehensive water quality assessment of State waters.

Data Types:
* Habitat assessments
* Cost/benefit information
* Physical, chemical, and biological characteristics

Data Usage:
* To develop water quality standards for toxic pollutants.
* To reclassify lakes and streams.
* To develop rules to implement federal nondegradation requirements.
* To revise Minnesota's definition of secondary treatment.

Cooperation:
* Attorney General
* Revisor of Statutes
* Regulated community
* Lake Studies Program, MPCA
* Toxic Substances Monitoring Program, MPCA
* Regulatory Compliance Section, MPCA
* Minnesota Department of Natural Resources

Needs:
* Develop phosphorous standards to control lake eutrophication.
* Develop rules to regulate nonpoint sources.
* Develop sediment criteria.

Schedule of Activities

Ongoing:
* Consider nonpoint source loads and impacts in the water quality standards (WQS) review/revision process.
* Consider consistency of WQS revisions with International Joint Commission (IJC) water quality objectives and identify WQS that do not support IJC objectives.
* Participate in the Regional Work Group, coordinated by EPA, on toxicant strategy development.

FY88:
* Initiate during FY 88 and complete during FY89 the development of numerical WQS for all toxicants where USEPA criteria are available.
* Develop procedures for applying "free froms" or other narrative criteria by the first qarter of FY 1988.
* Adopt new criteria for toxicants through application of "free froms" (narrative) procedures as needed.
* Develop anti-degradation requirements in the water quality rules, and apply to proposed projects.
* Identify all waters needing water quality based controls for toxics and non-toxics.

FY89:
* Complete the development of WQS for all toxicants where USEPA criteria are available.
* Initiate the WQS review/revision process for the next triennial review process.
* Undertake use attainability analyses and site-specific criteria modification studies as a means of ensuring sound water quality basis for permit, construction grants, NPS control and enforcement decisions.

Intensive Surveys Program

Objectives:

* Target and conduct total maximum daily loads/wasteload allocations (TMDLs/WLAs) in accordance with the continuing planning process and with emphasis in PWB areas for the support of key NPDES permit, enforcement, and construction grant funding actions.
* Determine that construction of advanced treatment projects, based on permit requirements more stringent than secondary treatment, will result in significant receiving water quality improvements or will mitigate an existing public health problem.
* Develop water quality based controls (TMDLs/WLAs) for waterbodies that are not expected to attain or maintain WQS through application of technology based controls for point sources. For such waterbodies impacted by toxics, supplement the TMDL/WLA with a control strategy for point sources that achieves WLA limitations within three years of adoption of the strategy.
* Determine that construction of AT projects, based on permit requirements more stringent than secondary treatment, will result in significant receiving water quality improvements or will mitigate an existing public health problem.
* Provide water quality data that can be used in the program evaluation and decision-making process.
* Ensure water programs address priority problem areas.
* Ensure that Water Quality Management Plans are updated.
* Evaluate if uses of the resource associated with the present use classification are being attained.
* If uses are not being attained, define sources of use impairment and predict potential uses pending mitigation.

Data Types:

* Chemical characteristics
* Biological characteristics
* Hydrological and hydraulic characteristics
* Diurnal fluctuations

Data Usage:

* Calculation of wasteload allocation effluent limitations needed to maintain water quality standards.
* Calculation of critical low flow periods for waste load allocations.
* Identification of toxic discharges of metals.
* Determination of the water quality in the zone of influence downstream of a discharger.
* Provide justification for advanced treatment.

Cooperation:

* USEPA
* Minnesota Department of Natural Resources
* USGS
* State Climatologist Office
* Permits, Enforcement, and Construction Grants Programs, MPCA
* Industrial and municipal dischargers
* Nonpoint Source Program, MPCA

Needs:

* After AT facilities are completed, special studies should be conducted to compare 'before' and 'after' water quality and to verify the accuracy of the mathematical models used to establish effluent limitations.
* The success and merits of use attainability should be documented by demonstrating improvements in fisheries and recreational uses after improvements have been implemented.

Schedule of Activities

Ongoing:

* Document procedures which are used to implement nondegradation

policies and utilize these procedures.
* Update identification of waterbodies where technology-based effluent limits are insufficient to achieve applicable WQS.
* Ensure that permits and construction grant projects are consistent with the Water Quality Management Plan.

FY88:
* Schedule and develop TMDL/WLAs in advance of permit expiration to support permit limit development.
* Schedule and develop control strategies for waterbodies impacted by point sources of toxics.
* Develop a list and schedule for AT reviews based on projections of AT projects for FY 88 and FY 89.
* Incorporate reviews of WQS and development of TMDL/WLAs as fundamental components of the AT justification process.
* Complete AT reviews consistent with schedule to ensure no delay in construction grant projects.

FY89:
* One advanced treatment study will be done at Bock, Minnesota.
* One intensive survey will be done at Eveleth, Minnesota to establish final effluent standards.
* Two wasteload allocation studies will be done.
* Seven reference wateshed studies will be done within the Western Corn Belt Plains Ecoregion.

Routine Monitoring and National Fixed Station Network

Objectives:
* Provide background water quality data used in: 1) development of water quality standards, 2) preparation of reports to ASIWPCA and the IJC, 3) fishery and biological studies, 4) characterization of ecoregions, 5) EPA required reports 305(b) and Water Quality Management Plan.
* Provides background information necessary to answer water quality inquiries asked by the general public, governmental agencies, academic communities, municipalities, and industries.

Data Types:
* Chemical characteristics
* Physical characteristics
* Biological characteristics

Data Usage:
* Determination of ambient water quality.
* Determine compliance with state rules and water quality standards.
* Determine long term trends of water quality.
* Provide for baseline data and allow for national data comparability.

Cooperation:
* USEPA
* States including Wisconsin, North Dakota, South Dakota, and Iowa
* Manitoba
* Ontario
* Environment Canada

Needs:
* Additional stations and parameters need to be added to comprehensively monitor the state, particularly if the impact of nonpoint source contributions are going to be quanitified.
* Metals should be collected and analyzed twice yearly at all stations.
* Organics should be collected at all stations yearly.
* Samples should be collected twelve months of the year rather than the present eight months.
* Routine event monitoring should be done for NPS.

* Reference watersheds for ecoregions should be identified and monitored.

Schedule of Activities

Ongoing:

* Enter monitoring data into STORET (including intensive survey data) within 60 days after receipt from the laboratory.
* As changes occur, update the existing Quality Assurance Plan for new parameters and methods.
* Revise and implement existing methodologies identified in the existing approved Quality Assurance Plan to reflect revisions in 40 CFR 136 in order to conform with specific guidance and methodologies as provided by EPA's Quality Assurance Office (revisions and implementation will occur as needed and practicable).
* Implement the approved Quality Assurance Program Plan.
* Provide valid water quality data that can be used in the program evaluation and decision making process and implement the Guidance for State Water Monitoring and Wasteload Allocation Programs, subject to review. Send appropriate final reports to EPA's Region V Clearinghouse.
* Collect water samples on a monthly basis (8 months a year) from 75 stations including 19 fixed stations.

FY88/FY89:

* Prepare and submit monitoring checklists pursuant to the regional strategies and the Guidance for State Water Monitoring & Wasteload Allocation Programs.
  1) Submit monitoring checklists for monitoring fixed stations and intensive surveys by January 1 of each year.
  2) Identify toxic substance monitoring locations and indicate whether they coincide with National Ambient Monitoring Station locations.

Nonpoint Source Pollution Program

Objectives:

* Develop and implement a nonpoint source pollution control program of integrated water quality and land-use management for surface and ground water protection.
* Coordinate the water quality planning process and serve as an interagency liaison so that water quality/land-use management actions of existing programs are implemented to control nonpoint source pollution.
* Administer the lake restoration grants program in order to improve water quality and assist the Agency in addressing nonpoint source pollution concerns.
* Develop an assessment strategy for the ranking of watersheds in the state for non-point pollution control and abatement.
* Verify improvement or degradation of water quality after lake restoration efforts have ended.
* Develop and refine the U.S. EPA ecoregion concept in Minnesota.
* Develop a draft statewide Nonpoint Source (NPS) Assessment Report which has recieved public comment by April 1988 and a final document approved by the MPCA Board and Governor by August 1988.
* Develop and implement the State NPS program.
* Prepare the annual NPS Report by September 30, 1988.

Data Types:

* Chemical characteristics
* Physical characteristics
* Hydrologic and hydraulic characteristics
* Biological characteristics

* Land use
* Topographic chacteristics

Data Usage:

* Determine nonpoint source best management practices (BMP) or BMP's incorporated with point source effluent standards to protect water quality.
* Evaluate and monitor the impacts of best management practices for nonpoint source control on surface and ground water.
* Determination the need for and effectiveness of lake restoration projects under the 314(a) program.
* Identify NPS impacted or potentially impacted areas and waterbodies.

Cooperation:

* Counties
* Watershed districts
* USGS
* Minnesota Department of Natural Resources
* Soil and Water Conservation Districts
* Lake Studies Program, MPCA
* Intensive Surveys Program, MPCA
* Routine Monitoring Program, MPCA
* Ground Water and Solid Waste Division, MPCA
* Hazardous Waste Division, MPCA
* All state, local and federal groups dealing with land or resource management.

Needs:

* Evaluate the relationships between surface water best management practices and ground water quality.
* Conduct post-restoration studies on water quality after restoration efforts have been implemented.
* Establish a stream assistance program to assist local managers in identifying stream pollution problems.

Schedule of Activities

Ongoing:

* Cooperate with and provide assistance to existing local water quality management efforts and governmental programs in order to promote and establish a watershed management approach to nonpoint source pollution control.
* Coordinate and work closely with watershed management projects (e.g. Big Stone, Clearwater River, and Garvin Brook) so that successful administrative and technical solutions to water quality/land-use management problems are demonstrated and appropriate experience is gained for future nonpoint source program implementation.
* Update and implement a public education and information strategy designed to communicate to the public, government agencies, and the legislature the significance of land-based water pollution on the economic and recreational welfare of the state so that support for integrated water quality/land-use management will be increased. Provide information to land users to improve land-use management for water quality protection.
* Develop technical and administrative tools for managing NPS programs including, as necessary, standards, BMP criteria, administrative procedures, etc.
* Implement the strategy for the MPCA's participation in the Metropolitan Surface Water Management Act of 1982 and the Local Water Planning Act of 1985 through:
  (1) Provision of available water quality data and assistance in locating such data.
  (2) Assistance in using pollutant delivery models.
  (3) Assistance in resource use and attainability assessments.

(4) Assistance in designing pollution abatement programs.
(5) Assistance in coordinating water quality management efforts with other units of government.
(6) Review of plans for consistency with the Act and sound watershed management activities.
(7) Coordination with other agencies in the review of local watershed plans.

* Review and evaluate monitoring data from clean lakes restoration grants for pre- and post-project evaluation within 90 days of receipt.
* Ensure that quality Lake Restoration Grant applications are prepared and submitted so that Minnesota may receive the maximum funding from EPA Region V's allocation.
* Ensure that projects in the program meet federal and state requirements, remain on schedule, and achieve intended water quality improvements. Completion of this activity is contingent upon EPA making timely (30 to 45 days) decisions regarding grants, budget period extensions, and the like.
* Coordinate closely with the Regulatory Compliance Section so that lake restoration grants serve as an integral part of a total water media program.

FY88:

* Complete NPS Water Body Assessment using ecoregions analysis of watersheds and existing water quality information. Develop goal and criteria setting process for lakes and streams.
* Identify categories and subcategories of NPS which provide significant contributions.
* Develop process to identify and document best management practices (BMP) for control of NPS and their probable effect on ground water.
* Establish an interagency team to identify and describe the state and local program for controlling NPS.
* Complete the assesment of the Minnesota River Basin for NPS impacts as funding is obtained.
* Develop a report which identifies the state management program, is approved by the Governor and submitted to USEPA by August 1988 which identifies: BMPs, programs, schedules, certification of AG of authorities and sources of funding which will be sent to implement the program.
* Adopt permanent rules and implement the Clean Water Partnership Program.
* Develop technical and administrative tools for managing NPS programs including as necessary standards, BMP criteria, administrative procedures, etc.
* Begin implementation of Clean Water Partnership Projects and projects funded through Section 319 of the Water Quality Act through administrative and technical assistance to projects.
* Facilitate implementation of BMPs for control of NPS to meet water quality standards and international agreements by providing technical assistance to management agencies.
* Assist project sponsors in establishing site specific control measures to improve water quality in association with spcefic NPS control projects.
  (1) Assist project sponsors in monitoring and evaluating BMP installation.
  (2) Promote state/local technical information exchange.
* Assist NPS management agencies to factor in water quality objectives into operating programs.
* Setup a tracking system to evaluate impacts of state programs on water quality.
* Based on reauthorized CWA, update the State 314(a) report by April 1, 1988 ensuring consistency with the NPS Assessment Report.
* Prepare applications for 314(a) projects by February 1988, based on the 314(a) program report.

(1) Provide a list of Candidate projects to Region V by October 15, 1987.
(2) Send draft projects to Region V by January 15, 1988.
(3) Send final projects to Region V by January 15, 1988.
(4) Submit final applications by February 15, 1988.

* Prepare applications for 314(b) demonstration program.
(1) Propose projects that reflect geographical requirements of 314(b), regional guidance and state priorities.

FY89:

* Provide a list of the components of the state NPS program which need to be developed in order to gain USEPA approval and a schedule for completing the development of the components.
* Develop technical and administrative tools for managing NPS programs.
* Develop guidance documents for Clean Water Partnership (CWP) and section 319 projects for monitoring, computer modeling, BMP project evaluation and reporting, project administration, application procedures, rules, and project development.
* Facilitate implementation of BMPs or control of NPS to meet water quality standards and international agreements by providing technical assistance to management agencies.
* Assist project sponsors in establishing site specific control measures to improve water quality in association with specific NPS control projects.
* Assist NPS management agencies to factor in water quality objectives into operating programs.
* Provide a description and schedule for demonstration projects to be funded during fiscal year.
* Coordinate development, training and implementation of AGNPS model.
* Prepare the annual NPS report by September 1, 1989.
* Develop and implement ground water related NPS projects.
* Provide a schedule to EPA Region V for implementation and/or devlopment of ground water NPS activities by December 30, 1988.

Border Waters Programs

Objectives:

* Support the IJC Water Quality Board initiatives and priorities for the Great Lakes Area of Concern.
* Support Article VI and Annex 7 of the GLWQA by participating in an in-place pollutants research program to the extent that State resources allow if funded by Congress.
* Support the CWA and Article IV of the GLWQA by developing a candidate list of "Outstanding Natural Resource Waters" within the Great Lakes basin and report on the statutory, administrative, and socioeconomic barrier remedies related to declaration of Great Lakes waters as Outstanding Resource Waters. Lake Superior is designated an "Outstanding Resource Value Waters" by Minnesota Rule.
* Support Article IV and Annexes 11 and 12 of the GLWQA by participating in the development, promulgation and monitoring of water quality standards (WQS) for the Great Lakes and their tributaries.
* Support the efforts to determine and control toxics loading of the Great Lakes as called for by Annex 12 of the GLWQA evaluating the need for implementing the ground water data management practices recommended by the Region V Ground Water Data Management Task Force.
* Support Annex 11 and 12 of the GLWQA by implementing Great Lakes monitoring described in Activity A and report loadings to IJC by

entering data into STORET.
* Ensure State participation in US/Canada Water Quality Board and activities of the IJC.

Data Types:
* Chemical characteristics
* Tissue data
* Sediment data

Data Usage:
* Determination of ambient water quality.
* Determine compliance with state rules and water quality standards.
* Determine compliance with IJC water quality objectives.
* Determine long term trends of water quality.
* Provide for baseline data and allow for national data comparability.

Cooperation:
* USEPA
* Environment Canada
* Ontario
* Manitoba
* North Dakota

Needs:
* Complete assessment of areas of concern.

Schedule of Activities

Ongoing:
* Report annually on the level of the 11 critical pollutants of the Water Quality Board as monitored in sediment, water, and effluents discharged to the Great Lakes. Data collected on any of the eleven critical pollutants will be placed in STORET within 30 days of receipt from laboratory.
* Appoint appropriate state personnel to IJC committees. (Staff will be appointed to IJC committees as needed to accurately represent Minnesota's interests and needs.)
* Participate in the Red River Pollution Control Board by:
  (a) Preparing a draft annual report and attending the annual meeting as needed.
  (b) Chairing the Red River Contingency Plan Work Group and completing annual updates of the plan.
  (c) Chairing the Red River Objectives Task Force and preparing a report to the Commission.
* Participate in the Rainy River Pollution Control Board by:
  (a) Preparing a draft annual report and attending the annual meeting as needed.
  (b) Co-chairing the Rainy River Study Plan Work Group and coordinating study with Boise Cascade.

FY88:
* Continue assistance in the completion of Area of Concern (AOC) Remedial Action Plan for sediments in the St. Louis River.
  (1) Provide assistance to and consultation with the EPA consultant on the development of the LAP.
  (2) Review draft RAP developed by EPA consultant within 60 days of receipt.
  (3) Draft sections of the RAP not completed by the EPA consultant as resources allow.
* Initiate implementation of RAP
  (1) Comply with implementation schedule of RAP when completed as resources allow.
* Provide inventory if not completed of major and minor dischargers in the Great Lakes AOCs by January 1, 1988. Develop a schedule by March 1, 1988 for incorporation of control limits and report compliance to GLNPO for phosphorous.

(1) Inventory will be provided and control limits scheduled for St. Louis Bay AOC.

* Ensure that inventories are incorporated into the RAP where appropriate.
* Initiate the promulgation of numerical water quality standards for the Great Lakes for at least those parameters having EPA criteria documents. Emphasis will be placed on the IJC Water Quality Board 11 critical pollutants and the priority pollutant metals needed to protect aquatic and terrestrial life and human health. Priority will be given to IJC areas of concern.
* Monitor receiving waters known or reasonably expected to be violating WQS at tributary mouths. With priority given to AOC tributaries to the extent that analytical methods exist.
* To the extent that completed monitoring will permit, report waterbodies or segments thereof within the GL basin which exceed the WQS for any of the pollutants identified.
* Monitor GLISP tribs monthly for TP, Na, Cl, NO2+NO3, and TSS for the purpose of calculating loads to the Great Lakes.
  - Stations on the Beaver River (BV-4) and St. Louis Bay (SLB-1) will be monitored nine times per year for the routine parameters and for Cl, total Pb, total Ca, total Na, total sulfate, and reactive silica.
* Depending on availability of resources, participate in EPA sponsored workshop on high flow sampling strategies and GL load estimation.
* Provide a self-evaluation of State ability to routinely generate and report reliable automated load estimates to the Great Lakes from individual tributaries, individual point sources, from all point sources to a tributary, and from all tributaries combined, per requirements of the Lake Michigan Toxics Strategy and Green Bay study, and recommendations of the 1985 WQB Report, Report On Capabilities, and identify needs for staff, hardware, software, and methods.
  (1) USEPA will provide guidance on other appropriate documentation outlining the procedures for conducting automated local estimates by September 30, 1987.
  (2) Self-evaluation will be provided by September 30, 1988.
* Assess sampling and analytical capability to detect appropriate levels of toxic substances in effluents and surface waters by September 30, 1988. Participate with USEPA in demonstration projects and screening surveys for those substances.
* Report annually on data collected by the MPCA on the level of 11 critical pollutants of WQB monitored in sediment, water, biota, and effluents discharging into the Great Lakes by entering data in STORET within 60 days of receipt from the laboratory.
* Collect spottail shiners at St. Louis Bay if available or other young of the year and send to GLNPO for analysis.
* Collect fall run coho salmon at French River if available and send to FDA according to Federal/State Great Lakes Fish Monitoring Strategy.
* Complete uniform Great Lakes-wide risk based fish advisory.
* Implement monitoring called for in AOC RAP to further define or to track progress as resources allow.
* Appoint appropriate State personnel to IJC committees.
* Actively participate in IJC committees as requested.
* Participate in the Red River Pollution Control Board.
  (1) Prepare an annual report and attend the annual meeting.
  (2) Chair the Red River Contingency Plan Work Group and cmplete annual updates of the plan.
  (3) Chair the Red River Objectives Task Force and prepare an annual report.
* Participate in the Rainy River Pollution Control Board.

(1) Prepare an annual report and attend the annual meeting.
(2) Co-chair the Rainy River Study Plan Work Group and participate in the preparation of the final report.

* Participate in the Lake Superior Surveillance Task Force.
* Participate in IJC round robin laboratory comparisons for IJC parameters measured in State programs.

FY89:

* Participate in the Great Lakes Water Quality Agreement Integration Work Group (GLWQAWG). Attend meetings and serve on committees as appropriate.
* Ensure State participation in the International Joint Commission (IJC) Great Lakes Water Quality Board.
* Actively participate on IJC Committees.
* (1) Participate in the Red River Pollution Control Board.
    (a) Prepare an annual report and attend annual meeting.
    (b) Chair the Red River Contingency Plan Work Group and complete annual updates of the plan.
    (c) Chair the Red River Objectives Task Force and prepare an annual report.
* (2) Participate in the Rainy River Pollution Control Board.
    (a) Prepare an annual report and attend the annual meeting.
    (b) Co-chair the Rainy River Study Workplan Group and participate in the preparation of the final report.
* Participate in the Lake Superior Surveillance Task Force.
* Participate in the IJC round-robin laboratory comparisons for IJC parameters measured in State monitoring programs.
* Assist the USEPA in preparing for the semiannual meeting with Canada to coordinate respective workplans and evaluate progress made in meeting the terms of the GLWQA.
* Support the IJC Water Quality Board's initiatives and priorities for the Great Lakes Area of Concern (AOC).
* Incorporate appropriate portions of completed AOC RAP into the Minnesota Water Quality Management Plan.
* Implement AOC RAP when the plan is approved and as resources allow.
* Develop a schedule for State Watershed Management Plans for Great Lake Areas impacting AOCs.
* Participate in the development of a Monitoring Program Strategy that supports plans for each adjacent St. Louis Bay
* Complete an inventory of those facilities discharging to Great AOC which need but do not currently have water-quality based effluent limits in place by March 31, 1989.
* Continue to provide Monthly Discharge Monitoring Report data for point source dischargers to the Great Lakes and their tributaries through PCS or STORET.
* Participate in activities related to Lake Superior LMP as resources allow.
* Provide an assessment of State sampling and analytical capability to detect levels of toxic substances in effluents and surface waters for use in preparing LMPs by March 31, 1989.
* Identify, by report in 305(b) Report and 304(l) lists, those Great Lakes waters known or reasonably expected to be violating WQS and initiate or continue monitoring for approriate parameters.
* Participate in a GLNPO sponsored In Place Pollutants (IPP) demonstration program for the removal, stabilization, or treatment of toxic bottoms sediments and in the Great Lakes IPP Demonstration Program Interagency Work Group when they are applicable to Minnesota waters as resources allow.
* Develop and promulgate appropriate WQS for the Great Lakes and their tributaries.
* Implement GL monitoring; report loadings to IJC and enter

data into STORET.
* Monitor GLISP tribs monthly for TP, NA, CL, TKN, NO2+NO3, and TSS.
  - Stations on the Beaver River (BV-4) and St. Louis Bay (SLB-1) will be monitored eight times per year for the routine parameters and for Cl, total Pb, total Ca, total Na, total sulfate, and reactive silica.
* Report annually analyses for the 11 Critical Pollutants in sediment, biota, water and effluents discharging into the Great Lakes.
* Implement Great Lakes wide risk-based methodology for fish advisories, conforming to methodolohy agreed upon among the Great Lakes States.

Emergency Response Program - Hazardous Waste Division

Objectives:
* Return contaminated spill sites to acceptable condition in a reasonable time frame and minimize the impact of spills by prompt effective actions.

Data Types:
* Chemical characteristics for surface and ground water
* Soils and sediment data

Data Usage:
* Determine nature and extent of spill.
* Determine toxic components.
* Determine compliance with state rules and standards.
* Evaluate cleanup procedures and success.

Cooperation:
* Local governmental agencies including police and fire departments
* Ground Water and Solid Waste Division, MPCA
* Water Quality Division, MPCA
* Regional offices, MPCA
* Minnesota Department of Natural Resources
* Minnesota Department of Transportation
* USEPA

Needs:
* Provide more on-site monitoring of spill cleanups.

Schedule of Activities

Ongoing:
* Mitigate the effects of spills of petroleum products and hazardous materials by maintaining an effective emergency response program.

FY88/FY89:
* Pursue legal actions against responsible parties.
* Respond to all major and intermediate incidents.
* Respond to all major spill sites consistent with the state contingency plan, and report to the National Responce Center.
* Compile necessary followup reports with recommended actions and provide them to appropriate agencies.
* Notify USEPA of all spill response activities.
* Initiate and issue, as appropriate, Notices of Violations based on significant noncompliance.

Dredge and Fill Program

Objectives:
* Review applications and issue or deny permits and certify compliance under the State Disposal System permit program and Section 401 of the Clean Water Act related to dredge and fill activities in order to prevent pollution of waters and protect sensitive aquatic ecosystems from the adverse impacts of discharged dredged and fill materials.
* Evaluate 404 permit assumption through an interagency task force.

Data Types:
* Sediment samples/Evaluation
* Chemical characteristics

Data Usage:
* Analyze water quality impacts of federal actions

Cooperation:
* Wisconsin
* U.S. Army Corps of Engineers
* U.S. Fish and Wildlife Service
* Minnesota Department of Natural Resources

Needs:
* Criteria development for sediments
* Criteria applications for sediments
* Implement a wetland protection program
* Define a wetland protection strategy

Schedule of Activities

Ongoing:
* Participate in the AID Program to identify sensitive aquatic corridors for the purposes of reducing the environmental impact in those areas as needed. Enter into an agreement with the DNR for coordination of the AID program.
* Report actions quarterly to USEPA.
* Consider USEPA proposals for development of a wetland protection strategy.

FY88:
* Review all (approximately 150) public notices under Section 404 of the Clean Water Act for impacts on designated uses of water bodies or wetlands and recommend approval, waiver, or denial of 401 Certification.
* Act upon approximately 120 applications for certifications under Section 401 of the Clean Water Act within the time allotted.
* Monitor the memorandum of agreement with Corps of Engineers on nationwide and general permits.
* Issue or deny State Disposal System permits for dredging projects with emphasis on permits for navigation purposes.
* Refer for enforcement unauthorization nonproper actions under 401 jurisdiction and comment on proposed EPA enforcement actions as appropriate.
* Participate in an interagency task force evaluating the assumption of the 404 process.

FY89:
* Review all public notices under Section 404 (CWA) for impacts on designated uses of water bodies or wetlands.
* Waive or deny certifications under section 401 (CWA) within the time alloted.
* Refer projects requiring State Disposal Systems Permits to the Regulatory Compliance Section for proper action.
* Refer for enforcement unauthorization or nonproper actions under 401 jurisdiction and comment on proposed EPA enforcement actions as appropriate.
* Participate in an interagency task force evaluating the assumptin of the 404 permit process.

* Draft a proposed program for review of wetland policies and a strategy to gain the necessary consensus of the affected agencies.

Data Management Program

Objectives:
* Coordinate a system of water quality data storage and retrieval so that water quality information can be furnished to Agency personnel and the public.
* Insure that quality assurance and quality control are maintained for the data base.

Data Types:
* Chemical characteristics for both surface and ground water
* Physical characteristics for both surface and ground water
* Fish tissue data
* Turtle tissue data
* Loon tissue data
* Sediment data

Data Usage:
* Uses of the data are listed under the individual program descriptions.

Cooperation:
* USEPA
* All programs within the Minnesota Pollution Control Agency
* Other state agencies including, State Planning, Department of Health, Department of Natural Resources, Department of Transportation, Department of Agriculture, Minnesota Geological Survey
* Local units of governments and watershed districts
* Industry
* Academic community
* Public

Needs:
* Develop capability to electronically transfer analytical results from the Department of Health so that the data is ready for storage in STORET without being keyed into the system.
* Develop the capability to electronically transfer data generated by other state agencies and local units of government so that a comprehensive data base is maintained in STORET without the rekeying of information.

Schedule of Activities

Ongoing:
* Coordinate the storage of all data in STORET.
* Coordinate the editing and correction of all STORET data.
* Provide assistance for data retrievals and statistical analysis for the Program Development Section and the Division of Water Qualtiy, as well as the general public and other state and federal agencies.

FY88/FY89:
* Prepare, store, edit and correct all Routine Water Quality Monitoring Program Data within 30 days after it is received from the laboratory.
* Prepare and store all other water related data collected by the Section, including toxics, lake studies, special studies, nonpoint source, and groundwater information.
* Store data collected by other groups, including, the Metropolitan Council, Ramsey County, Rice Creek Watershed District, Clearwater Watershed District, and lake restoration projects.

Quality Assurance/Quality Control Program

Objectives:

* Administer the Discharge Monitoring Report Quality Assurance (DMRQA) program for the state.
* Evaluate lab certification programs and make recommendations for setting up a program in the state.
* Review alternate test procedure applications relating to NPDES permit requirements.
* Coordinate quality control efforts between the Water Quality Division and the Health Department Laboratory.
* Review treatment facility laboratories.

Data Types:

* Chemical lab results
* Physical characteristics

Data Usage

* Determination of accuracy of lab data.
* Determination of compliance with permit conditions.
* Determination of comparability of data for alternate test procedure applications.

Cooperation:

* USEPA
* Regulatory Compliance Section MPCA
* Minnesota Department of Health
* Municipalities
* Industry
* Consulting Firms

Needs:

* Establish a Lab Certification Program to provide assurance that high quality data is reported to the state.
* Determine which permittees are reporting correct data and using acceptable procedures and quality control.
* Improve the quality of analytical data through training and certification program.

Schedule of Activities

Ongoing:

* Coordinate the inter-laboratory quality control program as a continuing in-house activity.
* Evaluate lab certification programs and make recommendations for their implementation.
* Evaluate Agency analytical and sampling methods and make recommendations to ensure quality assurance in this methodology.
* Instruct permit holder labs in proper lab techniques as requested.
* Review and comment on alternate test procedure applications.
* Inspect labs after reviewal of DMRQA program results.

FY88/FY89

* Conduct 25 onsite lab inspections.
* Recommend lab certification program by June 30, 1987.
* Prepare DMRQA report.
* Inventory private and public labs that provide data under NPDES program.
* Review the existing Quality Assurance Plan for new parameters and methods, including biomonitoring and update the Quality Assurance Plan as needed.
* Revise field methods, including sampling procedures and analytical methodologies, currently being used as needed.
* Implement the approved Quality Assurance Program Plan.

(6) SUMMARY

Environmental protection begins and ends with monitoring. Monitoring defines the pollution problem, helps determine what kind of pollution control is necessary, and measures the effectiveness of that control. Recognizing this, the Minnesota Pollution Control Agency operates a variety of monitoring programs.

Although this monitoring effort is extensive, many of the programs should be expanded to better define the pollution problems which still exist. The Routine Ambient Monitoring Program needs to be expanded to include more streams in the state and more frequent sample collection. Heavy metals and other toxics should be collected regularly as part of this monitoring program. Without this data, baseline information on a statewide basis will not exist. Similarly, special studies also need to be done to collect information on dioxin and pesticides as part of the Toxic Monitoring Program. Cuts in federal funding in Fiscal Year 1989 have reduced the operation of the Routine Ambient Monitoring Program to sampling during eight months of the year. This decreased level of funding has also resulted in an 80% reduction of the monies available for laboratory analysis of toxic substances.

The Agency is requesting an additional $250,000 from the 1989 State Legislature in order to mantain these monitoring programs. The additional funding will allow the ambient program to emphasize monitoring by ecoregion. The program will consist of two components. A state-wide monitoring network of 50 stations will be maintained to collect data throughout the state for trend analyses. In addition, 50 more stations will be added to characterize the water quality in 3 of the state's ecoregions one year, and 4 of the ecoregions the following year. Monitoring will include biological surveys (fish and macro-invertebrates), intensive monitoring of runoff events, and tissue and sediment monitoring. Water samples will be collected during 12 months of the year. Parameters monitored will be season specific and will include new generation pesticides and toxic metals.

Water Quality data on Minnesota's lakes is very limited. The Citizen Lake-Monitoring Program, the Lake Assessment Program, and the Lake Studies Program all need to be expanded to include lakes which are currently not being monitored. In addition, the elimination of funding for the Clean Lakes Program from the Federal Fiscal Year 1988 and 1989 budgets will greatly reduce the Agency's efforts to improve lake resources in Minnesota. The Minnesota Pollution Control Agency is requesting additional personnel from the 1989 State Legislature to expand the lake monitoring and public assistance programs. One additional person will be requested for the first year of the biennium, and two persons will be requested for the second year.

Biomonitoring presently consists of bioassays which are conducted on effluents. There is a need to develop the capability to perform bioaccumulation tests for both effluents and insitu conditions for this program. Monitoring of both surface and ground water needs to begin for the Nonpoint Source Program so that sources of this type of pollution can be identified. This program should also include storm event monitoring. Expansion of all of these monitoring programs will help the Agency to determine where pollution problems exist in the state and what kind of pollution control is necessary to correct those problems.

Other monitoring programs need to be expanded to better determine the effectiveness of the abatement work which has been done by the Agency and by municipalities and industries. The Intensive Surveys Program should document the success and merits of use attainability by demonstrating changes in fisheries and recreational uses after improvements have been implemented. The Biomonitoring Program should be expanded to measure the effectiveness of

land-use management practices employed to control nonpoint source pollution. Follow-up monitoring should be conducted on lake restoration work which has been federally funded to evaluate the success of those projects. These monitoring Programs would help the Agency judge how effective pollution control has been throughout the state. Current levels of federal funding in fiscal years 1988 and 1989 will not allow these necessary monitoring evaluations to be made.

The Agency will need additional funding to expand any of its monitoring programs. These funds will need to be provided by both the state and federal governments if an increase in monitoring activities is to occur. The need for additional monitoring is clear; the commitment to support that monitoring is not.

It is also clear that with the decrease in the availability of additional funding, it will become more important for agencies to coordinate their monitoring programs. This is true not only for state and local agencies within Minnesota, but also for state and federal agencies. Coordination will avoid duplication and stretch diminishing monitoring dollars. It will also foster cooperation between agencies in other areas. All agencies in Minnesota who are involved in environmental monitoring should insure that the data resulting from these programs are in a format that is easily accessable by all the other agencies so that it can be used by everyone. In the case of water quality data, this may mean the inclusion of all of the data in one or two main data bases; i.e. STORET for surface water and IGWIS for ground water. Data that are not easily available for use by other agencies do not serve the best interests of either the agency collecting the data or the monitoring community as a whole.

If Minnesota is going to remain in the forefront of pollution control nationally, a commitment to continue existing monitoring and to expand monitoring where it is necessary needs to be made. This commitment involves the financial support of both the State Legislature and the U.S. Environmental Protection Agency.

6. APPENDIX

Station and Parameter Lists for Fiscal Years 1988 and 1989

Biomonitoring Program
Lake Studies
Citizen Lake-Monitoring Program
Lake Assessment Program
Acid Rain Program
Toxic Substances Monitoring Program
Intensive Surveys Program
Routine Monitoring and National Fixed Station Network