

**CONSERVATION DISTRICTS AND
GREAT LAKES WATER QUALITY:
PRESENT AND PROSPECTIVE ROLES**

**A report to the
National Association of Conservation Districts
Committee on the Great Lakes**

**Prepared by the
Great Lakes Commission**

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in the Great Lakes Region**

TABLE OF CONTENTS

Acknowledgements	i
Executive Summary	1
Chapters	
1. Issue Overview	3
2. Current Programs	7
3. Nonpoint Source Pollution Control Priorities	20
4. Emerging Priorities and Future Needs	22
5. Findings and Recommendations	26
Appendices	
I. Great Lakes Basin Program	
II. Great Lakes Basin Summary of Survey Results	
III. State Summaries of Survey Results	
IV. Lake Subbasin Summaries of Survey Results	
V. Methodology and Survey Form	
VI. Map of Districts Included in Survey	

EXECUTIVE SUMMARY

Nonpoint source pollution from agricultural and urban runoff is a major contributor to water quality problems in the Great Lakes region. As reported previously by the Great Lakes Commission, National Resources Inventory data from the U.S. Department of Agriculture indicates that more than 900 million tons of soil are eroded annually in the Great Lakes states--the equivalent of twelve tons per resident in the region. Together, soil erosion and sedimentation reduce agricultural productivity, degrade water quality and fish and wildlife habitat; limit water-based recreation and damage water treatment and conveyance facilities.

In recent years, the relationship between land-use activities and Great Lakes water quality has been increasingly well documented. The focus on nonpoint source pollution problems is gradually expanding at the state, federal and regional levels and new partnerships are emerging to address what has now become a leading environmental problem in the Great Lakes Basin.

An integral part of this partnership is found in the operations of Soil and Water Conservation Districts (SWCDs); Soil Conservation districts (SCDs); Land Conservation Committees (LCCs); and related local entities (hereafter referred to as "districts"). Since its establishment in the 1930's, the nationwide conservation district system has promoted the informed use of soil and water resources. The hallmark of its service is an effective delivery system and a philosophy that places individual landowners and districts at the decision-making level for conservation programs. District programs have always been innovative, but changing demographics, land-use activities and the public's demand for high quality water have heightened the need for additional emphasis of the water quality benefits of conservation practices.

To address this need, the Great Lakes Commission joined with the National Association of Conservation Districts (NACD), the Conservation Technology Information Center (CTIC), the Soil Conservation Service (SCS) and the Ohio Department of Natural Resources (ODNR) to document the issues of water quality programs, priorities and needs of districts throughout the Great Lakes Basin.

The survey form, designed and used by the Ohio Department of Natural Resources in 1988, was administered to 189 districts throughout the Great Lakes Basin, generating a 100% response rate. The survey effort elicited responses in three principal areas.

The first section of the survey asked respondents to indicate which water quality activities their district performed. Nine program areas were broken down into twenty seven different activities. Respondents were asked to check the appropriate column if they provided technical or educational assistance related to each of the twenty-seven activities. This information is summarized in Chapter 3. At the bottom of these columns respondents were asked to estimate the total number of hours per year (based on 2080 hours/year for a full time employee) that the district and SCS staff spent on technical and educational programs. Districts were also asked to state their current budget and sources of funding.

The second part of the survey elicited responses on district priorities, and is addressed in Chapter 4. It asked for an assessment of the additional staff required to meet future priorities (in .5 staff year increments); opinions on cost-sharing or other incentives; and a documentation of district equipment needs. Districts were asked to estimate both a dollar amount, and the type of incentives or equipment needed.

The third section of the survey asked districts to share their views on future needs including additional regulation to control nonpoint source pollution, other types of assistance from a state water quality agency, SCS or other federal agencies, and research and information needs.

Survey results yield an important finding that demands concerted attention: **Water quality has emerged as a matter of highest priority within districts, but current programs and funding levels are not capable of accommodating new or expanded technical and educational assistance programs.** Some key facts and figures gleaned from the survey responses are:

- o For 1989, the combined total budget of the 189 districts was about \$20.1 million, with 53% of the total coming from state sources, 46% from local sources and 1% from federal sources. With an average annual budget of roughly \$106,000, Great Lakes Basin districts often require additional

basic office support, equipment and supplies necessary to deliver new programs or expand existing ones.

- o The full package of additional needs and incentives totals \$48.5 million or about \$242,500 per district. Of this amount, districts have identified \$30.5 million in incentives necessary to encourage landowner participation in conservation programs (roughly \$150,000 per district).
- o Districts report, on average, a need for two additional full time staff positions to provide technical and educational support at a total cost of \$12 million, or approximately \$60,000 per district.
- o Districts identify a need for \$2 million for SCS and Conservation Agency support staff.
- o Requests for equipment average approximately \$21,000 per district, or about \$4 million for the Basin. This includes funds for items such as no-till drills, tree planters, vehicles, monitoring and audio-visual equipment.

These and other survey results provide the basis for recommendations within the categories of funding and incentives; technical assistance and administrative support; regulation; education/information; and research and evaluation.

All such findings and recommendations point to the need for a cooperative, federal/state/local program that would protect and improve Great Lakes Basin water quality. Such an initiative, in fact, is found in the "Great Lakes Basin Program" concept developed by the Great Lakes Commission and unanimously adopted at its 1988 Semi-Annual Meeting. As proposed, the Program consists of five-principal elements: program grants and technical assistance; financial assistance and demonstration grants; special projects; evaluation/monitoring; and education/information (see Appendix I). The Great Lakes Basin Program is envisioned as a ten-year commitment, with start-up funding of \$10 million increasing to \$25 million in the third and all subsequent years. These figures were devised from a needs estimate provided by the Great Lakes states and federal agencies in 1987 and correspond closely to needs identified in the district survey.

Specific information further detailing district survey responses is included in both narrative and summary table form in the accompanying report and supporting appendices. Key findings and recommendations are presented in Chapter 5 as a framework for continued advocacy and support for district programs in the Great Lakes Basin.

CHAPTER 1 - ISSUE OVERVIEW

What is Nonpoint Source Pollution?

Nonpoint source pollution (or NPS) is one of the most difficult sources of pollution to define, identify and monitor. In contrast to point source pollution discharges from discrete identifiable locations (e.g., effluent pipes, smokestacks) nonpoint sources of pollution are the result of diffuse pollution sources which adversely impact water quality.

Nonpoint source pollution, for the most part, is the byproduct of the interaction between the natural hydrologic cycle and human land use practices. As it condenses, water vapor in the atmosphere picks up both natural and manmade chemicals. Upon striking the earth's surface in the form of precipitation, the water dissolves additional soluble chemical substances which were either produced or unearthed by land use activities: agricultural practices, forestry, mining, manufacturing, transportation, waste disposal, and other aspects of rural and urban living. As the water flows over the land surface into rivers, lakes and streams, and/or permeates the soil to recharge the groundwater, it carries the contaminants with it. The pollutants carried by runoff are as diverse as the activities that generate them. They include conventional pollutants such as sediments, oxygen demanding organic wastes, phosphorous and nitrogen, and toxics from manufacturing and industrial processes, pesticide and herbicide residues and heavy metals.

Classifying a source of pollution as a point source or a nonpoint source is not always consistent or clear, and often depends upon the circumstances under which the pollution occurs. For example, individual septic tanks are generally regarded as nonpoint sources of pollution, particularly in subdivisions and other developed areas where clusters of tanks have the potential to pollute groundwater. However, if an individual septic tank discharges into a waterbody during an overflow, it may be considered a point source. Generally, however, the two major pollutant pathways can be identified by the characteristics identified in Table 1:

Table 1. Pollution Source Characteristics

Characteristics of Point and Nonpoint Source Pollution

<u>Point Source Pollution</u>	<u>Nonpoint Source Pollution</u>
<ul style="list-style-type: none">• Pollutants discharged from a single source at a discrete point	<ul style="list-style-type: none">• Results in the contamination of surface and groundwater by pollutants entering water at many locations from diversely distributed sources
<ul style="list-style-type: none">• Prevented through the use of regulatory permits, inspections and monitoring processes	<ul style="list-style-type: none">• Prevented by modifying activities, practices or operations on the land or by changing land use activities through the use of incentives, regulation, and/or voluntary compliance
<ul style="list-style-type: none">• Controlled by the use of treatment technologies to remove pollutants before discharge	<ul style="list-style-type: none">• Controlled by preventing availability, release or transport of pollutants that adversely affect water quality
<ul style="list-style-type: none">• Associated with the use of water for commercial and municipal purposes	<ul style="list-style-type: none">• Associated with runoff from precipitation events or the movement of groundwater

Adapted from the New York NPS Management Program 1990

How Does Nonpoint Source Pollution Affect the Great Lakes Region?

The Great Lakes and their tributaries comprise the largest freshwater system in the world. The Great Lakes Basin supports a multi-billion dollar recreation and tourism industry; hosts thousands of species of fish and wildlife; houses the manufacturing of 25% of the nation's industrial goods and is home to 10% (based on 1987 U.S. Census data) of the U.S. population. Nonpoint sources of pollution are the largest sources of pollutant loadings reaching the Great Lakes today, and are the primary means of accumulating harmful toxics in the Basin's waterways.

Agricultural erosion, agricultural chemicals and animal waste runoff have long been primary constituents of nonpoint pollutant loadings entering the Great Lakes. Erosion from cropland constitutes 67% of all soil loss in the Great Lakes states. Furthermore, 79% of the cropland in the Great Lakes states is eroding at rates which exceed the tolerable soil loss rate (T). Annual sheet and wind erosion from cropland in the Great Lakes states is 606.5 million tons.

A related problem is that of sedimentation, the depositing of eroded soil, silt or sand particles in waterbodies. Effects are observed in downstream portions of tributaries and in harbors and bays where siltation may impair the use of water for drinking, hamper shipping activity and adversely affect fish spawning habitat. Once on the lake or river bottom, sediments can bind phosphorous, heavy metals, pesticides and other substances, becoming a sink for many pollutants and rendering them unavailable for uptake by aquatic organisms unless disturbed by dredging or other activities.

Contaminated bottom sediments impair water quality and use in 41 of the 42 Areas of Concern designated by the International Joint Commission under the Great Lakes Water Quality Agreement. Contaminated sediments are difficult to remediate; dredging may only aggravate water quality problems by releasing even more pollution into the water column. Once dredged, sediments are difficult to dispose of properly on land and adequate containment raises both environmental and financing questions.

Other types of pollution are emerging as significant contributors to the nonpoint problem including urban runoff, combined sewer overflow, and airborne toxics.

Despite the socioeconomic and environmental importance of the Great Lakes, there is no comprehensive program of nonpoint source pollution control targeted at the Basin. Developing such an approach requires a multi-jurisdictional approach at all levels from the local to the binational arena.

What Is the District's Role In Controlling Nonpoint Source Pollution ?

Justifying increased expenditures on nonpoint source pollution control often requires that Soil and Water Conservation Districts demonstrate that environmental benefit can be gained using low cost, efficient control strategies.

Nonpoint source pollution control, as practiced by the Basin's Soil and Water Conservation Districts, is ideally suited to provide the best possible water quality assistance at the least expense. Districts help control nonpoint source pollution where it is needed the most, by working with individual land users in areas where best management practices can reduce nonpoint pollutant loadings. Districts contribute advice, information and assistance - providing hands-on resources for nonpoint source pollution control.

Soil Conservation Districts, as they were originally called, were formed in the late 1930s in response to the severe drought and devastating losses of topsoil during the Dust Bowl years. Their mandate was primarily agricultural: to provide education, technical assistance and cost-share incentives in order to encourage soil conservation. Districts were founded on the belief that conservation

decisions should be made at the local level by individual landowners with technical funding assistance provided by the federal, state and local governments.

District activity has flourished and expanded to meet the diverse conservation needs associated with demographic trends. The district model has been replicated nearly 3,000 times across the United States and its territories. Today, district programming areas include agriculture, construction site erosion, hydromodification, land disposal, mining, oil and gas activities, silvicultural management, urban runoff and other water quality activities. The scope of issues has also expanded, most notably to include the conservation and protection of water. The districts have changed their focus from on-site soil erosion control activities to off-site water quality concerns.

Soil and Water Conservation Districts, given their experience and broad mandate, are uniquely positioned to assist the Basin in identifying priorities and implementing programs to improve Great Lakes water quality.

Other federal programs are targeted at either agriculture, nonpoint source pollution, or both. The Soil Conservation Service (SCS) provides technical assistance to landowners and others through agreement with districts. The Agricultural Stabilization and Conservation Service (ASCS) addresses the financial assistance needs of private landowners. The Agricultural Conservation Program (ACP) is a cost-share program designed to encourage the implementation of enduring conservation practices. The Rural Clean Water Program (RCWP) provides assistance for installation of best management practices, particularly in efforts to control critical water quality problems. The Farmer's Home Administration (FHA) assists participants in watershed protection and other soil conservation and pollution abatement cost-share programs with loans to private landowners. The USDA's Agricultural Experiment Station, part of the national land grant higher education system, conducts research in related areas and links it through the Cooperative Extension Service, which provides educational programs to landowners and agricultural associations.

The Environmental Protection Agency (EPA), through authorizations under the Clean Water Act, is involved in soil and water conservation activities. The Clean Lakes Program (Section 311) provides funds for lake protection and restoration projects, including individual landowner implementation of best management practices. Section 104 of the 1987 Act established the Great Lakes National Program Office to specifically support and undertake monitoring and surveillance projects in the Great Lakes. Included in the 1987 reauthorization is the Nonpoint Source Management Program, Section 319, which designates funding to states to develop and implement nonpoint source management programs. EPA has had a close working relationship with districts since 1972 in a wide variety of programs funded under Section 108 of the Clean Water Act.

How Do Districts Improve Great Lakes' Water Quality?

Districts have more than 50 years' experience in providing direct assistance to urban and rural landowners. They contribute their knowledge toward the promotion and establishment of the following in the Great Lakes Basin:

- * **Best Management Practices (BMPs), routinely used by districts in soil erosion control, improve Great Lakes water quality by reducing sediment loadings into water courses. BMPs are defined as " those methods, measures or practices designed to prevent or reduce pollution. They include but are not limited to: structural and nonstructural controls and operation and maintenance procedures." (U.S. EPA, 1984) The EPA's Post PLUARG Evaluation (1980) states that "PLUARG has determined that the most cost-effective approach for treating agricultural nonpoint source contributions is to implement best management practices in hydrologically sensitive areas." It goes on to state that sedimentation, nutrients and fecal coliform have the best chance of being reduced through BMPs.**
- * **On-site assistance for farmers, ranchers, foresters, and other landowners helps in planning and carrying out a long term conservation program that meets the site specific needs.**
- * **Hands-on services provided by Districts are flexible enough to accommodate water quality problems of different magnitudes and are responsive enough to tailor measures and practices to site-specific concerns.**
- * **Planning assistance is available through districts for developing and implementing multi-county resource conservation and development programs.**
- * **District field personnel are leaders and innovators, accustomed to transforming limited resources into successful programs.**
- * **Districts distribute information about alternative land uses and treatments for controlling erosion and reducing sedimentation, conserving water and preventing flood damage in upstream areas.**
- * **Districts, through projects funded by EPA since 1972, have demonstrated that the project-specific approach is effective in improving water quality.**
- * **Policies implemented at the district level are carefully structured to meet the requirements of state and federal directives.**

CHAPTER 2 - CURRENT PROGRAMS

What Are The Current Nonpoint Source Pollution Program Areas ?

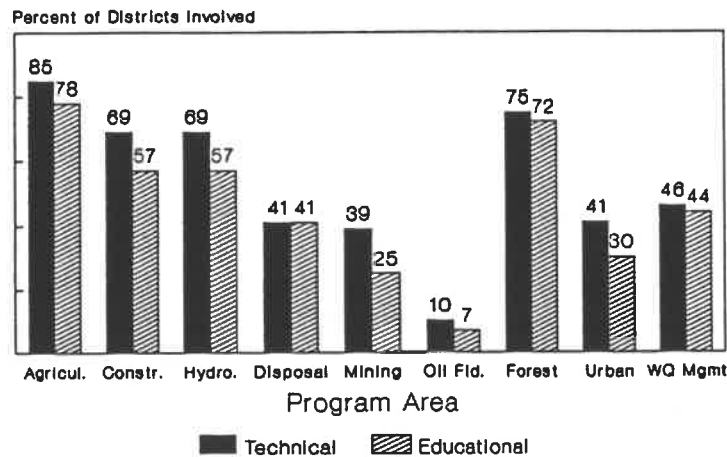
Nine major activity areas were included on the survey form. These areas reflect the diverse range of programs that fall under the district's current mandate. Each area combines the source of nonpoint pollution with the actions taken to control pollution from those sources. They include: agriculture, construction site erosion, hydromodification, land disposal, mining, oil field waste, forestry, urban runoff and water quality monitoring.

The following is an overview of the nine program areas and the 27 activities they encompass. The percent of districts involved in each program area (Figure 1) is an average of all the activities that fall under that area. Separate averages are given for technical and educational programs.

1. **Agriculture.** Due to the abundant acreage in farm production in the Great Lakes Basin, districts are heavily involved in assisting private landowners with conservation measures. The district's responsibility to farmers covers a wide range of projects: agricultural erosion control (including activities such as implementing erosion control practices, complying with the 1985 Food Security Act, and developing farm conservation plans); animal waste management; and agricultural chemical control of pesticides and fertilizers.
2. **Construction Site Erosion.** Many districts are experiencing periods of development and growth. The development process converts land from a relatively stable state into a construction phase, before it is transformed into its final use. The rate of erosion increases dramatically during construction and is a significant source of phosphorous, silt and other pollutants. Though this programming area is specific to construction, it is not necessarily always associated with urbanization.
3. **Hydromodification.** Hydromodification practices include erosion and sedimentation through stabilization of stream courses, protection of wetlands; stream channel and lake stabilization; stream protection practices (berms, buffers, 1-sided construction); wetland preservation; and dredge and fill activities requiring section 404 and 401 permits. This type of control is necessary when land is used intensively for livestock production, when natural drainage patterns and loadings are altered, or when a particular habitat is threatened.
4. **Land Disposal.** Continuing development of rural and urban areas in the Great Lakes Basin has been accompanied by increased problems associated with disposal of municipal and industrial wastes. District activities to control this type of pollution includes both reduction measures and assistance in proper disposal methods. This program area is divided into three types of activities: (landfill siting, erosion control, litter prevention and recycling); sludge application; and septic tank system siting.
5. **Mining.** Water quality activities associated with resource extraction are concentrated in pockets within the Basin. Mining can be a major source of erosion, sedimentation and related contamination problems. Sedimentation poses a problem during operation as well as after closure of a mining site, unless remediation takes place. Four control activities under this program area are: mined land reclamation (e.g., gravel, coal, sand); prime farmland identification; complaints and site investigation; and working with active mine operators.
6. **Oil Field Waste.** Like mining, oil extraction can impare water quality due to poor siting, improper treatment and disposal of wastes. Although this type of pollution is limited to relatively few parts of the Great Lakes Basin, district personnel are involved in control measures that involve: oil and gas well head siting (plan review); oil and gas complaints (site investigations, brine runoff); and working with oil and gas well operators to prevent problems.

7. **Forestry.** Forest management includes activities that improve the health of the forest, decrease wind and soil erosion, increase the soil's water holding capacity and increase infiltration rates on sites. These types of measures improve water quality as well. Forestry related activities include timber stand improvement and woodland protection practices under FIP, ACP and the CRP.
8. **Urban Runoff.** Urban runoff is a problem associated with land that is converted from uses with high infiltration rates (e.g., farms, woodlands) to uses with low or no infiltration (e.g., buildings, roads, parking lots). This change increases the quantity of runoff which carries sediment and residue from the paved surfaces to the nearest bodies of water, drastically altering the quality and quantity of receiving waters. As urban areas expand, district personnel have extended their activities into subdivision storm drainage (plan reviews); complaints/site investigations; floodplain survey/determination; and highway construction inspection and plan review.
9. **Water Quality Management.** This program area refers to water quality monitoring that provides a baseline for evaluating programs, as well as changes in water quality. These activities fall under one category which includes stream/lake sampling, data collection, and research and modeling.

Summary of Current Nonpoint Control Activities



Total Number of Districts = 189

Figure 1. Summary of Current Nonpoint Source Pollution Control Programs

The following section describes the current level of activity for each of the 27 activities included in the nine program areas:

Agriculture

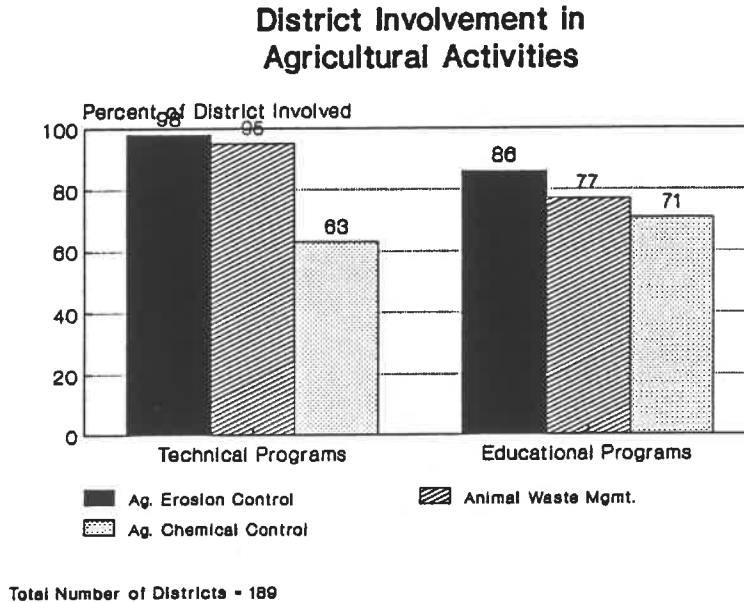


Figure 2. Current Agricultural Activities

Three activities make up the bulk of the Basin's programming efforts: agricultural erosion control, animal waste management and agricultural chemical control. Nearly 98% of the Basin's districts have technical programs in place to control agricultural erosion and 86% have agricultural erosion control education programs. In animal waste management, 95% of districts provide technical assistance and 77% provide educational assistance (Figure 2). Three of the Great Lakes states (Minnesota, Ohio and Pennsylvania) report 100% involvement in both technical and educational waste management and erosion control programs.

Agricultural chemical control is not as widely practiced as the other programs, but 63% of districts in the Basin provide technical assistance. Among the individual lake basins, the level of technical involvement on agricultural chemical control ranges from 36% in Lake Ontario to 86% in Lake Huron, with the majority of the lake basins clustered around the Basinwide average in a range of 50-60%. Educational outreach programs in agricultural chemical control are found in 71% of all the Great Lakes Basin districts.

The Lake Huron Basin has the highest overall participation rates of any of the individual lake basins in the three activities combined. Ninety-seven percent of the lake's 22 districts provide technical assistance, while 84% provide educational assistance for those activities which fall under the agriculture section of the survey. Lake Ontario, with an identical number of districts, has the lowest overall participation in agricultural activities with 73% providing technical assistance and 68% providing educational outreach.

Maintaining and upgrading the current level of involvement in agricultural nonpoint source pollution control in the Great Lakes Basin is imperative. Agricultural land use is the primary contributor of

nutrient and organic chemical loadings reaching the Great Lakes. The prominence of agricultural concerns in the Great Lakes Basin is not surprising. Agricultural farm land covered over 28 million acres in the United States' Great Lakes Basin counties (1982 data). Agricultural programming is the driving force behind current and prospective district activity.

Construction Site Erosion

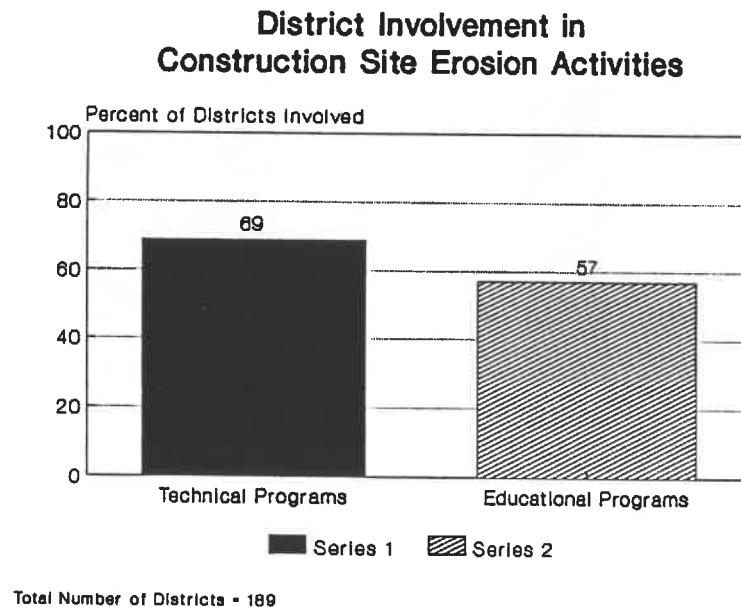


Figure 3. Current Construction Site Erosion Activities

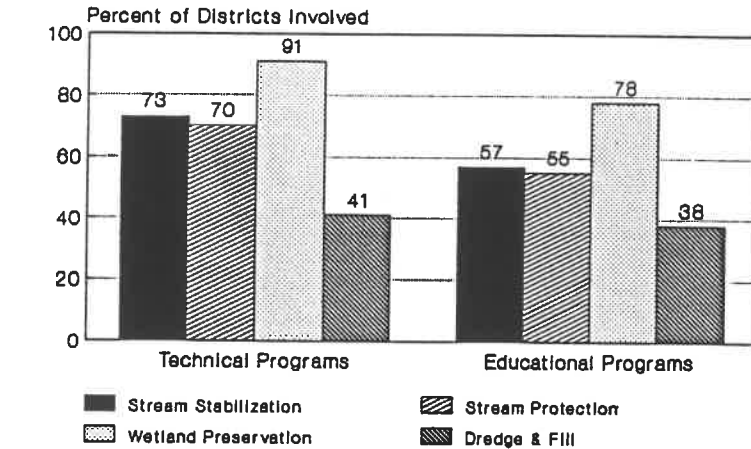
Sixty-nine percent of all districts in the Great Lakes Basin provide technical assistance to control erosion from residential, commercial and industrial construction sites (Figure 3). Fifty-seven percent of all districts have educational programs to install practices which prevent erosion from construction sites. The individual lake basin's rates of involvement in both technical and educational activities designed to address construction site erosion falls within a range of approximately 55-75%. For example, Illinois districts, which encompass most of the Chicago metropolitan area, have both technical and educational programs in construction site erosion, as does the one district on Pennsylvania's Lake Erie shore. Michigan (at 67% technical, 42% educational) and Wisconsin (58% technical and 51% educational) have the lowest state averages, which does not reflect the heavy involvement in construction site erosion control in districts surrounding major cities such as Detroit and Milwaukee.

Erosion from construction sites, like other nonpoint source pollution events, is usually prompted by periods of wind and/or rain. Though not a long term land use, construction drastically modifies the land surface within a very short time, usually leaving the land barren of vegetation or other ground cover.

Soil erosion from construction sites, especially on or near riparian lands, can have a significant impact on water quality. The movement of soil and sand into the water column increases turbidity, accumulates contaminants in bottom sediments, and impairs navigation and requires expensive dredging for removal.

Hydromodification

District Involvement in Hydromodification Activities



Total Number of Districts = 189

Figure 4. Current Hydromodification Activities

Seventy-three percent of districts are engaged in technical efforts to stabilize streams (57% have educational programs) and 70% provide technical services in stream protection (55% have educational programs). Wetland preservation receives the most attention of the three; 92% of districts in the Great Lakes Basin have technical programs and 79% have educational programs.

Hydromodification control, the reversal or stabilization of changes in the flow and/or character of a stream channel or a wetland area, is practiced widely throughout the Basin. Major hydromodification practices identified by survey respondents include technical and education programs to: stabilize stream and lake channels, protect existing watercourses by building berms and buffers, preserve wetlands and conduct dredge and fill activities. Hydromodification occurs through development activities, urban and agricultural erosion events, damming for flood control and power generation, and agricultural drainage.

Thermal pollution and sediment are the primary impacts associated with hydromodification. Sediment deposition can adversely alter fish and wildlife habitat and impact the food chain. Thermal pollution is especially devastating to cold water fish that live and spawn within specific temperature ranges.

Land Disposal

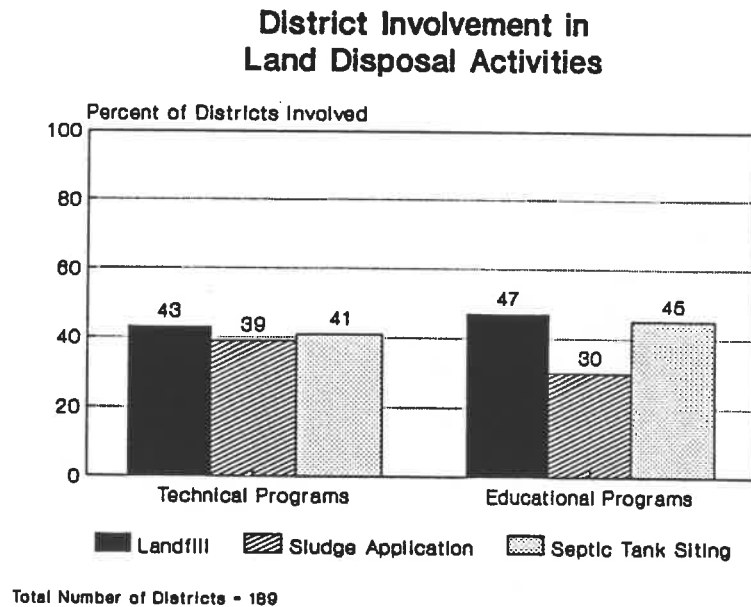


Figure 5. Current Landfill Activities

Land disposal areas for wastewater treatment sludge and solid waste contain pollutants which can seep into groundwater and/or accumulate in surface waters. Dredge and fill and sludge application activities can transfer pollutants to surface and groundwater by runoff and seepage. Percentages for technical and educational controls in these areas are documented in the graph above.

The landfill program category includes landfill siting, erosion control in and around landfills, and solid waste reduction including litter prevention and recycling (Figure 5). Forty-four percent of all districts have technical programs to reduce the leachate from landfills into surface and groundwater while 47% address disposal concerns through educational programs.

The pollutants from land disposal vary widely among the different sources. Improperly functioning septic systems leach oxygen demanding wastes and nutrients into the soil. Near shorelines, septic tank malfunctions contribute to nutrient loadings, degraded water supplies and algal blooms. The Lake Michigan districts in Indiana and western lower Michigan, for example, voice concern over septic problems, particularly in high tourism counties where summer lakeside homes with septic systems are common. At 70%, Indiana has the highest number of districts involved in technical activities related to septic tank system siting. Overall, more than 42% of the Basin's districts have technical programs in place to address septic tank siting problems and 45% undertake educational outreach.

Mining and Oil Field Activities

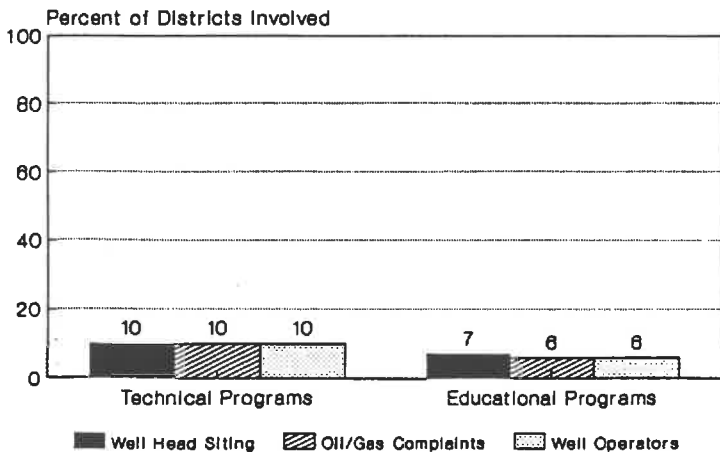
Oil field activities comprise a small, but important part of the nonpoint source control activities in the Basin. Approximately 10% of all districts engage in technical programs to investigate well head sites and oil and gas complaints. Between 6% and 7% perform outreach activities directed at well head operators.

The major oil and gas producing areas of the Basin are found along the western shore of Lake Ontario and the eastern section of Lake Erie, southeastern Michigan near the St. Clair River, northwestern Michigan near Cadillac, and in southern Michigan near the tri-state border. In the corresponding states of Michigan, New York and Ohio, the programming rates for oil field activities are higher than the average for the Basin as a whole but are not a major portion of any state's activities.

Overall, mining activities receive more attention Basinwide than do oil field activities. Thirty-seven percent of all districts perform technical activities related to mine site investigation and answering complaints, while 22% provide educational programming. As a whole, 17% of the Basin's districts provide technical assistance to active mine operators and 18 districts (approximately 10%) provide educational assistance. However, programs associated with the identification of prime farmland command the most time of all mining-related activities in the Basin (67% of the districts provide technical assistance and 48% educational).

Although resource extraction operations are not evenly distributed throughout the Basin, they can present significant pollution problems if not properly undertaken. The wastes produced contain high concentrations of pollutants and accumulate over long periods of time. Pollutant loadings from mining and oil extraction consists of erosion and sedimentation, leachate from crushed treated rock, brine, and petrochemical runoff.

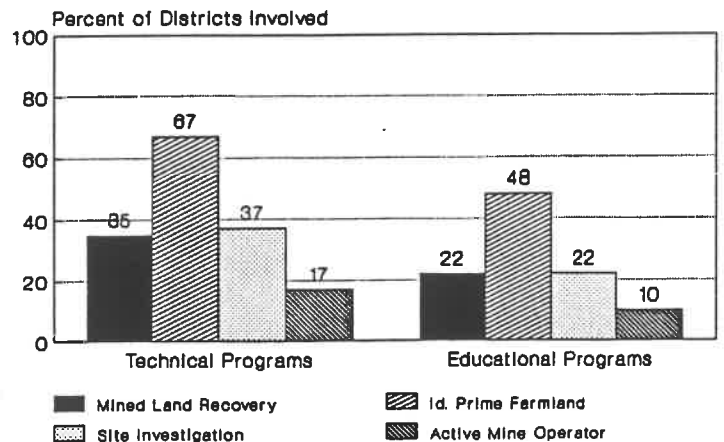
District Involvement in Oil Field Activities



Total Number of Districts - 189

Figure 6. Current Oil Field Activities

District Involvement in Mining Activities



Total Number of Districts - 189

Figure 7. Current Mining Activities

Forestry

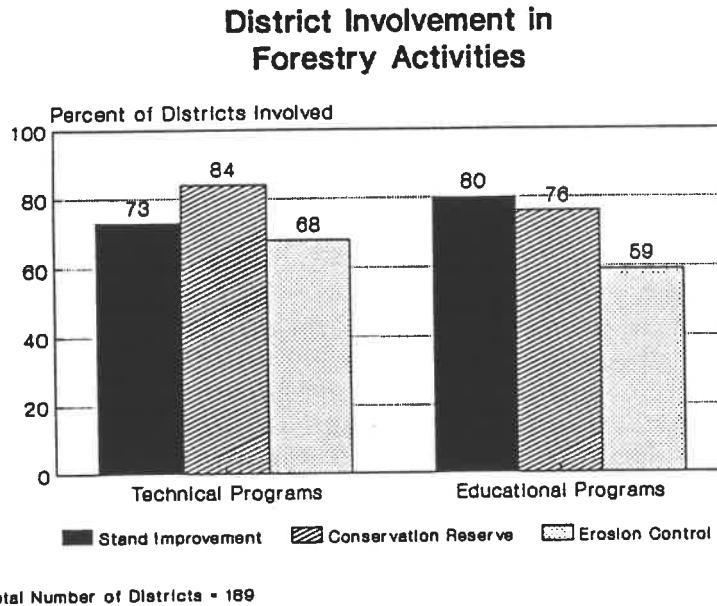


Figure 8. Current Forestry Activities

Next to agriculture, forestry receives the most program attention in the Great Lakes Basin. The three programs addressed in the survey were timber stand improvement, the Conservation Reserve Program and silvicultural erosion control. The Conservation Reserve Program has the highest participation rates: 84% of the districts have technical programs and 76% have educational programs (Figure 8). Forest management and woodland protection practices are addressed by educational efforts in 80% of the districts and technical programs in 73%. Erosion control is practiced less widely, 68% of districts provide technical assistance and 59% provide educational assistance.

Pollution associated with forestry practices occurs during logging and at landing sites. Timber stand improvement activities improve the health of the forest ecosystem, and remediate areas where erosion damage and tree loss have occurred. The Conservation Reserve Program is a federal program to retire highly erodible farmland from production by planting it with perennial grass, native vegetation, windbreaks and/or trees. It is administered through the ASCS.

Urban Runoff

Though urban runoff is a relatively new program area for conservation districts, at least one third of the districts are active in this area (Figure 9). Site investigation is practiced in 55% of the districts. In controlling urban runoff, more emphasis is placed on technical programs than educational. Thirty-four percent of all districts offer educational assistance in both complaint/site investigations and in floodplain survey determinations. These figures vary widely between lake basins. In the Lake Huron Basin, for example, no districts provide educational assistance to subdivisions on drainage-related issues, while 58% in the Lake Erie Basin do.

Paved surfaces in urban areas increase and accelerate runoff after a storm event. It is not uncommon for storm water to be directly channeled to the nearest body of surface water, carrying with it debris, sediment, and residues from streets, parking lots, and other surfaces. In areas with combined sewer overflows (CSOs) urban runoff can severely impact water quality in a short period of time, as pollutants in higher concentrations reach watercourses without treatment.

To combat this problem, developers are usually required to adhere to the "zero runoff" standard: limiting the quantity of runoff after development to an amount equal to or less than that before development. To assist landowners, districts review subdivision storm drainage plans, investigate sites, survey floodplains, review highway construction plans and inspect paved areas.

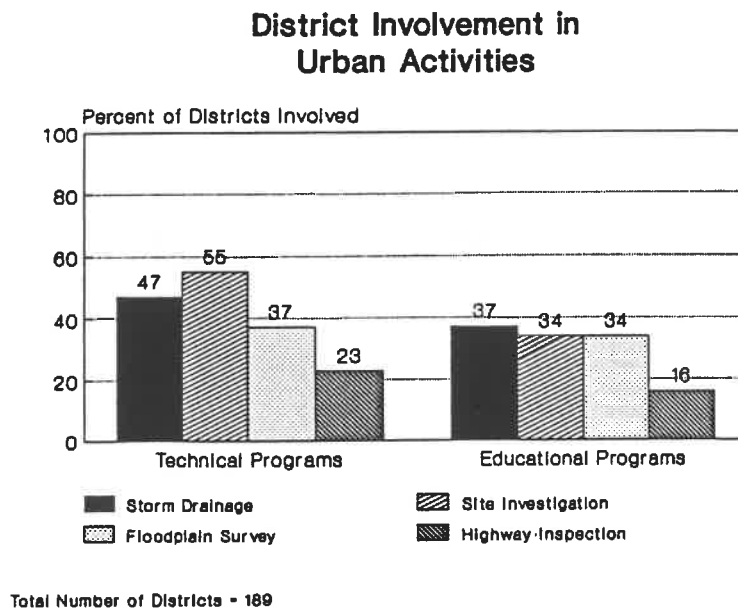
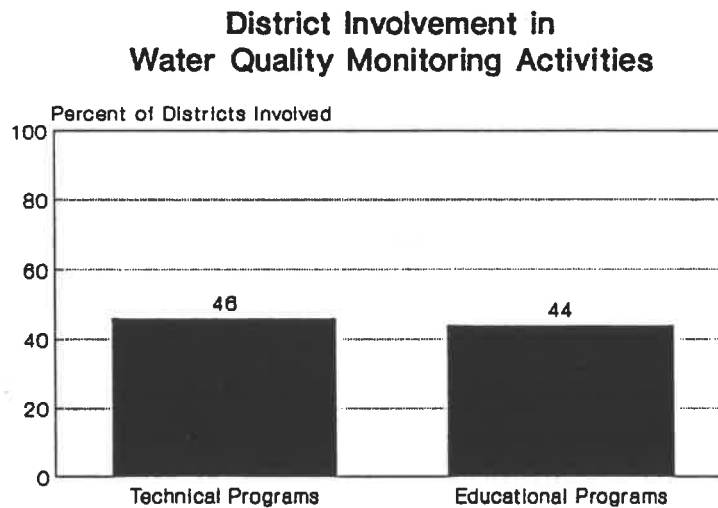


Figure 9. Current Urban Runoff Activities

Water Quality Monitoring

Water quality monitoring documents the present status of water bodies and updates changes in specific quality parameters to allow interpretation of overall water quality improvement. This information provides baseline data for recording long-term trends, effects of control techniques on water quality including changes in individual nutrient and pollutant levels. This program area includes the sampling of streams and lakes, routine data collection, research and modeling. Just under half of the districts (46%), are involved in technical water quality monitoring activities (Figure 10). A similar number (44%) are involved in educational programs.



Total Number of Districts = 189

Figure 10. Current Water Quality Monitoring Activities

What Are the Most Prevalent Educational and Technical Programs and How Do They Compare ?

The five most prevalent technical and educational programs in the Basin are listed in Table 2. Technical and educational efforts for each are relatively consistent from a percentage standpoint. Agricultural erosion control, animal waste management, wetlands management and forest conservation appear on lists of both technical and educational programs.

Top 5 Basinwide Technical and Educational Programs

(Percent of Districts Involved Follows Title)

<u>Technical Programs</u>		<u>Educational Programs</u>	
1. Agricultural Erosion Control	98%	1. Agricultural Erosion Control	86%
2. Animal Waste Management	95%	2. Timber Stand Improvement	80%
3. Wetlands Preservation	91%	3. Wetlands Preservation	78%
4. Conservation Reserve Program	84%	4. Animal Waste Management	77%
5. Stream Channel Stabilization	73%	5. Conservation Reserve Program	76%

Total Number of Districts - 189

How Much Time Do Districts Spend in Nonpoint Source Pollution Control ?

District staff in the Great Lakes Basin spend a considerable amount of time engaged in nonpoint source pollution control activities. The survey asked districts to divide the hours spent by district and Soil Conservation Service staff between those spent on technical programs and those spent on educational programs. (It is important to note that the number of staff per district varies across the Basin, in a range of 2 to 8 people per district as do the programming duties of each staff person). The figures in this section represent the district estimates of total hours worked. The Basinwide hourly average for technical assistance by district staff persons is 2947 hours or 1.4 staff years per district (one staff year = 2080 hours). District staff average 976 hours of educational outreach per district per year, approximately one-half of one staff year.

Soil Conservation Service personnel are primarily engaged in technical assistance and contribute an average of 2003 hours (96% of a staff year) to nonpoint source pollution control programs. (The number of SCS staff per district also varies within the Basin. Some districts have several SCS technicians while others access technicians who share their time between two or more districts.) SCS staff spend an average of 396 hours engaged in educational programs related to nonpoint source pollution control in the Basin districts. This information is presented in Figure 11a.

Figure 11b displays the average estimated percentage of total staff time spent on urban activities on a state-by-state basis. The average for the entire Great Lakes Basin is 14.3%, and the median 10%. This figure provides only a relative measure of the percentage of time a district spends on urban activities. Since there are only a few districts in Illinois and Pennsylvania in the Great Lakes Basin and most are highly urbanized, it is not surprising to find such high averages compared to the remaining states. These areas of the Basin are almost exclusively involved in urban pollution control. For example, the districts along Southern Lake Michigan shoreline report involvement in urban nonpoint source control between 60-90% of the time, with one district reporting that urban activities occupied 99% of its time. However, the average for the entire Lake Michigan Basin is 12%. The Lake Erie Basin (51 districts) spends the largest percent of total staff hours on urban nonpoint source control at approximately 22%. The Lake Huron Basin (22 districts) spends the least amount of time addressing urban concerns, about 7.4% of the total staff time per district.

Average Staff Hours Spent on Nonpoint Source Pollution Control

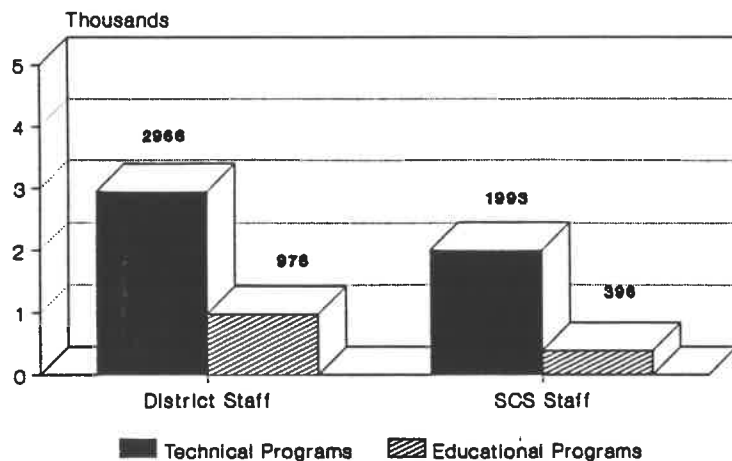
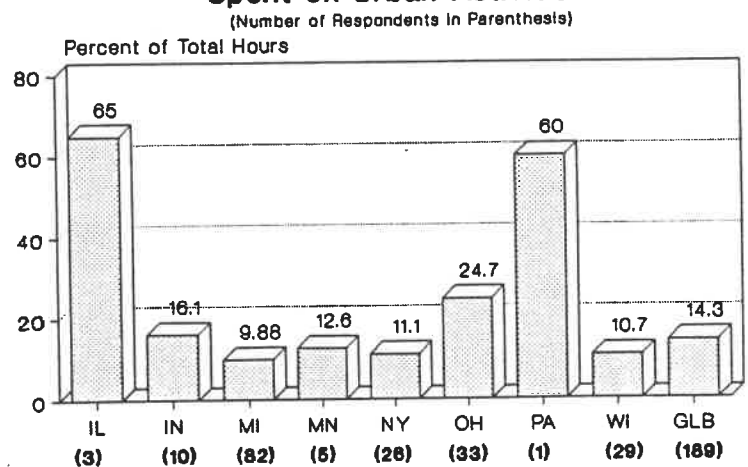


Figure 11a. Average Number of Staff Hours Spent on NPS Pollution Control

Average Percent of Total Staff Hours Spent on Urban Activities



Figures are Per District, Per Year

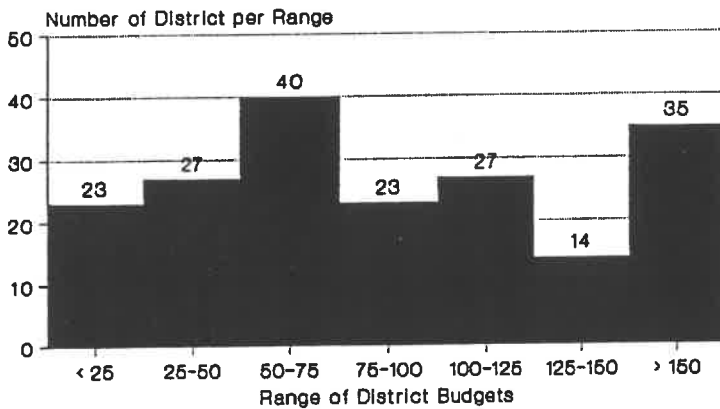
Figure 11b. Average Percent of Total Staff Hours Spent on Urban Activities

What is the Funding Level for Districts?

The combined budgets of the 189 districts within the Great Lakes Basin total \$20,073,907 for FY 1989-1990, an average of \$106,211 per district. The state averages range from a low of \$65,800 per district to a high of \$148,931. The majority of program funds come from local, county and state governments. Federal contributions are significant, but levels are difficult to determine from the survey responses.

Districts in general indicate that they receive little or no money **directly** from the federal government other than through special projects funds from U.S. EPA, USDA or other agencies. Additionally, many of the state incentive and grant programs are supported wholly or in part by the federal government either through cash or in-kind contributions.

BASINWIDE BUDGET INFORMATION Average District Budget = \$106,211



Figures are in Thousands of Dollars

Figure 12a. Range of District Budgets

AVERAGE DISTRICT BUDGET 1989-1990 (Number of respondents in parenthesis)

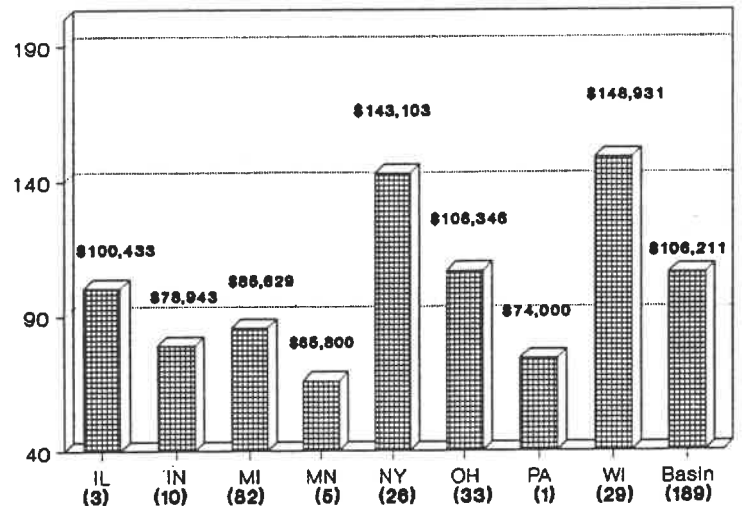


Figure 12b. Average District Budget by State

CHAPTER 3 - NONPOINT SOURCE POLLUTION CONTROL PRIORITIES

What are the Current Nonpoint Source Pollution Control Priorities in the Great Lakes Basin ?

The survey asked districts to rank their top three programming priorities out of the 27 program categories described in Chapter 2. These responses were then weighted and tabulated, with a weight of 3 given to a priority ranking of 1, a weight of 2 for a priority of 2, and so forth. The top five priorities are as follows:

1. Agricultural Erosion Control

Agricultural erosion control received 475 points, making it the top program priority in the Basin. Agricultural erosion control was the first priority in all of the individual lake basins and in all states except Illinois, where construction site erosion ranked first and agricultural erosion ranked second. This priority ranking is consistent with the participation rates for technical and educational programs designed to control agricultural erosion outlined in Chapter 1.

2. Water Quality Monitoring

Water quality, the Basin's second highest programming priority, received 141 points. Water quality was the first priority in the state of Wisconsin, and five other states ranked it among their top five concerns. Water quality was not ranked first in any of the lake basins although in four of the five subbasins it placed among the top five priorities.

3. Animal Waste Management

With a point total of 124, animal waste management is the third programming priority in the Basin. Though none ranked it their top priority, consistently high marks from the states of Michigan, Minnesota, New York, Ohio, and Wisconsin contributed to its placement among the top five Basinwide priorities. The subbasin's priority rankings echo those of their component states listed above. Although none regarded animal waste management as number one, it received placement within the top five subbasin priorities in all subbasins but Lake Superior.

4. Timber Stand Improvement and Woodland Protection

Timber stand improvement placed fourth with 76 points, influenced by the high ranking it received in the State of Michigan. It tied for fifth place in Minnesota and Wisconsin, and ranks among the top five priorities for the Huron and Superior Basins.

A comparison of the Basinwide technical and educational priorities is found in Table 2.

Table 2. Technical and Educational Priorities Compared

Basinwide Priorities vs. Established Programs

<u>Current District Priorities</u>	<u>Top 5 Technical Programs</u>	<u>Top 5 Educational Programs</u>
1. Agricultural Erosion Control	1. Agricultural Erosion Control	1. Agricultural Erosion Control
2. Water Quality	2. Animal Waste Management	2. Timber Stand Improvement
3. Animal Waste Management	3. Wetlands Preservation	3. Wetlands Preservation
4. Timber Stand Improvement	4. Conservation Reserve Program	4. Animal Waste Management
	5. Stream Channel Stabilization	5. Conservation Reserve Program

CHAPTER 4 - EMERGING PRIORITIES AND FUTURE NEEDS

What are the Emerging Priorities in the Basin ?

The Future Needs section of the survey (see Appendix IV), offered insights into the emerging priorities in the Great Lakes Basin. Responses varied between comments on budgetary matters and programs in general. The top five emerging priorities include: water quality protection (28 district responses); urban and suburban activities especially those related to storm water runoff (19 districts); agricultural chemical control (5 districts); groundwater protection (4 districts) and animal waste management (4 districts).

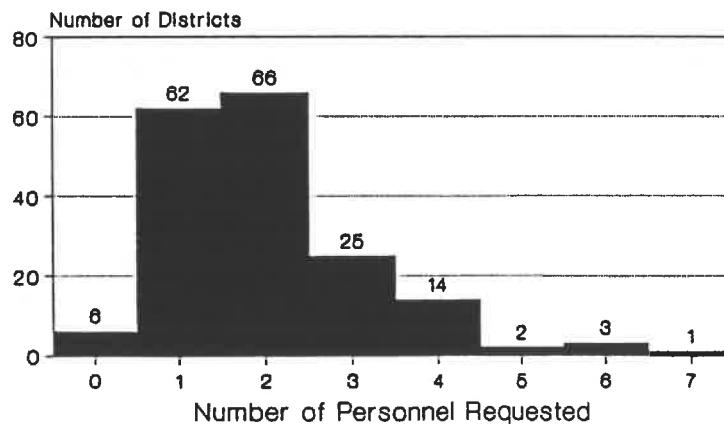
It is evident from the responses that water quality concerns will play a much larger role in future district activities. An Illinois district commented that urban development pressures will increase the need for more comprehensive educational outreach and technologically based research programs to address the effects of growth. Increased involvement in rural and urban soil erosion control practices, is also expected. A district in Michigan stated "we will need to be bigger and better, constantly upgrading our existing programs to provide more water quality assistance." Rural water quality was also a dominant theme among the responses, with agricultural chemical usage and septic tank system problems emphasized.

Concerns relating to budgetary matters dominated the emerging priorities responses. More than 22% of the districts anticipate a decrease in funding levels for FY 1990-91. Districts anticipate greater reliance on local and/or self-generated funds to maintain or increase current staffing levels. Ten districts expressed a need for a designated nonpoint source pollution watershed program.

How Many Additional Staff Are Needed To Implement Nonpoint Source Pollution Control Programs?

On average, districts conclude that they need an additional two persons to adequately address nonpoint concerns (Figure 13). Most requests were for additional technical assistance from either the Soil Conservation Service (51 districts) or from the Soil and Water Conservation Districts themselves (21 districts). Districts, in general, are understaffed and require additional support if they are to successfully fulfill their mandate.

Additional Personnel Needed By Districts (185 Districts Responding)



All .5 Requests Were Rounded Up

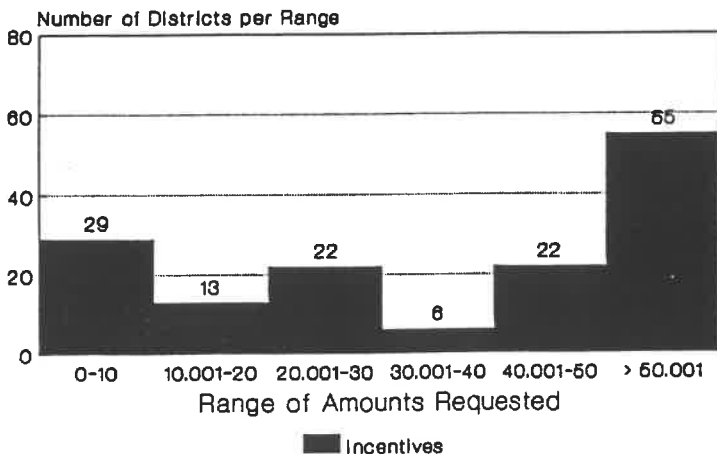
Figure 13. Additional Personnel Requested to Implement Water Quality Programs

What Types of Incentives and Equipment are Needed to Implement Nonpoint Source Pollution Control Programs?

District programs operate on limited resources. In order to address the Basin's growing nonpoint source pollution concerns, the majority of districts support an expanded cost-share program. Since nonpoint source control relies on voluntary adoption of control strategies, it is heavily dependent on incentives to landowners such as the cost-share program. The survey elicited many different methods to encourage nonpoint source control including direct grants for personnel; increasing technical support services; property tax credits; and low interest loans. On average, districts indicate that \$151,302 worth of incentive funds would increase their ability to encourage pollution control amongst landowners (Figure 14a).

Equipment needs vary across the Basin, but are in all cases items fundamental to program delivery. No-till drills (25), tree planters (included with drills), vehicles (usually trucks - 38), soil and water sampling equipment (31) and computers (27) topped the request list. Requests for an office (or office space) were common, as were telephone and photocopier requests. The value of the equipment requested spans a wide range, as indicated in Figure 14b.

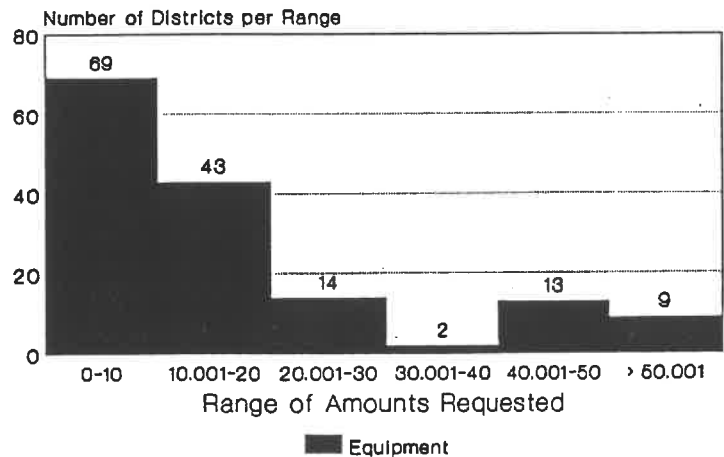
**Incentive Funds Needed By Districts
(147 Districts Responding)**



Figures are in Thousands of Dollars

Figure 14a. Incentives Requested

**Additional Equipment Needed By Districts
(150 Districts Responding)**



Figures are in Thousands of Dollars

Figure 14b. Equipment Requested

What Other Types of Assistance Do Districts Need From Governments?

Districts would like to receive additional technical and engineering assistance; funding (including more cost-share); training in water quality management and conservation tillage practices; personnel to implement water quality programs; and educational program support materials, such as pamphlets and videos.

What Are The Region's Research and Information Needs?

The majority of information requests were site specific. However, several broad issues needing additional research include: groundwater monitoring and testing (29 districts); information on sources of ground and surface water contamination (28 districts); a monitoring and modeling program to predict areas of vulnerability (20 districts); baseline water quality data (17 districts); and information on the leaching capabilities of pesticides and herbicides (15 districts). Four out of five of these informational requests are water quality related, and the last (pesticide leaching) has major water quality impacts. These requests correlate with the emergence of water quality as a district program priority.

What Is The Regional View On Additional Regulation?

Districts identify a need for additional regulation as an important component of their programs in urban and farmland erosion control, animal waste management and agricultural chemical control. While only 101 of the 189 Districts surveyed responded to the question on the need for regulation, more than 91% of those responding indicated that there is a need for increased regulation.

Of those responding that regulation was unnecessary, several alternatives were offered such as: increase enforcement by expanding district authority (5 districts); increase the number of personnel available for enforcement purposes (9 districts); and encourage intergovernmental/agency coordination (2 districts).

CHAPTER 5 - FINDINGS AND RECOMMENDATIONS

GENERAL

Findings

A greater emphasis is being placed on water quality issues (and nonpoint sources of pollution in general), and the adverse water quality impacts associated with nonpoint source pollution are becoming increasingly important to Soil and Water Conservation Districts in the Great Lakes Basin.

Because of the diverse and localized nature of nonpoint source pollution, Soil and Water Conservation Districts, Soil Conservation Districts and Land Conservation Committees are uniquely qualified to address many of the nonpoint source pollution issues facing the Great Lakes Basin. For more than 50 years, districts have been working to promote and establish the wise use of the nation's soil and water resources. Their effectiveness in delivering programs stems in part from the philosophy that conservation decisions should be made at the local level, with technical, educational and funding assistance from federal, state and local governments.

While district programs have historically been innovative and broad-based, the complex nature of today's water quality issues has created the need for additional cooperative assistance between federal, state and local interests. Also, changing demographics, land use activities and public demand for high quality water and a clean environment have prompted districts to expand the focus of their programs on waste management, urban nonpoint pollution control and overall water quality improvement.

The 189 Great Lakes Basin districts surveyed for this report identified the need for an annual appropriation of \$48.5 million in new money for technical assistance, cost-sharing, administrative support, education and information and research and evaluation. The following recommendations were developed from the district perspective and are intended primarily for district consideration and action. However, these recommendations also apply to other appropriate federal, state, local and private organizations with an involvement in soil and water conservation activities in the Great Lakes Basin.

Recommendations

1. Great Lakes Basin Soil and Water Conservation Districts (SWCDs), Soil Conservation Districts (SCDs) and Land Conservation Committees (LCCs), hereafter known as "districts", should adopt the recommendations presented in this report as general guidance in future program development and advocacy activities.
2. Dedicated revenue of \$48.5 million in new funds should be sought to develop and expand district programs that will implement the findings and recommendations of this report, with \$30.5 million directed toward cost-share and other incentive programs.
3. The Great Lakes Basin Program, a federal/state initiative prepared and endorsed by the Great Lakes Commission, should be fully supported. Envisioned as a ten year commitment at \$25 million per year, the proposal provides for program grants; technical assistance; demonstrations and special projects; education/monitoring; and education/information (See Appendix I).
4. Development of formal water quality-related assistance programs that include a combination of information, education, technical assistance, financial assistance, and regulation components at the federal, state and local levels should be encouraged. To this end, the districts should join in the efforts of the Great Lakes Commission, the USDA, the U.S. EPA and the Great Lakes states in developing a cooperative state-federal assistance program for nonpoint source pollution control

(i.e., Great Lakes Basin Program). Districts should make these needs known to their Congressional representatives and appropriate committee leadership.

5. Delivery of federal and state programs in surface and groundwater management, forestry and wildlife should be expanded through greater district participation. These programs should recognize the unique ability and experience of districts to assist landowners in implementing such programs and in educating the public. Such programs should encourage the participation of district staff and/or supervisors on state and local level policy boards.

FUNDING AND INCENTIVES

Findings

Funding levels for districts in the Great Lakes Basin are inadequate to meet needs in a variety of necessary assistance, education and support programs. For 1989, the combined total budget of the 189 districts surveyed was more than \$20 million, with 53% of the total coming from state sources, 46% from local sources and 1% from federal sources. With an average annual budget of about \$106,000, Great Lakes Basin districts require additional basic office support, equipment and supplies in order to deliver new programs or expand existing programs. In addition, SCS staff currently contribute more than one full time work year per District to nonpoint programs. However, the serious cutbacks to the Conservation Operations budget of SCS is undermining the ability of SCS to contribute to basinwide nonpoint programs.

Based on the survey results, the full package of additional district needs totals \$48.5 million or about \$242,500 per district in the Great Lakes Basin. Of this amount, districts have identified the need for about \$30.5 million in cost-share and other incentives used to encourage landowner participation in water quality programs. This is roughly \$150,000 per district per year. Districts support the development and expansion of existing USDA cost-share incentive programs as a way of spreading the burden of financing crucial environmental programs and activities. Districts also report the need for two additional full time staff positions per district to provide technical and administrative assistance at a total cost of \$12 million or about \$60,000 per district, as well as the need for an additional \$2 million per year for SCS and state conservation agency support staff. District requests for additional equipment average approximately \$21,000, or \$4 million total for the entire Basin. These requests include funds for such items as no-till drills, tree planters, vehicles, and monitoring and audio-visual equipment.

Recommendations

1. Funding levels for collective district activities in the Great Lakes Basin should be increased by \$48.5 million annually, of which \$30.5 should be directed at cost-share and other landowner incentive programs.
2. Current USDA special programs targeted at specific water quality problem areas should be expanded or at least maintained. These include the SCS Hydrologic Unit Program, ASCS Special Watershed Funds, USDA/Extension Service demonstration projects, SCS Land Treatment Watershed Projects under Public Law 566 and the Forest Service's Stewardship Program.
3. The Conservation Operations budget of the Soil Conservation Service should be increased by at least 25 percent over a period of five years, thereby increasing SCS staff and program capabilities to handle this Great Lakes need.
4. Legislation to dedicate funding for a Great Lakes water quality improvement program should be developed, and a larger proportion of USDA and U.S. EPA water quality funds should be earmarked for the Great Lakes Basin.

5. Appropriate state and federal agencies should be encouraged to create district specific roles in implementing the Remedial Action Plans (RAPs) for the 42 Areas of Concern identified by the International Joint Commission. Districts should also seek specific roles in RAP implementation as well as program funding development.
6. Section 319 of the Water Quality Act of 1987 should be funded at Congressionally authorized levels of \$100 million for FY 1991. Section 319 funds should be used to fund local implementation projects for both urban and agricultural activities to the maximum extent allowed by law, thereby minimizing the amounts set aside for program administration.

TECHNICAL ASSISTANCE AND ADMINISTRATIVE SUPPORT

Findings

Increased technical assistance, administrative support and training is needed to help Districts become more efficient and effective in controlling agricultural and urban nonpoint source pollution in the Great Lakes Basin. Such assistance should emphasize water quality improvement through changes in land use practices, soil fertility and pesticide management and overall soil and water conservation. On average, Great Lakes Basin districts need an additional two full time staff positions per district to provide technical assistance to adequately address nonpoint source pollution concerns. The total cost for this is roughly \$12 million or about \$60,000 per District. An additional \$2 million is needed for SCS and state conservation agency support staff in the Basin.

Recommendations

1. The districts should request additional technical support from the USDA and funding from state and county governments for two additional technical specialists per district at a cost of about \$60,000 per district; a total of \$12 million for the Basin.
2. SCS and state conservation/water quality agency technical training for district staff should be expanded to include such areas as urban stormwater management; wetlands delineation/mitigation; soil fertility management; analysis of composting for waste management; non-structural stream channel stabilization; filter strip effectiveness and maintenance.
3. District assistance and capability in newly emerging natural resource protection issues should be expanded. Specifically, this should include urban forestry, development site review, water quality monitoring and lake management.
4. The number of SCS and state conservation agency area personnel should be increased to provide basinwide technical assistance and administrative support. Specifically, this should include engineering review for animal waste management structures, design and installation of lower cost stream channel stabilization measures, nonpoint source project planning and reporting, and approval/review of urban stormwater management practices. Based on a district need for about 400 new positions, at least 40 additional SCS and state conservation agency support staff will be required at a cost of \$2 million.
5. The development of regulations for erosion control, sediment prevention, animal waste management and urban runoff programs should be encouraged at both the state and local levels.

EDUCATION/INFORMATION

Findings

A critical need exists for increased education and information on the effects of agricultural erosion, agricultural chemicals, animal waste management practices and urban construction activities on water quality in the Great Lakes Basin. Public and landowner awareness must increase, particularly as these issues relate to higher profile concerns such as toxic pollutants and groundwater contamination. Districts view education and public outreach programs as integral parts of their

overall water quality management strategies. Education is extremely important because nonpoint source programs are primarily voluntary and a strong education/information component at the local level is necessary to help ensure that key conservation practices are implemented by landowners. Expanded efforts are also needed to establish networks and build coalitions between soil and water education and conservation interests, extension services and other government agencies.

Recommendations

1. Of the two needed positions identified by the districts, staff assistance of at least one half-time position should be allocated to education programs directed at landowners and the general public. SCS should be encouraged to devote more resources to developing educational support material.
2. Formal and nonformal nonpoint source education programs directed at the general public, K-12 classrooms and landowners should be expanded and delivered by the districts and state water quality agencies. The \$100 million Great Lakes Protection Fund, established by the Great Lakes Governors in 1989, as well as state environmental education funds, should be among the sources used to help finance these efforts until they are self-supporting.
3. Districts should increase communication and cooperation with other environmental groups and constituencies affected by emerging nonpoint source issues. Districts that allocate more than 20% of their staff time to urban issues should encourage urban residents to become more involved in district programs. Opportunities for urban representation on district boards of supervisors should be pursued. Districts should work closely with urban, wildlife and environmental groups to secure their support for district appropriation requests and the Great Lakes Basin Program proposal.

RESEARCH AND EVALUATION

Findings

Districts believe that expanded and well-supported research, monitoring and evaluation programs are needed to provide information in several areas and disciplines related to soil erosion, sedimentation and water quality. Quantitative and baseline data, surface and groundwater quality modeling, and expanded monitoring and testing programs are needed. This information will also assist districts in evaluating program effectiveness. Overall monitoring efforts must be strengthened with other methods of evaluation such as biomonitoring.

Recommendations

1. Districts should support expanded research programs at all levels of government to address issues such as: quantifying off-site impacts of sedimentation, determining the relationship of soil erosion to water quality, and evaluating current and prospective control programs. Research programs should be developed in areas of agriculture, construction site erosion, hydromodification, land disposal, oil field and mining activities, forestry practices, urban runoff, and overall water quality.
2. Monitoring programs, particularly at the federal level, should be strengthened and upgraded. This should include expanded data collection points (monitoring stations) for both surface and groundwater.
3. Through the use of contracts with state water quality agencies, district roles in water quality monitoring should be expanded. This should include: sample collection and funding of districts to initiate volunteer monitoring programs. Cooperative efforts with vocational agricultural programs, tillage clubs, Future Farmers of America, and other interested citizens groups should be explored.

APPENDIX I
GREAT LAKES BASIN PROGRAM

GREAT LAKES BASIN PROGRAM

In November, 1987 the Great Lakes Commission appointed a second Soil Erosion and Sedimentation Task Force with member state and federal agency representation to 1) design in detail the elements, activities and funding levels of a proposed federal Great Lakes Basin Program; 2) develop an action strategy to generate the state, federal and Congressional support to establish the program; and 3) to advise the Commission in the conduct of such a strategy. The following represents a Task Force summary of the important objectives and elements of a Great Lakes Basin Program.

GOAL OF THE PROGRAM

The purpose of the Great Lakes Basin Program is to protect and improve the Basin's water quality by controlling erosion and sedimentation; limiting the input of associated nutrients and toxic contaminants; and minimizing off-site damages to harbors, streams, fish and wildlife habitat, recreational facilities and the Basin's system of public works.

OBJECTIVES OF THE PROGRAM

- o To achieve special legislative recognition for the water quality problems associated with erosion, sedimentation and the delivery of nutrients and toxic contaminants to the Great Lakes.
- o To provide dedicated, reliable long-term funding for erosion and sediment control programs in the Great Lakes Basin.
- o To better coordinate efforts, roles and initiatives between federal, state and local soil conservation and pollution control agencies and groups in the Great Lakes Basin.
- o To recognize sediment as an important pollutant, its role in the transport of chemicals and to improve the linkage between erosion control and water quality programs.
- o To support the development and implementation of urban and rural nonpoint source management programs and sediment components of Remedial Action Plans under terms of the U.S.-Canada Great Lakes Water Quality Agreement.
- o To build coalitions and networks to support a Great Lakes Basin Program and to share information and educate groups and individuals with similar interests and goals.
- o To protect and enhance the region's water quality for the benefit of all economic and environmental interests.

PROGRAM ELEMENTS

The proposed Great Lakes Basin Program is comprised of five principal elements:

1. **PROGRAM GRANTS AND TECHNICAL ASSISTANCE** - to state and local entities to strengthen the current program infrastructure for nonpoint source pollution control and to develop new programs for controlling erosion and sedimentation.
2. **FINANCIAL ASSISTANCE AND DEMONSTRATION GRANTS** - to state and local entities to support demonstration projects that complement Basin program activities.

3. **DEMONSTRATIONS AND SPECIAL PROJECTS** - providing for the application of scientific knowledge to existing soil erosion/sedimentation problems in the Basin and identified water quality management needs.
4. **EVALUATION/MONITORING** - to coordinate and expand federal, state and local agency efforts to track Program progress and identify areas of concern for future attention.
5. **EDUCATION/INFORMATION** - to promote participation in the Program and build coalitions and networks among water quality and soil conservation interests at the federal, state, regional and local levels.

1. **PROGRAM GRANTS AND TECHNICAL ASSISTANCE**

Activities under this category will include, among others:

- An incentive program to states to develop soil erosion and sedimentation control programs that lock in water quality priorities.
- Expanded technical assistance programs through agencies such as the Soil Conservation Service; U.S. Environmental Protection Agency; state Departments of Agriculture, Natural Resources and Environmental Protection and their equivalents; university extension services; soil and water conservation districts; and others. Such programs will involve, in part, the establishment of local environmental extension-like programs emphasizing water quality improvement through changes in land use practices, fertility and pesticide management and soil and water conservation.
- Assistance to the states in the development and implementation of erosion and sedimentation control portions of state nonpoint source management programs.

Program grants will be made available by a lead federal agency to other federal agencies (through Interagency Agreements) and to state agencies and local entities in each of the eight Great Lakes states. These state agencies will be responsible for disbursing the funds to their own appropriate units.

Funds made available under the Program Grants provision will be used to further the stated goals and objectives of the Great Lakes Program. They will be allocated to both expand existing programs compatible with those goals and objectives as well as to establish new programs.

The program grants provision will be guided by an explicit grants application process and allocated formula. Interagency Agreements at the federal and state levels, and a set of explicit program criteria founded on Great Lakes Basin Program goals and objectives.

2. **FINANCIAL ASSISTANCE AND DEMONSTRATION GRANTS**

Funds will be made available to the entities identified under the "program grants and technical assistance" discussion, and through a similar disbursement arrangement. Such funds will be used for site specific projects tied to the state management programs called for under the "program grants" language.

Specific uses for these funds will include, among others:

- o long-term contracts with individual landowners providing a cost-share contribution toward implementing approved soil conservation and water quality management practices.

[By way of background, the USDA - Soil Conservation Service (SCS) in Michigan uses this method in its Resource Conservation and Development Program and Watershed Protection and Flood Prevention Program. It is also used in the SCS-administered Great Plains Conservation Program and the Agricultural Stabilization and Conservation Service (ASCS) administered Agricultural Conservation Program. This approach is viewed favorably in that it ties down work loads, commitments and funding needs. Due to the commitment and obligation on the part of the landowner, results are realized rather quickly and tend to be long lasting.]

- o Innovative urban and rural erosion control projects, focusing on agricultural and urban land disturbing practices directed at both surface and groundwater protection.

The demonstration grants provision will be administered and guided by an explicit application process and allocation formula to complement the program grants and technical assistance provision and respond to explicit criteria founded on the goals and objectives of the Great Lakes Basin Program.

3. DEMONSTRATIONS AND SPECIAL PROJECTS

Demonstrations and special projects will expand and support the application of scientific knowledge to existing water quality problems in the Great Lakes Basin. Funds will be made available to the agencies and organizations identified above, as well as universities and institutes within the Great Lakes states, to undertake applied research projects that support the goals and objectives of the Great Lakes Basin Program.

Such special projects might include:

- o Determining the effects of erosion and sediment control programs and various land-use practices on groundwater. Conservation tillage, for instance, retains water that might otherwise run off into streams and lakes. The retained water may infiltrate into groundwater and raise nutrient and pesticide levels.
- o Chemicals associated with sediment. Tremendous amounts of sediment enter the Great Lakes each year. It will be important to demonstrate and quantify the role that sediment plays in the transport of toxic pollutants. Practices that reduce both erosion and chemical transport should be examined.
- o Demonstrating and quantifying the off-site impacts of sedimentation. Quantitative information on the off-site effects of sedimentation in the Great Lakes Basin is lacking. Sediment related damages to water treatment and conveyance facilities, and recreation, fisheries, and wildlife need to be demonstrated.
- o Relating "T" to water quality goals. The concept of achieving T (tolerable soil loss) needs to be evaluated with respect to the off-site damages of sedimentation to water quality and other aspects of the environment. There is a need to review information on T as it relates to water quality to allow the states to establish standards and set goals that meet water quality objectives.

Funds under the demonstrations and special projects provision will also be used to enhance coordination and cooperative research among agencies such as the Soil Conservation Service; U.S. EPA Great Lakes National Program Office; U.S. Army Corps of Engineers; U.S. Fish and Wildlife Service; International Joint Commission; and the various applicable state agencies, institutes and research organizations.

4. EVALUATION/MONITORING

This provision in the Great Lakes Basin Program will provide the funds needed for tracking the progress of erosion and sedimentation control in the Great Lakes Basin and associated water quality impacts. This is a critical component of the Great Lakes Basin Program, as monitoring programs are presently limited in scope. The evaluation/monitoring provisions will promote opportunities for modeling and the expanded use of remote sensing/aerial photography to identify areas of concern and track progress. Also, the program will establish a pilot-demonstration evaluation/monitoring program on the Great Lakes to serve as a model for other environmental programs.

Finally, these provisions will facilitate information exchange and cooperation between U.S. EPA, the United States Geological Survey (USGS), the U.S. Army Corps of Engineers, the Great Lakes Environmental Research Laboratory, and state water quality agencies to expand the current system of nonpoint source monitoring and provide opportunities for new initiatives.

5. EDUCATION/INFORMATION

Provisions to promote the Great Lakes Basin Program, build coalitions and networks, share information and educate groups and individuals are viewed as critical to program success. Delivery of this program element will involve the range of federal, state and local agencies and organizations identified earlier, with a principal focus on landowners, the agricultural community, environmental interests and the organizations representing them. Examples include the National Association of Conservation Districts (NACD), environmental groups, trade and transportation groups, and conservation groups.

[Interest in this issue is growing rapidly. At its national convention on February 2, 1988, the NACD passed a resolution allowing the formation of a "special committee on the Great Lakes" to address nonpoint source pollution issues in the Great Lakes. The NACD has expressed interest in the establishment of a Great Lakes Basin Program. The Lake Carriers' Association has also expressed an interest in cooperative action to address these important issues, citing the benefits to be realized in reduced harbor and channel dredging costs. Opportunities for such involvement will be expanded and promoted under the Great Lakes Basin Program.

6. ADMINISTRATIVE ASPECTS

At the federal level, the U.S. Environmental Protection Agency and the Soil Conservation Service would have important roles, with enabling legislation designating a lead agency. This legislation would mandate interagency agreements among and between various federal agencies, including the U.S. Environmental Protection Agency; Soil Conservation Service; Cooperative Extension Service; Agricultural Stabilization and Conservation Service and the Agricultural Research Service.

A single line agency within each of the eight Great Lakes States would be designated as the grant administrator, with the option of designating one or more other agencies or sub-state entities to provide that function.

An advisory committee of governors' appointees, federal agency officials, and appropriate representatives from outside organizations would be established to guide the program, set priorities and assess program progress.

The geographic focus would include the 207 counties within the eight Great Lakes states that lie fully or partially within the drainage basin.

Funding. The Great Lakes Basin Program is envisioned as a ten-year commitment, with funding for the first year at \$10 million, second year funding at \$15 million, and subsequent years at \$25 million.

Funds requested would be a new, dedicated source that could be rolled over from one year to the next at least for the first two-year "start-up phase" of the program.

Funds appropriated for the start-up phase of the program will be used primarily, but not exclusively, to:

1. help the states in developing program plans to implement the Great Lakes Basin Program;
2. begin implementation of those portions of the state nonpoint source management programs that relate to erosion and sedimentation;
3. set up evaluation/monitoring programs so that baseline data can be gathered; and
4. identify erosion control/water quality research needs that can be addressed through the various aspects of the program in years two through ten.

Funds appropriated for the implementation phase of the Program (years 3-10) will be used to address all five Program elements.

There will be a state cost-sharing requirement of not less than 25 percent for any of the principal elements, with the built-in flexibility to include financing mechanisms such as revolving loan funds for certain aspects of the program. This does preclude higher matching requirements for certain aspects of the programs such as demonstration grants.

Funding Level Rationale. The proposed funding level is based upon needs estimate provided by the various appropriate Great Lakes state and federal agencies in a 1987 survey conducted by the Great Lakes Commission. That study estimated total annual Basin program costs for soil erosion and sedimentation control activities at \$109 million for FY 1990. It is anticipated that the proposed amount will leverage other funds, and in combination with other funding sources and existing programs, provide a level of support needed to address the critical soil erosion and sedimentation issues at hand.

It is important to note that the proposed funding level is but a small fraction of the annual costs that accrue to the Great Lakes Basin states in terms of water quality degradation and harbor and channel maintenance dredging requirements as a result of sedimentation. Federal costs for the latter alone, for example, run tens of millions of dollars a year - much of which can be attributed to upstream agricultural erosion.

APPENDIX II

GREAT LAKES BASIN SUMMARY OF SURVEY FINDINGS

GREAT LAKES BASIN

A) CURRENT STATUS	TOTAL	NOTES
1. Number of Districts	189	
2. Total Budget	\$20,073,907	
Federal Contribution	\$275,738	1% of total
State Contribution	\$10,630,213	53% of total
Local Contribution	\$9,167,956	46% of total
3. Average Budget	\$106,211	
4. Average Hours Spent on NPS Activities	Technical	Educational
District Staff	2947	975
SCS Staff	2003	394
5. NPS Control Priorities		The Top 3 Priorities in each district were ranked 3-1, with the 1st priority receiving 3 points. The most points an activity could receive in the Great Lakes Basin is 189 x 3, 567 points.
1. Agricultural Erosion Control	478	
2. Water Quality	130	
3. Animal Waste Management	112	
4. Agricultural Chemical Control	39	
5. Timber Stand Improvement	36	
6. Average Hours Spent on Urban Activities (per district)	14.3%	
B) DESIRED STATUS		
1. Average Additional Staff Requested (189 districts responding)	2	Min. 0, Max. 7 Staff Type Technician (General) 30 SWCD 35 SCS Tech. 30
2. Average Incentive Amount Requested (164 districts responding)	\$150,340	Min. 0, Max. 6,000,000 Incentive Types Cost-Share 85
3. Average Equipment Amount Requested (150 districts responding)	\$20,625	Min. 0, Max. 300,000 Equipment Type Vehicle 38 WQ Monitoring Equip. 31 Computer 27 No till Planter/Drill 25
4. Regulation Desired?	92-Y, 17-N	Regulatory Areas Soil Erosion 30 Animal Waste Management 14 Ag. Chemical Control 13 Construction Site Erosion 11
Non-Regulatory Changes Desired: Increased Enforcement 9, Expand District Authority 5.		
5. Program Needs: * Funding 49, Training 48, Technical Assistance 39, Educational Prog. Support 28, Leadership/Direction 21, Staff 19.		
6. Research and Information Needs: * Water Quality Monitoring Programs 29, Agricultural Chemical Movement and Toxicity Data 28, Baseline Water Quality 17.		

* Number of district requests follows each entry.

APPENDIX III

STATE SUMMARY OF SURVEY FINDINGS

ILLINOIS

A) CURRENT STATUS	TOTAL	NOTES
1. Number of Districts	3	
2. Total Budget	\$301,300	
Federal Contribution	\$9,039	3% of total
State Contribution	\$2,811,723	62% of total
Local Contribution	\$1,503,963	35% of total
3. Average Budget	\$100,433	
4. Average Hours Spent on NPS Activities	Technical	Educational
District Staff	2032	2177
SCS Staff	1053	421
5. NPS Control Priorities		The Top 3 Priorities in each district were ranked 3-1, with the 1st priority receiving 3 points. The most points an activity could receive in the State of Illinois is 3 x 3, 9 points.
1. Construction Site Erosion	6	
2. Agricultural Erosion Control	3	
3. Stream Channel Stabilization	2	
4. Wetlands Preservation	2	
5. Subdivision Storm Drainage	1	
6. Average Hours Spent on Urban Activities (per district)	65%	
B) DESIRED STATUS		
1. Average Additional Staff Requested (3 districts responding)	1	Min. 1, Max. 2 Staff Type Technicians 2 Educational Staff 1 Natural Resources Staff 1
2. Average Incentive Amount Requested (3 districts responding)	\$16,667	Min. 0, Max. 25,000 Incentive Types Demo Grants 1 Cost-share 1
3. Average Equipment Amount Requested (2 districts responding)	\$21,000	Min. 13,000, Max. 50,000 Equipment Types No-till Drill 2
4. Regulation Desired?	2-Y, 1-N	Regulatory Areas Ordinance/urban controls 1 Soil Erosion Controls 1
5. Program Needs: *	Training 2, Technical Support 1, Educational Program Support 1, Better Intergovernmental Coordination 1, Incentives for Urban Programs 1.	
6. Research and Information Needs: *	Stream Bank Stabilization 1, Assessment and Feedback on Existing Programs 1, Quantification of Overall Environmental Tolerance Levels 1, Water Quality Monitoring 1, Information on Soil Erosion and Sedimentation Delivery 1.	

* Number of district requests follows each entry.

INDIANA

A) CURRENT STATUS	TOTAL	NOTES
1. Number of Districts	10	
2. Total Budget	\$789,428	
Federal Contribution	\$1,120	
State Contribution	\$712,472	90% of total
Local Contribution	\$75, 836	10% of total
3. Average Budget	\$78,943	
4. Average Hours Spent on NPS Activities	Technical	Educational
District Staff	1758	1044
SCS Staff	2934	724
5. NPS Control Priorities		The Top 3 Priorities in each district were ranked 3-1, with the first priority receiving 3 points. The most points an activity could receive in the State of Indiana is 10 x 3, 30 points.
1. Agricultural Erosion Control	29	
2. Wetlands Preservation	6	
3. Water Quality	6	
4. Agricultural Chemical Control	4	
5. Construction Site Erosion	3	
6. Average Hours Spent On Urban Activities (per district)	16.1	
B) DESIRED STATUS		
1. Average Additional Staff Requested (10 districts responding)	2	Min. 0, Max. 4 Staff Type SCS Staff 5 SWCD Staff 5
2. Average Incentive Amount Requested (6 districts responding)	\$135,833	Min. 10,000, Max. 500,000 Incentive Type Cost-share 3
3. Average Equipment Amount Requested (7 districts responding)	\$23,286	Min. 0, Max. 60,000 Equipment Types No-till Drill/Planter 3 Educational Equipment 2
One Response Items: Vehicles, Irrigation System Evaluation, Soil Testing Equipment, Office Equipment, Water Sampling Equipment		
4. Regulation Desired?	5-Y, 1-N	Regulatory Areas Urban Erosion Controls 4 No Answer 4
One Response Items: Wetland Preservation Non Regulatory Changes Desired: Increase Educational Programming 1		
5. Program Needs: *	Staff 3, Groundwater Contamination Information 2, Technical and Management Training 2, Policy Directives/Regulations on Water Quality 2, Educational Materials 2.	
6. Research and Information Needs:	Nutrient Movement 1, Agricultural Chemical Movement 1, Pesticide Thresholds 1, Well Testing 1, Computer Model for Vulnerability 1, Information on the Utilization of Animal Waste 1, Demo Plots 1, Cost/Benefit Analysis of Pristine Wildlife Areas 1.	

* Number of district requests follows each entry for both Program and Research and Information Needs.

MICHIGAN

A) CURRENT STATUS	TOTAL	NOTES
1. Number of Districts	82	
2. Total Budget	\$7,021,581	
Federal Contribution	\$93,633	1% of total
State Contribution	\$4,356,567	62% of total
Local Contribution	\$2,571,381	37% of total
3. Average Budget	\$85,629	
4. Average Hours Spent on NPS Activities	Technical	Educational
District Staff	2582	1156
SCS Staff	1926	313
5. NPS Control Priorities		The Top 3 Priorities in each district were ranked 3-1, with the 1st priority receiving 3 points. The most points an activity could receive in the State of Michigan is 82 x 3, 246 points.
1. Agricultural Erosion Control	224	
2. Timber Stand Improvement	63	
3. Water Quality	56	
4. Animal Waste Management	47	
5. Agricultural Chemical Control	22	
6. Average Hours Spent On Urban Activities (per district)	9.88%	

B) DESIRED STATUS

1. Average Additional Staff Requested (78 districts responding)	2	Min. 1, Max. 7 Staff Type SCS Personnel 20 SWCD Personnel 18
2. Average Incentive Amount Requested (67 districts responding)	\$95,000	Min. 0, Max. 2,000,000 Incentive Type Cost-share 25 Tech Demo Grants 22
3. Average Equipment Amount Requested (65 districts responding)	\$14,774	Min. 0, Max. 50,000 Equipment Type Computer/Office Equip. 19 Vehicle 10 Water Quality Monitoring 9 No-till Drill 7
4. Regulation Desired?	36-Y, 17-N	Regulatory Areas Ag. Chemical Control 6 Soil Erosion Controls 5 Animal Waste 4 Water Quality 3

Non Regulatory Changes Desired: Increase Enforcement 5, Increase Staff for Better Outreach 4, Increase District Power/Autonomy 3, Provide Additional Funding 1.

5. Program Needs: * Technical Support 24, Funding 15, Training 14, Educational Program Support 14, Program Development/Leadership 13, Personnel 10.
6. Research and Information Needs: Groundwater Contamination 13, Water Quality Monitoring 12, Educational Material 10, Information on Ag. Chemical Movement 10, Baseline Water Quality Data 8.

* Number of district requests follows each entry for both Program and Research and Information Needs.

MINNESOTA

A) CURRENT STATUS	TOTAL	NOTES
1. Number of Districts	5	
2. Total Budget	\$329,000	
Federal Contribution	\$78,280	24% of total
State Contribution	\$96,660	29% of total
Local Contribution	\$154,060	47% of total
3. Average Budget	\$65,800	
4. Average Hours Spent on NPS Activities	Technical	Educational
District Staff	1300	468
SCS Staff	799	104
5. NPS Control Priorities		The Top 3 Priorities in each district were ranked 3-1, with the 1st priority receiving 3 points. The most points an activity could receive in the State of Minnesota is 5 x 3, 15 points.
1. Water Quality	6	
2. Construction Site Erosion	5	
3. Agricultural Erosion Control	4	
4. Animal Waste Management	4	
5. Timber Stand Improvement	2	
6. Average Hours Spent On Urban Activites (per. district)	12.6%	
B) DESIRED STATUS		
1. Average Additional Staff Requested (5 districts responding)	1	Min. 1, Max. 2 Staff Type Technical Assistance 1 SWCD Staff 1 Water Quality Specialist 1
2. Average Incentive Amount Requested (5 districts responding)	\$122,400	Min. 10,000, Max. 400,000 Incentive Type Cost-share 3
3. Average Equipment Amount Requested (5 districts responding)	\$10,400	Min. 500, Max. 40,000 Equipment Type Vehicles 3 Water Sampling 2 Computer 1
4. Regulation Desired?	4-Y	Regulatory Areas Intergovt. Coordination 2 Sediment controls 1 No Response 1

One Response Items: Land Use Planning, Water Management Planning

5. Program Needs: * Staff 2, Grants for Water Quality 2, Financial Planning 2, Training 1, Technical Support 1, Better Intergovernmental Coordination 1, Funding 1.
6. Research and Information Needs: * Baseline Water Quality Data 3, Various Land Use Impacts 2, GIS Mapping of Districts 2, Agricultural Chemical Movement 1, Nonpoint Source Data (on various sites) 1, Feedlot Evaluation 1, Sewage Disposal 1.

* Number of district requests follows each entry.

NEW YORK

A) CURRENT STATUS	TOTAL	NOTES
1. Number of Districts	26	
2. Total Budget	\$3,716,587	
Federal Contribution	\$82,995	2% of total
State Contribution	\$1,619,256	44% of total
Local Contribution	\$2,014,336	54% of total
3. Average Budget	\$142,946	
4. Average Hours Spent on NPS Activities	Technical	Educational
District Staff	3178	717
SCS Staff	2737	666
5. NPS Control Priorities		The Top 3 Priorities in each district were ranked 3-1, with the 1st priority receiving 3 points. The most points an activity could receive in the State of New York is 26 x 3, 78 points.
1. Agricultural Erosion Control	66	
2. Water Quality	30	
3. Animal Waste Management	19	
4. Subdivision Storm Drainage	6	
5. Construction Site Erosion	5	
6. Average Hours Spent On Urban Activities (per district)	11.1%	

B) DESIRED STATUS		
1. Average Additional Staff Requested (26 districts responding)	2	Min. 0, Max. 3 Staff Type SCS staff 6 SWCD staff 5
2. Average Incentive Amount Requested (22 districts responding)	\$161,591	Min. 0, Max. 1,000,000 Incentive Type Cost Share 12
3. Average Equipment Amount Requested (21 districts responding)	\$50,048	Min. 0, Max. 300,000 Equipment Type Water Quality Monitoring 8 Computer Software 2 Water/Soil Lab 2 Vehicle 1 Office equip 1
4. Regulation Desired?	12-Y, 4-N	Regulatory Areas Soil Erosion Controls 4 Constr. Project Review 2

One Response Items: WQ, Recycling, Land Use, Sewage, Animal Waste, Solid Waste Disposal

- Program Needs: * Technical Assistance 13, Technical Training 9, Funding 6, Baseline WQ Data 4, Program Direction 4, Educational Program Materials 3, Personnel 2, and GIS Mapping 2.
- Research and Information Needs: * Sampling and Monitoring Water Quality 14, Watershed Studies 5, GIS Mapping 3, Feedback on Programs 2, Soil Studies 2, Ground Water Studies 2, Causes of Erosion 1.

* Number of district requests follows each entry.

OHIO

A) CURRENT STATUS	TOTAL	NOTES
1. Number of Districts	33	
2. Total Budget	\$3,523,011	
Federal Contribution	\$6,800	44% of total
State Contribution	\$1,536,455	56% of total
Local Contribution	\$1,979,756	
3. Average Budget	\$106,758	
4. Average Hours Spent on NPS Activities	Technical	Educational
District Staff	2721	1189
SCS Staff	1657	516
5. NPS Control Priorities		The Top 3 Priorities in each district were ranked 3-1, with the 1st priority receiving 3 points. The most points an activity could receive in the State of Ohio is 33 x 3, 99 points.
1. Agricultural Erosion Control	93	
2. Water Quality	25	
3. Animal Waste Management	12	
4. Dredge and Fill Activities	10	
5. Construction Site Erosion	9	
6. Average Hours Spent on Urban Activities (per district)	24.7%	
B) DESIRED STATUS		
1. Average Additional Staff Requested (33 districts responding)	2	Min. 0, Max. 7
2. Average Incentive Amount Requested (23 districts responding)	\$46,826	Min. 0, Max. 300,000 Incentive Type Cost-share 21
3. Average Equipment Amount Requested (27 districts responding)	\$17,400	Min. 0, Max. 55,000 Equipment Type Vehicle 7 No till drill 6 Computer 5 Office space 4
4. Regulation Desired?	20-Y, 1-N	Regulatory Areas Rural/Urban Erosion Control 8 Agri. Chemical Control 3
5. Program Needs: * Training 8, Funding 8, Personnel 6, Technical Assistance 6, Educational Material 5, Water Quality Monitoring 2, Low Input Practices 2.		
6. Research and Information Needs: * Agricultural Chemical Control 9, Educational Material 5, Conservation Tillage 5, Water Quality Monitoring and Information 4, Wetland Protection 3, Animal Waste Management/Use 2.		

* Number of district requests follows each entry.

PENNSYLVANIA

A) CURRENT STATUS	TOTAL	NOTES
1. Number of Districts	1	
2. Total Budget	\$74,000	
Federal Contribution	\$0	0% of total
State Contribution	\$29,600	40% of total
Local Contribution	\$44,400	60% of total
3. Average Budget	\$74,000	
4. Average Hours Spent on NPS Activities	Technical	Educational
District Staff	2000	40
SCS Staff	2000	0
5. NPS Control Priorities		With only one district the priorities were ranked 3-1, with the 1st priority receiving 3 points.
1. Subdivision Storm Drainage	3	
2. Complaints/Site Investigation	2	
3. Wetland Preservation	1	
6. Average Hours Spent on Urban Activities (per district)	60%	
B) DESIRED STATUS		
1. Additional Staff Requested	2	
2. Incentive Amount Requested	\$250,000	Incentive Types Cost-share
3. Equipment Amount Requested	\$15,000	Equipment Types Computer
4. Regulation Desired?	1-N	
5. Program Needs: Intergovernmental Coordination		
6. Research and Information Needs: No Response		

WISCONSIN

A) CURRENT STATUS	TOTAL	NOTES
1. Number of Districts	29	
2. Total Budget	\$4,319,000	
Federal Contribution	\$3,310	1% of total
State Contribution	\$2,811,723	65% of total
Local Contribution	\$1,503,963	34% of total
3. Average Budget	\$148,931	
4. Average Hours Spent on NPS Activities	Technical	Educational
District Staff	4874	570
SCS Staff	1853	188
5. NPS Control Priorities		The Top 3 Priorities in each district were ranked 3-1, with the 1st priority receiving 3 points. The most points an activity could receive in the State of Wisconsin is 29 x 3, 87 points.
1. Agricultural Erosion Control	59	
2. Animal Waste Management	40	
3. Water Quality	16	
4. Agricultural Chemical Control	6	
5. Timber Stand Improvement	6	
6. Average Hours Spent on Urban Activities (per district)	10.7%	
B) DESIRED STATUS		
1. Average Additional Staff Requested (29 districts responding)	2.6	Min. 0, Max. 4 Staff Type SCS Tech. 3
2. Average Incentive Amount Requested (20 districts responding)	\$468,802	Min. 0, Max. 1,500,000 Incentive Types Cost-Share 13 Grants 4 Property Tax Credits 1
3. Average Equipment Amount Requested (21 districts responding)	\$15,214	Min. 0, Max. 50,000 Equipment Type Vehicle 12 Computer 4 Survey Equipment 4
One Response Items: Office Supplies, Tree/No till planter		
4. Regulation Desired?	19-Y, 4-N	Regulatory Areas Ordinance/Urban controls 5 Animal Waste Management 3 Agri. Chemical Control 2
Non-Regulatory Changes Desired: Funds and Staff to Enforce Current Regulations 1		
5. Program Needs: *	Funding 6, Technical Support 3, Personnel 3, Water Quality Monitoring 1.	
6. Research and Information Needs: *	Cumulative Watershed Effects on Lake Superior and its Tributaries 4, Water Quality Monitoring for Surface and Groundwater 3, Conservation Tillage and Sustainable Agriculture 2, Animal Waste Management 2, Natural Crop Filter and Buffer Research 2.	

* Number of district requests follows each entry.

APPENDIX IV

LAKE BASIN SUMMARY OF SURVEY FINDINGS

LAKE SUPERIOR

A) CURRENT STATUS	TOTAL	NOTES
1. Number of Districts	17	
2. Total Budget	\$653,884	
Federal Contribution	\$78,280	12% of total
State Contribution	\$358,951	55% of total
Local Contribution	\$216,653	33% of total
3. Average Budget	\$38,464	
4. Average Hours Spent on NPS Activities	Technical	Educational
District Staff	1241	383
SCS Staff	725	150
5. NPS Control Priorities		The Top 3 Priorities in each district were ranked 3-1, with the 1st priority receiving 3 points. The most points an activity could receive in the Lake Superior Basin is 17 x 3, 51 points.
1. Agricultural Erosion Control	32	
2. Animal Waste Management	23	
3. Timber Stand Improvement	15	
4. Water Quality	10	
5. Stream Channel Stabilization	6	
6. Average Hours Spent on Urban Activities (per district)	11.6%	

B) DESIRED STATUS

1. Average Additional Staff Requested (17 districts responding)	2	Min. 0, Max. 4 Staff Type Technician (General) 5 SWCD 2 SCS Tech. 1
2. Average Incentive Amount Requested (14 districts responding)	\$66,500	Min. 0, Max. 400,000 Incentive Types Cost-Share 8
3. Average Equipment Amount Requested (14 districts responding)	\$11,933	Min. 0, Max. 40,000 Equipment Type Vehicle 8 Computer 2 Sampling Equipment 2 Office Space 2

One Response Items: Sprayer, Sampling Equipment, No till Drill.

4. Regulation Desired?	13-Y, 1-N	Regulatory Areas Construction Site 3 Highway Construction 2 Water Quality 2
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Non-Regulatory Changes Desired: Intergovernmental Coordination 2, Increased Enforcement 1.

5. Program Needs: * Funding 6, Personnel 5, Technical Assistance 4, Financial Planning 3.
6. Research and Information Needs: * Lake Superior Specific Water Quality Data 4, Water Sampling and Monitoring 3, Educational Material 3, GIS Data 2.

* Number of district requests follows each entry.

LAKE MICHIGAN

A) CURRENT STATUS	TOTAL	NOTES
1. Number of Districts	77	
2. Total Budget	\$8,794,005	
Federal Contribution	\$92,149	1% of total
State Contribution	\$5,249,310	60% of total
Local Contribution	\$3,452,546	39% of total
3. Average Budget	\$112,649	
4. Average Hours Spent on NPS Activities	Technical	Educational
District Staff	3673	1043
SCS Staff	2290	288
5. NPS Control Priorities		The Top 3 Priorities in each district were ranked 3-1, with the 1st priority receiving 3 points. The most points an activity could receive in the Lake Michigan Basin is 77 x 3, 231 points.
1. Agricultural Erosion Control	191	
2. Animal Waste Management	50	
3. Water Quality	52	
4. Wetlands Preservation	23	
5. Agricultural Chemical Control	18	
6. Average Hours Spent on Urban Activities (per district)	12.2%	
B) DESIRED STATUS		
1. Average Additional Staff Requested (74 districts responding)	2	Min. 0, Max. 7 Staff Type Technical Asst. (General) 20 SCS Staff 13 SWCD Staff 11 Education Specialist 6
2. Average Incentive Amount Requested (57 districts responding)	\$216,673	Min. 0, Max. 500,000 Incentive Types Cost-Share 29 Demo Grants 3 Tax Credits 2
3. Average Equipment Amount Requested (61 districts responding)	\$18,250	Min. 0, Max. 100,000 Equipment Type Computer 14 Vehicle 13 WQ Monitoring Equipment 9 Low till Drill/Planter 9 Soil Survey Equipment 4
4. Regulation Desired?	42-Y, 5-N	Regulatory Areas Soil Erosion 16 Animal Waste Management 10 Agri. Chemical Control 7 Construction/Urban Land 6 Wetlands 4
Non-Regulatory Changes Desired: Staff to Enforce Current Regulations 4, Expand Education Programs 2, Better Enforcement 2, Increase District Authority 2.		
5. Program Needs: *	Technical Support 20, Training 18, Funding 15, Educational Support 13, Leadership/Program Development 12.	

6. Research and Information Needs: * Data on Agricultural Chemical Use/Effects 19, Groundwater Mapping and Testing 11, Educational Materials 11, Soil Erosion and Sedimentation Data 11, Water Quality Monitoring 7, Urban Pollution Levels 4, Baseline Water Quality Data 4, Cost-Benefit of NPS Practices 4.

* Number of district requests follows each entry.

LAKE HURON

A) CURRENT STATUS	TOTAL	NOTES
1. Number of Districts	22	
2. Total Budget	\$2,019,291	
Federal Contribution	\$10,895	1% of total
State Contribution	\$1,315,365	65% of total
Local Contribution	\$693,032	34% of total
3. Average Budget	\$91,786	
4. Average Hours Spent on NPS Activities	Technical	Educational
District Staff	2701	1127
SCS Staff	1687	321
5. NPS Control Priorities		The Top 3 Priorities in each district were ranked 3-1, with the 1st priority receiving 3 points. The most points an activity could receive in the Lake Huron Basin is 22 x 3, 66 points.
1. Agricultural Erosion Control	60	
2. Timber Stand Improvement	21	
3. Water Quality	15	
4. Conservation Reserve Program	8	
5. Agricultural Chemical Control	8	
6. Average Hours Spent on Urban Activities (per district)	7.36%	

B) DESIRED STATUS

1. Average Additional Staff Requested (22 districts responding)	2	Min. 0, Max. 3 Staff Type Forestry Specialist 7 SWCD 6 SCS Tech. 3
2. Average Incentive Amount Requested (19 districts responding)	\$63,947	Min. 10,000, Max. 250,000 Incentive Types Cost-Share 7
3. Average Equipment Amount Requested (18 districts responding)	\$11,156	Min. 0, Max. 50,000 Equipment Type Vehicle 5 No till Drill/Planter 4 Computer 3 WQ Monitoring Equipment 3

One Response Items: Fax Machine, Copy Machine, Soil Testing Equipment.

4. Regulation Desired?	6-Y, 3-N	Regulatory Areas Soil Erosion 3 Ag. Chemical Control 2 Livestock Grazing 1
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Non-Regulatory Changes Desired: Increased Enforcement 2, Voluntary Compliance 1

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|---|
| 5. Program Needs: * Funding 7, Training 6, Personnel 4, Educational Material 4, Program Direction 2. |
| 6. Research and Information Needs: * Baseline Water Quality Data 5, Water Sampling and Monitoring 4, Conservation Tillage 3, Soil Survey 3, Agricultural Chemical Movement 3. |

* Number of district requests follows each entry.

LAKE ERIE

A) CURRENT STATUS	TOTAL	NOTES
1. Number of Districts	51	
2. Total Budget	\$5,190,380	
Federal Contribution	\$11,933	
State Contribution	\$2,121,911	40% of total
Local Contribution	\$3,056,536	60% of total
3. Average Budget	\$101,772	
4. Average Hours Spent on NPS Activities	Technical	Educational
District Staff	2465	1169
SCS Staff	1815	568
5. NPS Control Priorities		The Top 3 Priorities in each district were ranked 3-1, with the 1st priority receiving 3 points. The most points an activity could receive in the Lake Erie Basin is 51 x 3, 153 points.
1. Agricultural Erosion Control	136	
2. Water Quality	40	
3. Animal Waste Management	21	
4. Agricultural Chemical Control	13	
5. Subdivision Storm Drainage	12	
6. Average Hours Spent on Urban Activities (per district)	21.9%	
B) DESIRED STATUS		
1. Average Additional Staff Requested (50 districts responding)	2	Min. 0, Max. 6 Staff Type SWCD Staff 12 SCS Staff 9 Clerical 5 Water Quality Specialist 3
2. Average Incentive Amount Requested (38 districts responding)	\$109,917	Min. 0, Max. 300,000 Incentive Types Cost-Share 32
3. Average Equipment Amount Requested (39 districts responding)	\$18,947	Min. 0, Max. 55,000 Equipment Type No till Planter/Drill 12 Vehicle 8 WQ Testing Equip. 8 Computer 6 Mulcher 4
One Response Items: Communications/Audio Visual Equipment		
4. Regulation Desired?	23-Y, 5-N	Regulatory Areas Soil Erosion 8 Septic Tanks 4 Agri. Chemical Control 4 Animal Waste 4 No Reponse 23

Non-Regulatory Changes Desired: Define District Authority More Clearly 2, Voluntary Compliance 1
Increase Enforcement 1, Better Intergovernmental Coordination 1.

5. Program Needs: * Funding 14, Training 12, Additional Personnel 10, Technical Asst. 8, Program Leadership/Guidelines 7, Educational Material 6.
6. Research and Information Needs: * Pesticide Leaching Capabilities 9, Baseline Water Quality Data 8, Agricultural Chemical Movement/Thresholds 5, Impacts of No till on Surface and Groundwater 3, Cost/Benefit Analysis of Various Control Practices 3.

* Number of district requests follows each entry.

LAKE ONTARIO

A) CURRENT STATUS	TOTAL	NOTES
1. Number of Districts	22	
2. Total Budget	\$3,416,287	
Federal Contribution	\$82,422	2% of total
State Contribution	\$1,584,675	46% of total
Local Contribution	\$1,749,190	52% of total
3. Average Budget	\$155,286	
4. Average Hours Spent on NPS Activities	Technical	Educational
District Staff	3256	624
SCS Staff	2719	603
5. NPS Control Priorities		The Top 3 Priorities in each district were ranked 3-1, with the 1st priority receiving 3 points. The most points an activity could receive in the Lake Ontario Basin is 22 x 3, 66 points.
1. Agricultural Erosion Control	59	
2. Animal Waste Management	18	
3. Water Quality	13	
4. Construction Site Erosion	5	
5. Subdivision Storm Drainage	4	
6. Average Hours Spent on Urban Activities (per district)	10.4%	
B) DESIRED STATUS		
1. Average Additional Staff Requested (22 districts responding)	2	Min. 0, Max. 5 Staff Type SWCD 4 SCS Tech. 4
2. Average Incentive Amount Requested (19 districts responding)	\$179,211	Min. 0, Max. 1,000,000 Incentive Types Cost-Share 9 Grants 2
3. Average Equipment Amount Requested (18 districts responding)	\$49,222	Min. 0, Max. 70,000 Equipment Type WQ Monitoring Equip. 9 Vehicles 2 Computer 2
One Response Items: Aquatic Weed Harvester.		
4. Regulation Desired?	8-Y, 3-N	Regulatory Areas Soil Erosion 3 Urban Development 2
Non-Regulatory Changes Desired: Voluntary Compliance 1, Increase District Authority 1.		
5. Program Needs: *	Technical Assistance 11, Training 8, Funds 7, Educational Material 5.	
6. Research and Information Needs: *	Water Quality Monitoring and Sampling 18, Soil Studies 3, Groundwater Studies 2, GIS Mapping 2.	

* Number of district requests follows each entry.

APPENDIX V
SURVEY METHODOLOGY
AND
SURVEY FORM

DISTRICT SURVEY METHODOLOGY

In 1989, the National Association of Conservation Districts (NACD) Committee on the Great Lakes along with the Great Lakes Commission, the Conservation Technology Information Center (CTIC), the Soil Conservation Service (SCS) and the Ohio Department of Natural Resources initiated a nonpoint source water quality survey project. The goals of this project were to establish an information database to underscore the value and role of the Soil and Water Conservation Districts (districts) in effectively dealing with nonpoint source pollution and to provide information to support the need for increased funding at the district level.

This survey of 189 districts in the Great Lakes Basin was based, in part, on a December, 1988 survey of the 88 districts in Ohio. Data gathered in the Ohio survey were partially responsible for the General Assembly's funding of two new water quality programs for the state in 1989.

Survey forms were distributed by the NACD to 189 Great Lakes Basin districts in the Fall of 1989. Names and addresses of districts were obtained from the NACD Nonpoint Source Directory. Completed forms were returned to CTIC, which forwarded them to the Great Lakes Commission beginning in February 1990. Commission staff then compiled, entered and stored the data on a database.

The first section of the survey asked respondents to indicate which water quality activities their district performed. Nine program areas were broken down into twenty seven different activities. Respondents were asked to check the appropriate column if they provided technical or educational assistance related to each of the twenty-seven activities. This information is summarized in Chapter 3.

Technical assistance includes helping landowners adopt land use management practices, aiding in project design and construction, conducting plan reviews and meeting with agencies, departments or commissions. Educational programs include developing or providing information or materials such as handbooks, pamphlets, brochures or district participation in educational meetings, field days, school programs, classroom site visits or workshops.

At the bottom of these columns respondents were asked to estimate the total number of hours per year (based on 2080 hours/year for a full time employee) that the district and SCS staff spent on technical and educational programs. Districts were also asked to state their current budget and sources of funding.

The part of the survey relating to district priorities is included in Chapter 4. It asked for an assessment of the additional staff required to meet future priorities (in .5 staff year increments); opinions on cost-sharing or other incentives; and a documentation of district equipment needs. Districts were asked to estimate both a dollar amount, and the type of incentives or equipment needed. Respondents indicated only that incentives and equipment were needed but did not include a type or dollar amount.

The last section of the survey asked districts to share their views on the need for additional regulation to control nonpoint source pollution, other types of assistance from a state water quality agency, SCS or other federal agencies, and research and information needs.

The response rate from the surveyed districts was 100 percent which reflects the tremendous importance the districts place on water quality issues in the Great Lakes. A difference, however, exists between the number of districts surveyed for this report (189) and the total number of Great Lakes Basin districts which is 207. The eighteen districts not initially surveyed are those that for the most part have only small portions of their total land area that drains into the Great Lakes Basin. Although the total figures for the Basin, the individual Lake sub-basins and the states would change somewhat if all 207 districts were captured, the average district, Basin and sub-basin figures would probably change very little. Also, because the missing districts are those with small in-Basin drainage areas, determining the percent of district budgets spent on activities inside the Basin would be extremely difficult.

SURVEY OF DISTRICT/FIELD OFFICE WATER QUALITY AND NONPOINT SOURCE CONTROL ACTIVITIES

District Name: _____
 State _____
 Percentage of district in G.L. Basin: _____

Existing Programs (place an X next to activities your District is involved in)		Technical	Education
Agri- culture	1. Agricultural Erosion Control (practices, CRP, farm plans)		
	2. Animal Waste Management		
	3. Ag Chemical Control (pesticides and fertilizers)		
CSE	4. Construction Site Erosion (residential, commercial, highway)		
Hydromod.	5. Stream Channel and Lake Stabilization		
	6. Stream Protection Practices (berms, buffers, 1-sided construct.)		
	7. Wetland Preservation, Swampbuster		
	8. Dredge and Fill Activities requiring Section 404, 401 Permits		
Land Disposal	9. Landfill (siting, erosion control, litter prevention, recycling)		
	10. Sludge Application		
	11. Septic Tank System Siting		
Mining	12. Mined Land Reclamation (gravel, coal, sand, etc.)		
	13. Prime Farmland Identification		
	14. Complaints, Site Investigations		
	15. Working with Active Mine Operators		
Oil Field Waste	16. Oil and Gas Well Head Siting (plan review)		
	17. Oil and Gas Complaint (site investigations, brine runoff)		
	18. Working with Oil and Gas Well Operators		
Forestry	19. Timber Stand Improvement and Woodland Protection Practices		
	20. Conservation Reserve Program (tree planting)		
	21. Erosion Control (haul roads and windbreaks)		
Urban Runoff	22. Subdivision Storm Drainage (plan review)		
	23. Complaints/Site Investigations		
	24. Floodplain Survey/Determinations		
	25. Highway Construction Inspection and Plan Review		
WQM	26. Water Quality (stream/lake sampling, data collection, research, modeling)		
	27. Other Nonpoint Source Activities		
TOTAL HOURS PER YEAR, DISTRICT STAFF			
TOTAL HOURS PER YEAR, SCS STAFF			

What percentage of the total hours (all staff) are spent on urban activities? _____ %
 Considering all the existing programs, what are your current top three priorities?
 Use number from checklist above: 1. _____ 2. _____ 3. _____
 What is your existing total annual SWCD budget? \$ _____
 Of your total budget, what % is provided by:
 Local funds _____ % State funds _____ % Federal funds _____ %

Do you see this changing in the future? If so, how? _____

What level of additional resources do you feel you will need to adequately carry out the water quality activities listed above? _____

Number and Type of Additional Personnel: _____ (SCS and SWCD)
 Program Incentives: \$ _____ (amount and type of incentive(s))
 Equipment: \$ _____ (type and cost)

Does your District see a need for stronger regulations to help SWCDs carry out nonpoint source control programs? Yes No (circle one)
 If yes, in what areas? _____

Which types of assistance does your District need from the state water quality agency, Soil Conservation Service, etc.? _____

Which types of research or information are most needed to help your District implement your water quality programs? _____

APPENDIX VI
MAP OF GREAT LAKES BASIN COUNTIES

LEGEND

Great Lakes Region Boundaries

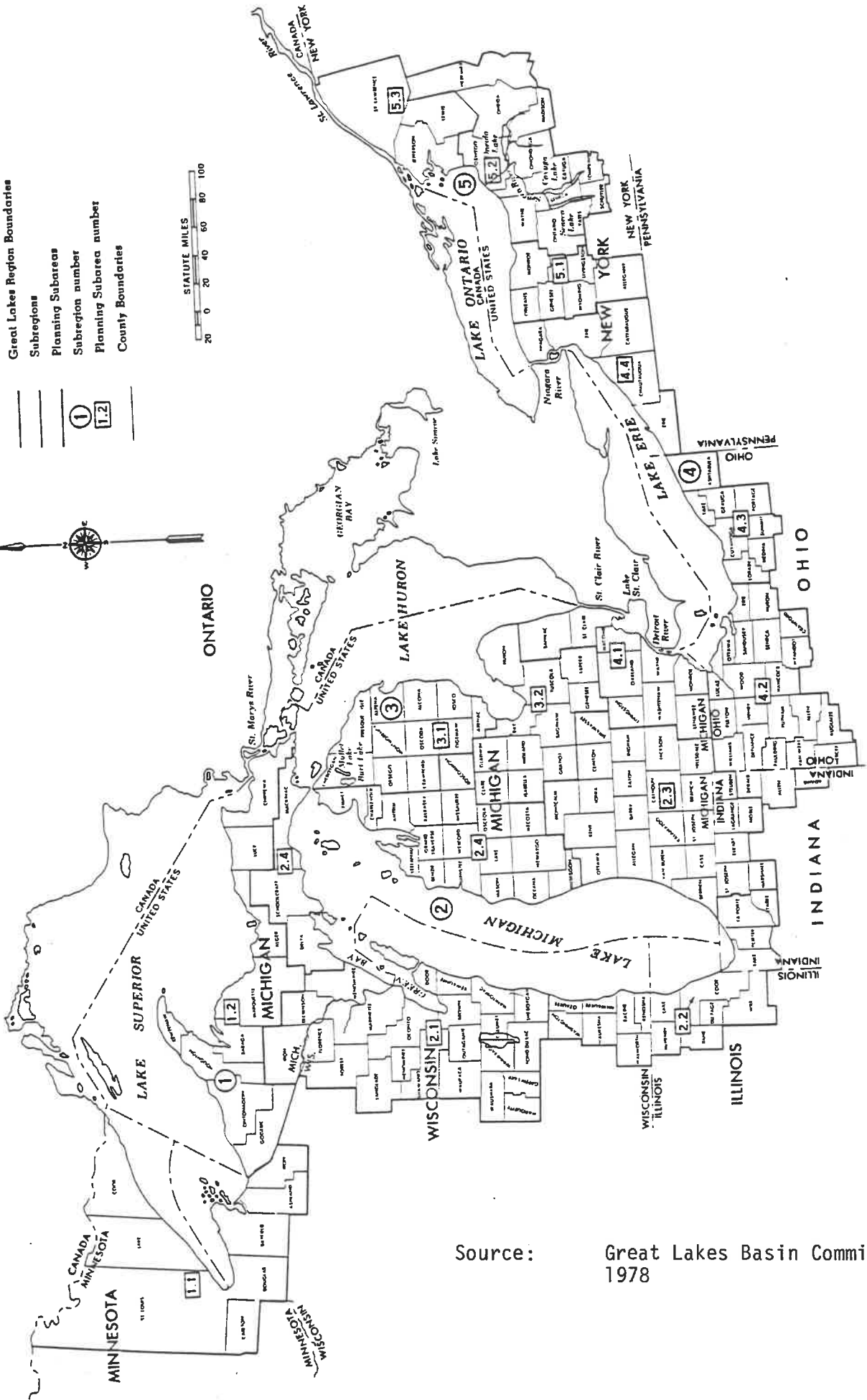
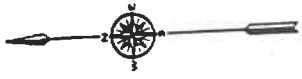
Subregions

Planning Subareas

Subregion number

Planning Subarea number

County Boundaries



Source: Great Lakes Basin Commission 1978