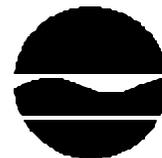




NONPOINT SOURCE



MANAGEMENT PROGRAM

October 2000



**NEW YORK STATE DEPARTMENT OF
ENVIRONMENTAL CONSERVATION**

**DIVISION OF WATER
BUREAU OF WATERSHED MANAGEMENT**

*Governor George E. Pataki
Governor, New York State*

*John P. Cahill
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ACRONYMS AND ABBREVIATIONS

| | | |
|-------------|---|--|
| AEM | - | Agricultural Environmental Management |
| ALSC | - | Adirondack Lakes Survey Corporation |
| CAAA | - | Clean Air Act Amendments |
| CBEP | - | Community Based Environmental Protection |
| CCMP | - | Comprehensive Conservation and Management Program |
| CEM | - | Continuous Emissions Monitoring |
| CEM | - | Community-based Environmental Management |
| CNPCP | - | Coastal Nonpoint Pollution Control Program |
| CRP | - | USDA Conservation Reserve Program |
| CSGWPP | - | Comprehensive State Groundwater Protection Program |
| CSO | - | Combined Sewer Overflow |
| CVAP | - | Clean Vessel Act Program |
| CWA | - | Clean Water Act |
| CWSRF | - | Clean Water State Revolving Fund |
| CZARA | - | Coastal Zone Act Reauthorization Amendment |
| DA&M | - | NYS Department of Agriculture and Markets |
| DO | - | Dissolved Oxygen |
| DOH | - | NYS Department of Health |
| DOS | - | NYS Department of State |
| DOW | - | NYS DEC Division of Water |
| DWSRF | - | Drinking Water State Revolving Fund |
| EC | - | Environment Canada |
| ECL | - | Environmental Conservation Law |
| EPF | - | Environmental Protection Fund |
| EQIP | - | USDA Environmental Quality Incentive Program |
| FSA | - | Farm Service Agency |
| GIS | - | Geographic Information System |
| Home*A*Syst | - | Home Assessment Systems |
| LaMP | - | Lake Management Plan |
| MCL | - | Maximum Contaminant Levels |
| MOU | - | Memorandum of Understanding |
| NEPPS | - | National Environmental Performance Partnership Agreement |
| NOAA | - | National Oceanic and Atmospheric Administration |
| NPS | - | Nonpoint Source |
| NPSCC | - | Nonpoint Source Coordinating Committee |
| NRCS | - | Natural Resources Conservation Service |

ACRONYMS AND ABBREVIATIONS

(CONTINUED)

| | | |
|---------|---|--|
| NURP | - | Nationwide Urban Runoff Program |
| NYCDEP | - | New York City Department of Environmental Protection |
| NYCWAP | - | New York City Watershed Agricultural Program |
| NYSDEC | - | NYS Department of Environmental Conservation |
| NYSEFC | - | NYS Environmental Facilities Corporation |
| NYSSWCC | - | New York State Soil and Water Conservation Committee |
| OME | - | Ontario Ministry of Environment |
| OWTS | - | Onsite Wastewater Treatment Systems |
| PAL | - | Priority Aquifer List |
| PHL | - | Public Health Law |
| PPA | - | Performance Partnership Agreement |
| PPG | - | Performance Partnership Grant |
| PWL | - | Priority Waterbodies List |
| PWS | - | Public Water Supply |
| RACT | - | Reasonably Available Control Technology |
| RFP | - | Request for Proposals |
| RIBS | - | Rotating Intensive Basin Studies |
| SDWA | - | Safe Drinking Water Act |
| SLWAP | - | Skaneateles Lake Watershed Agricultural Program |
| SPDES | - | State Pollutant Discharge Elimination System |
| SWAP | - | Source Water Assessment Program |
| SWCD | - | Soil & Water Conservation District |
| TMDL | - | Total Maximum Daily Load |
| TOGS | - | Technical Operational Guidance Series |
| TU | - | Trout Unlimited |
| USDA | - | United States Department of Agriculture |
| USEPA | - | United States Environmental Protection Agency |
| USGS | - | U.S. Geological Survey |
| WET | - | Water Education for Teachers |
| WHIP | - | USDA Wildlife Habitat Incentive Program |
| WICSS | - | Water Integrated Compliance Strategies System |
| WMAC | - | Water Management Advisory Committee |
| WQCC | - | Water Quality Coordinating Committee |
| WRP | - | USDA Wetland Reserve Program |

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NONPOINT SOURCE MANAGEMENT PROGRAM - UPDATE

CHAPTER I OVERVIEW

New York conducts its Nonpoint Source Management Program under the following vision and mission statements:

Vision Statement

Nonpoint source pollution caused by natural and human activities no longer impairs New York State's waters.

Mission Statement

The mission of New York's Nonpoint Source Program is to control, reduce or treat polluted runoff through the implementation of structural, operational or vegetative management practices; to administratively coordinate various state agencies and other interested partners having regulatory, outreach, incentive-based, or funding programs that foster installation of management practices for any of the identified sources of nonpoint pollution threatening or impairing the waters of New York; and to conduct local implementation and statewide coordination and evaluation on a watershed basis.

The seven long-term goals of the Nonpoint Source Management Program are listed here, followed by the chapters where their implementing programs and activities are presented:

1. Establish a five year planning cycle for updating the New York State Nonpoint Source Management Plan. (Chapter I)
2. Coordinate statewide federal, state and industry programs that address aspects of NPS pollution. (Chapter I)
3. Establish and foster partnerships to coordinate county and local activities to address NPS pollution. (Chapters II and IV)
4. Identify and evaluate NPS water quality problems. (Chapter III)
5. Encourage and assist all landowners with guidance documents, incentives and funding to implement management practices to control NPS pollution. (Chapters IV, V and VIII)
6. Where regulatory programs exist, identify management practices approved for use in New York, and track progress of their implementation/installation for the control of NPS pollution. (Chapter V)
7. Address NPS pollution from all categories geographically by watershed. (Chapter VI)

The above are general goals for the Nonpoint Source Management Program. In addition, DEC and partner agencies have developed statewide Long- and Short-Term Goals for reduction of nonpoint source pollution. Priority source category goals have also been developed. Both can be found in Appendix E.

The 1990 Nonpoint Source Management Program signified the transition in New York, and the nation, to a water quality improvement program that included nonpoint source pollution control. There have been many changes in the field of nonpoint source pollution control since then. This Management Program Update incorporates the federal, state and local changes since 1990 and makes recommendations for further activities needed to address nonpoint source pollution in New York.

At the federal level, the Nonpoint Source program under Section 319 of the Clean Water Act remained substantially unchanged since proposed amendments to the CWA were not passed. However, increases in funding through 1998 provided for the implementation of many nonpoint source management practices and projects. The 1996 Farm Bill and the 1996 Amendments to the Safe Drinking Water Act (SDWA) have both highlighted the need for better, or at least more strategically located, nonpoint source management practices. New York's Coastal Nonpoint Pollution Control Program was developed in response to the Coastal Zone Act Reauthorization Amendments (Section 6217). The program received final conditional approval from the National Oceanic and Atmospheric Administration (NOAA) and Environmental Protection Agency (EPA) on November 18, 1997. The approval acknowledges that, with a few exceptions, New York has the enforceable policies and mechanisms necessary to effectively address nonpoint source pollution in the watersheds of the coastal waters.

At the state level, the New York Nonpoint Source Coordinating Committee (NPSCC) was created and continues as New York's forum for collaboration on NPS issues. The New York State Soil and Water Conservation Committee (NYSSWCC) and the New York State Department of Environmental Conservation (NYSDEC) brought County Water Quality Coordinating Committees (WQCCs) from an idea to reality. By 1992, each county had a WQCC. The Clean Water / Clean Air Bond Act was a new state funding source passed by voters in November 1996. The Environmental Protection Fund (EPF) has supplemented 319 funding since 1995. Numerous agricultural and non-agricultural projects have been funded.

At the local level, County WQCCs have developed water quality strategies for every county. The county strategies serve to focus locally based implementation efforts. As of 1998, over 250 local projects using federal, state or local dollars were under way across the state. New York City Department of Environmental Protection (NYCDEP) and the City of Syracuse, as part of SDWA filtration avoidance, have established programs to address all sources of nonpoint pollution in the watersheds that supply drinking water for their cities. (See Watershed Partnerships, pg. II-3.)

This updated Nonpoint Source Management Program is intended to provide direction for the work of the NPSCC into the future. New York shares EPA's long-term vision to implement a dynamic, effective nonpoint source program to achieve and maintain beneficial uses of water.

The objectives of this document are:

1. To outline the extent of water quality problems in New York caused by nonpoint sources and to explain how future assessment information will be used to report progress.
2. To provide guidelines for setting priorities among watersheds;
3. To outline an education/information strategy to make more people aware of nonpoint source pollution;
4. To recommend control measures needed to address each category of nonpoint source pollution causing water quality problems in New York;
5. To list management practices for the control of nonpoint source pollution compiled since 1990; and
6. To identify potential sources of funding available to implement nonpoint source control programs.

Short term goals or implementation steps were written (1996-1998) by NYSDEC staff and New York's Nonpoint Source Coordinating Committee members with input from County WQCC members, DEC regional staff, New York's Water Management Advisory Committee and others. The implementation steps are given for each source category in Chapter V.

A. Basic Concepts: Nonpoint Sources and Controls

The concept of "nonpoint source pollution" can best be conveyed by contrasting it with "point source pollution." A point source of water pollution is defined in Section 17-0105 of the Environmental Conservation Law as:

any discernible, confined, and discrete conveyance, including but not limited to, any pipe, ditch, channel, tunnel,

conduit, well, discrete fissure, container, rolling stock, concentrated animal feeding operation, landfill leachate collection system, vessel or other floating craft from which pollutants are or may be discharged. This term does not include return flows from irrigated agriculture or agricultural storm water runoff.

In contrast, nonpoint source may be an areawide source or many sources distributed diffusely which cumulatively contribute to water quality degradation. The characteristics that generally distinguish point and nonpoint sources are shown below in Table I-1.

Some sources may contribute pollutants both by point and nonpoint pathways. For example, individually-owned septic tanks could be collectively regarded as nonpoint sources of groundwater pollution. However, an individual septic tank which discharges directly to a waterbody would be considered a point source.

TABLE I-1

| POINT SOURCE POLLUTION | NONPOINT SOURCE POLLUTION |
|--|--|
| - Pollutants discharged from a single source at a discrete point. | - Pollutants entering water at many locations from many sources, distributed diffusely over an area. |
| - Pollution can feasibly be abated and/or controlled through regulatory permits, inspections, monitoring and compliance processes. | - Usually best prevented or remediated by modifying activities, practices or operations on the land, or by changing land use activities either through the use of financial incentives, voluntary compliance, or regulation. |
| - Usually controlled through use of wastewater treatment technologies to remove pollutants before discharge. | - Usually controlled by reducing or preventing availability, release or transport of pollutants that adversely affect water quality. |
| - Usually associated with the use and disposal of water for industrial, commercial or municipal purposes. | - Usually associated with runoff from precipitation events or with movement of groundwater. |

Pollution from most nonpoint sources occurs in response to hydrologic events. Because there is no way to eliminate runoff from the natural hydrologic cycle, there will always be nonpoint pollution in human inhabited areas. Contaminants transported in overland runoff during and following a storm event usually are characterized as nonpoint if they enter a waterbody diffusely, or as point if they enter at a

discrete stormwater discharge point. For example, pesticides and fertilizers applied on large areas of land are considered nonpoint pollutants if they migrate to surface or groundwater.

Airborne pollutants, including contaminants responsible for acid rain and particulates transported by wind, also are characterized as nonpoint. Although

these pollutants are best controlled at their emission points by air quality programs, their adverse impact on water quality demonstrates the need to include air quality programs as part of New York's nonpoint source management program.

Table I-2 lists by source category various nonpoint sources of pollution affecting surface and groundwater in New York State. These categories are a slight variation on the list the EPA provided in its 1987 nonpoint source program guidance.

The control and prevention of nonpoint source impacts on the state's waters requires a different approach from that used with point sources of pollution. Those involved with control of a point source include only a few entities: the source owner (private or public) and the regulating institutions. Managing nonpoint sources, on the other hand, calls for the participation of a variety of players. Chapter II describes the partnerships between the government agencies and nongovernment organizations involved with the control of nonpoint source pollution in New York. The great variety of sources, the range of expertise needed to deal with them, and the distribution of legal authority and accountability all contribute to the need to share the task.

Nonpoint source pollution usually is best prevented or remediated by employing one or more management practices. A management practice is a means of preventing or reducing the availability, release or transport of substances which adversely affect surface and groundwaters. It is a practice used to prevent or reduce the impact of nonpoint pollutants usually from a specific source category.

New York has developed a series of ten Management Practices Catalogues each containing management practices for a particular source category. From this list of tested and approved practices, the best practice should be selected and used by individuals or groups wherever needed to diminish the impact of nonpoint source pollution. They can be used without a formal planning process or without an identification of a specific problem. They make good environmental sense. Use of

appropriate management practices helps build environmental responsibility.

B. Activity Associated with Nonpoint Source Implementation in New York Since 1990

1. Implementation of the 1990 NPS Management Program

The 1990 Management Program described the program's foundation in the federal 208 program of the 1970s and the Continuing Planning Process of the 1980s and early 1990s. As part of the Continuing Planning Process, the Nonpoint Source Assessment Report and Nonpoint Source Management Program were developed in a public process involving 100 representatives of agencies, industries and organizations. The NYSDEC by virtue of its statutory authority for the management of water resources and control of water pollution in the State, has assumed the lead responsibility for control of nonpoint source pollution. Since 1990, the Division of Water has continued to maintain the nonpoint source problem inventory (now the Priority Waterbodies List), develop guidance documents on topics such as management practices and watershed planning, and coordinate activities with other involved agencies, primarily through quarterly meetings of the NPSCC. The following review of past years' work, starting with the implementation of the 1990 NPS Management Program, serves as a point of departure for this NPS Management Program Update.

The 1990 Management Program contained an implementation schedule that listed recommendations for the next four years. The implementation schedule consisted of recommendations for each of thirteen categories of nonpoint source pollution. They are listed in Chapter V of the 1990 NPS MP. Of the 72 recommendations, 23 were fully achieved, 31 were partially achieved, 5 were revised, and 13 were not achieved. In some cases, DEC had the primary responsibility for implementing recommendations but in others, other agencies took the lead.

TABLE I-2
Nonpoint Sources

- | | |
|---|---|
| <ul style="list-style-type: none"> • <u>Atmospheric Deposition</u> <ul style="list-style-type: none"> - Acid rain - Dry particulates • <u>Agriculture</u> <ul style="list-style-type: none"> - Row crops/Grain crops - Orchards/vineyards - Pasture land/overgrazing - Barnyards - Manure spreading - Fertilizer application - Pesticide application - Livestock access to streams - Improper manure storage - Milking center waste - Feed storage areas • <u>Construction</u> <ul style="list-style-type: none"> - Highway/road/bridge - Land clearing/development • <u>Contaminated Sediment</u> <ul style="list-style-type: none"> - Dredging - Resuspension of toxic or hazardous substances • <u>Hydrologic Habitat Modification</u> <ul style="list-style-type: none"> - Stream channelization - Dredging - Flow regulation/modification - Removal of riparian vegetation - Streambank modification/destabilization - Surface impoundments • <u>Land Disposal</u> <ul style="list-style-type: none"> - Sludge (disposal of septage/sludge from astewater treatment) - Landfills (solid waste disposal) | <ul style="list-style-type: none"> • <u>Leaks, Spills & Accidents</u> <ul style="list-style-type: none"> - Petroleum handling and storage - Hazardous chemical handling and storage • <u>On-site Wastewater Systems</u> <ul style="list-style-type: none"> - Nutrient loading - Pathogen release • <u>Roadways and Right-of-Way</u> <ul style="list-style-type: none"> - Storage and handling of deicing agents and abrasives - Storage and handling of Pesticides/herbicides • <u>Resource Extraction/Exploration/ Development</u> <ul style="list-style-type: none"> - Surface mining - Dredge mining/spoil disposal - Petroleum exploration activities (brine solutions and sediment associated with gas and oil drilling operations) • <u>Silviculture</u> <ul style="list-style-type: none"> - Logging adjacent to streams - Skidding - Logging road construction/treatment/maintenance - Improper landing location • <u>Urban Runoff</u> <ul style="list-style-type: none"> - Impervious surface (contaminants from streets, sidewalks, parking) • <u>Other</u> <ul style="list-style-type: none"> - Saltwater intrusion resulting from overpumping / inter-basin transfers - Natural (ambient conditions) - Marinas |
|---|---|

One of the most significant recommendations that was achieved, was the development of the SPDES General Permit for stormwater runoff from construction activities. The January 9, 1998, draft EPA Phase II Stormwater Regulations has resulted in DEC having to revise much of its stormwater program including the SPDES General Permits for stormwater, both construction and industrial. This is discussed further in the Construction and Urban Runoff sections of Chapter V.

Highlights of other recommendations that were fully achieved include developing a procedure for counties to use in preparing water quality strategies, producing a handbook that describes a watershed planning process for control of nonpoint source pollution and developing a series of 10 management practice catalogues (summarized in Appendix B) for each significant category of nonpoint source pollution in New York.

Cooperation of local agencies such as Soil and Water Conservation Districts or county health departments has been required to implement many of these programs. Organizations such as the New York State Association of Conservation Districts and the Soil and Water Conservation Society have also been called on to assist in implementation.

The Division of Water published status reports in 1991 and 1995 to briefly describe progress in implementing the 1990 NPS Management Program. These documents included descriptions of the NPSCC, the guidance materials developed to address stormwater runoff and erosion/sediment control, the management practices catalogues and other activities, including training sessions and distribution of targeted outreach materials. The reports also gave updated assessment information and described funded implementation projects.

2. NPS Implementation Projects

New York's nonpoint source implementation grant projects are both federally and state funded. Table I-3 shows information about the first four rounds of

NPS implementation grant projects funded through DEC.

In addition to the non-agricultural projects in Table I-3, 33 nonpoint source projects were selected for funding in the first three rounds of the agricultural nonpoint source program, totaling nearly \$1.5 million. This program is administered under the NYSSWCC (a.k.a. the State Committee, it exists within the Department of Agriculture and Markets).

| TABLE I-3 NONPOINT SOURCE IMPLEMENTATION PROJECTS FUNDED THROUGH DEC | | |
|---|----------------------------|-------------|
| Calendar Year of Contract Awards | No. of Projects | Cost |
| '92 | 7 | \$300,000 |
| '94 | 28 | \$950,000 |
| '95 | 28 | \$1,500,000 |
| '97 | 51 | \$2,575,000 |

The NYSSWCC funded (1997-1998) an additional 65 agricultural projects selected from among the responses to their Round 4 request-for-proposals. Natural Resources Conservation Service (NRCS) funded Environmental Quality Incentive Program (EQIP) projects totaling \$3,495,000 in 24 Priority Areas with 1997 funds; and \$4,560,000 in 16 Priority Areas with 1998 funds.

The 1996 Bond Act selected 90 projects in SFY '97-98 in five categories for funding. \$5,647,853 went to 38 nonpoint source projects (both agricultural and non-agricultural categories).

3. Coastal Nonpoint Pollution Control Program

The Coastal Zone Act Reauthorization Amendments of 1990 (CZARA) included a section devoted to coastal nonpoint pollution control, now

known as Section 6217. This federal legislation requires New York and about 30 other states and territories with approved coastal management programs to develop and implement programs to control nonpoint pollution to restore and protect coastal waters.

The central purpose of Section 6217 is to strengthen the links between federal and state coastal zone management and water quality programs. Another purpose is to enhance state and local efforts to manage land use activities that degrade coastal waters and coastal habitats.

At the federal level, the program is administered jointly by EPA and the National Oceanic and Atmospheric Administration (NOAA), respectively, the federal water quality and coastal management agencies. This approach is echoed at the state level, where NYSDEC and the Department of State's (DOS) Division of Coastal Resources are jointly responsible for program development and implementation. The two agencies entered into a partnership (through a Memorandum of Understanding) to develop New York State's Coastal Nonpoint Pollution Control Program Document.

The most significant change which 6217 represents is that the program must be "enforceable," moving beyond the traditional voluntary approach to addressing nonpoint pollution.

Congress required EPA and NOAA to develop guidelines addressing the various types of nonpoint pollution. EPA and NOAA divided nonpoint pollution into six categories: agriculture; forestry; marinas; hydromodifications (dredging, dams, etc.); urban (including many types of development such as roads, bridges, buildings, and onsite waste disposal systems), and wetlands. Within each of these source categories, the federal agencies defined "management measures," which are the goals specific to each source of pollution. For example, a management measure for the section dealing with marinas requires that fueling stations be designed to allow for ease in spill cleanup.

The 6217 program accommodates different conditions by requiring that management measures be enforceable, but allowing flexibility in which specific practices are used. For example, for the marina fueling station management measure mentioned above, several specific practices would allow achievement of the measure, such as requiring the preparation of a spill contingency plan and initial siting so that spills will be confined to a limited area. In essence, the management measures are goals that are to be achieved, while the practices are specific possible ways to achieve the goal. This split between enforceable measures and a range of possible practices allows the states flexibility in achieving the goals.

The EPA and NOAA guidance lists 57 management measures in the six source categories. DEC and DOS have determined, after a review of existing programs, that about two thirds of these management measures are already in place in New York State. Such programs as waste oil recycling and wetland protection programs already achieve many of the goals of the 6217 program.

Given the wide range of programs and agencies involved in nonpoint pollution management in New York, DEC and DOS have purposely decided to build on existing programs wherever possible. As an example, both the marina and hydromodification categories require the evaluation of possible impacts before new actions are begun. In both of these instances, state permit programs already exist, so it seems logical to incorporate nonpoint pollution control into these programs rather than develop new permit systems.

Issuance of final conditional approval to New York State (November 18, 1997) indicates that NOAA and EPA agree with this approach and recognize that, New York's existing programs (primarily those same programs described in Chapter V of this document) will adequately address coastal nonpoint pollution, with exceptions explained below.

The conditions of the approval focus on what New York needs to do to achieve the remaining Section

6217 management measures. At the end of the description of each NPS category in Chapter V several paragraphs are included to summarize NOAA/EPA's conditions to achieve management measures for related Section 6217 Source Categories. Some of the conditions require the state to develop a strategy to meet certain aspects of a management measure. Other conditions require that mechanisms and authorities are set in place to provide broad coverage by a specific date. New York's strategies for four of the federal conditions are in Appendix D.

Upon final approval, the New York State Coastal Nonpoint Pollution Control Program (CNPCP) (including strategies for meeting conditions) will be incorporated into the State's overall Nonpoint Source Management Program.

4. Source Water Assessment

The NYSDOH is responsible for maintaining a potable supply of drinking water for the citizens of New York State. Drinking water can be threatened by point and nonpoint source contamination. One development in the DOH program since 1990 is the Source Water Assessment Program. NYSDOH responsibilities under the Safe Drinking Water Act (SDWA) are also included in the PPA.

As required in the 1996 Amendments of the SDWA, source water assessments are being conducted at all public water supply sources. The goal of these assessments is to provide meaningful information to direct ongoing source water protection efforts and the overall drinking water program in New York State. The assessments consist of: source delineation; identification of significant contaminant sources in the source area; and presentation of the assessments to the public. Efforts to identify potential sources of contaminants and assess a system's associated vulnerability will strive at assembling useful information, both existing and new, that will address the greatest threats to drinking water, future source protection efforts, and related regulatory decisions. Source water delineation will be an iterative process of focusing

on an area, looking for problems, analyzing how real the risk is, and refining the above.

C. **Performance Partnership Agreement**

State Fiscal Year 1996-1997 was the start of the Performance Partnership Agreements (PPAs) under the National Environmental Performance Partnership System (NEPPS). The parties to the 1996-97 agreement are DEC and EPA.

One of the goals of a PPA is to strike a balance between maintaining statewide base programs and solving geographic and pollutant-specific problems as needed. These geographic and pollutant-specific problems would be addressed by all major stakeholders using Community Based Environmental Protection (CBEP). The lead agency would be EPA for international and interstate waters or where EPA has a statutory or programmatic mandate; DEC for intrastate waters, except where nongovernmental entities or sub-state governmental agencies express an interest in taking the lead. Of particular interest to EPA/DEC are CBEP projects addressing problems placing disproportionate burdens on low income or minority communities.

Funding to implement the Agreement is from a combination of a Performance Partnership Grant (PPG), multiple geographic and project grants as well as state funding to DEC for water quality programs.

The majority of the PPA describes how DEC will fulfill its part. The partnership program calls for the State to:

- ! undertake an environmental and programmatic self-assessment, identifying program strengths, weaknesses, and opportunities for improvement.
- ! identify the action plan for maintaining and improving the State's surface and ground water resources, detailing specific actions and approaches the State proposes to take in the coming year.

- ! identify and select appropriate environmental and program performance indicators.
- ! assess its basic fiscal accountability.
- ! identify other stakeholders and potential partners willing to join forces to protect and enhance New York's water resources.
- ! share with the public, information about environmental conditions, goals, priorities, and prior year's achievements.

Each year, as part of the PPA, a determination will be made regarding what portion of the total funds available to New York State for water quality programs will be allocated for NPS activities.

D. Five Year Update of the NPS Management Program

1. Watershed-based Program

Since the development of the 1990 NPS Management Program, a variety of programs, laws, regulations and committees have addressed the impact of nonpoint source pollution on New York's waters. These have included planning efforts, demonstration projects and implementation programs. The most fundamental change in New York's NPS Management Program, as well as nationally, is the move to address nonpoint source pollution and related resource issues on a watershed basis. The major initiatives of the Nonpoint Source Program will continue to make the shift from the more segregated water quality initiatives of the past to an integrated watershed approach.

2. Partnerships

To achieve the goals set in the 1990 recommendations and in the 2000 Long- and Short-Term Goals contained in Appendix E, the actual implementation activities must be carried out by DEC and a variety of other governmental agencies

and programs working together. (See Partnerships, Chapter II).

3. Limitations on Control of Implementation Activities

The commitment of DEC staff or funding resources to water quality programs is an annual management process. With the year-to-year uncertainty in funding from both state and federal sources, DEC is not in a position to commit to performance objectives which depend on future budgets. Annual adjustments to the program may continue to be required based on changing priorities set during the Division of Water's management planning process and in future Performance Partnership Agreements.

DEC has no direct control over priority setting or the budget process for other agencies and therefore cannot make commitments for them. However, DEC has and will use its role as the lead agency for water quality activities in the state to require other agencies that take actions under the auspices of the nonpoint source program to be consistent with program objectives. This coordination has and will be done through memoranda of understanding with appropriate agencies, consistency reviews of federal actions and contracts with regional planning agencies (and/or Soil and Water Conservation Districts) who receive pass-through funding under the Clean Water Act.

CHAPTER II

PARTNERSHIPS

Nonpoint source (NPS) pollution comes from a number of small sources rather than from a single pipe. Because of this fact the types of actions that need to be taken to address the resulting water quality problems will be actions taken by a number of individuals, often on a voluntary basis. The NYSDEC recognized early in the process of preparing the NPS Management Program that control programs will necessarily involve coordinated actions by a number of different agencies and groups. The preface to the January, 1990, NPS Management Program says that:

"In many cases, the solution to nonpoint source problems will involve coordination and cooperation of agencies from all levels of government as well as the public."

NYSDEC has continued to use a variety of methods to build and strengthen partnerships, both at the state and local levels. Examples of the committees, task forces, coalitions and programs that support and encourage these partnerships will be described in this chapter.

A. New York Nonpoint Source Coordinating Committee (NPSCC)

Building on the cooperative effort that developed in the preparation of the NPS Management Program, New York created a NPS Coordinating Committee. This committee consists of 18 federal, state and local agencies that have a key role in the control of NPS pollution in the state. Quarterly meetings of the Coordinating Committee are open to any agency or group that would like to participate. To further boost the concept of a cooperative effort, the chairmanship of the committee rotates among the member agencies.

The NPSCC was created to:

1. Facilitate communications among federal and state agencies and organizations involved in NPS programs;

2. Identify cooperative activities that can assist each in achieving its goals, while promoting an overall New York NPS program;
3. Coordinate programs of state and federal agencies and organizations to better utilize existing resources;
4. Serve as a model for local decision makers involved in implementing the NPS program.

The NPSCC meets quarterly. Information exchange is a key component of each meeting. Agencies use the committee to introduce new initiatives, to explain new or amended laws that affect NPS pollution and to seek input from others on projects that are under consideration.

The NPSCC serves as an arena to keep participating agencies communicating and sharing ideas with one another. It is seen as a major component to the overall strategy to address NPS pollution in New York.

B. NPSCC Steering Committee

In January, 1996, the NPSCC Steering Committee was formed. A subset of the NPSCC, the group's primary functions are to:

1. Serve as a guidance group for the NPSCC;
2. Provide direction to each agency involved with NPS implementation (i.e. offer guidance on the best use of cooperative agreements); and
3. Provide a general opportunity to raise interagency issues.

This Steering Committee consists of the state and federal agencies which have statutory statewide

responsibilities in implementing NPS pollution controls in New York. The following agencies are members of the Steering Committee:

- ! NYS Dept. of Agriculture and Markets
- ! NYS Dept. of Environmental Conservation
- ! NYS Dept. of Health
- ! NYS Dept. of State
- ! USDA Natural Resources Conservation Service
- ! Cornell Cooperative Extension
- ! US Environmental Protection Agency
- ! NYS Soil and Water Conservation Committee

A primary role of the committee has been to discuss funding requests submitted by each of the involved agencies and to make recommendations on how section 319 funds should be suballocated to each agency. In the future this group will be called upon to again make recommendations on the direction of the NPS program, as they did with the 2000 Long- and Short-Term Goals.

C. County Water Quality Coordinating Committees (WQCCs)

Based in part on the success at the statewide level of the NPSCC, DEC in conjunction with the New York State Soil and Water Conservation Committee (NYSSWCC or State Committee) fostered the creation of committees to coordinate activities at a local level. Counties were selected as the organizing unit for these committees to provide well-defined areas of jurisdiction for the agencies likely to be involved. Each county group was asked to develop a strategy that would guide water quality activities in the county. DEC and the State Committee provided written guidance to the county WQCCs on developing and implementing these water quality strategies. While this guidance offers suggestions on which agencies should be invited to participate in the committee, no attempt was made to require a particular make up of the committee. The intent was to provide flexibility to each county to determine the exact make up of their committee.

The strategies were to form a blueprint for action in each county. To ensure some level of consistency for the county strategies, the State Committee and DEC came up with a set of minimum requirements. At a minimum, county strategies needed to include:

- C a mission/purpose statement
- C a list of prioritized water quality problems or concerns
- C a description of the committee's role in implementing the strategy.

Small grants encouraged county Water Quality Coordinating Committees to develop their strategy and then to implement some elements of it. Initial grants of \$4,750 were made available to every county. Fifty-five of the fifty-seven eligible counties completed their strategy in time to qualify for this initial payment.

In subsequent years, smaller sums have been made available to counties, \$2,500 in FY94 and, in FY95, grants of \$4,000 in two tiers. Using FY96 funds, grants of \$1,000 were available for every county. Additional grants of up to \$5,000 per county were made available on a competitive basis. For FY97, NYSDOH added money to the pot available to county committees. In return, the county WQCCs are to assist with the Drinking Water Source Water Assessment Program. Once again each county can receive a grant of \$1,000. Additional grants of up to \$5,000 per county will be available on a competitive basis.

D. Water Management Advisory Committee (WMAC)

Many Division of Water (DOW) programs need sustained involvement from informed individuals outside the Division so that the Division can understand how its programs affect various groups across the State. The WMAC helps fulfill this need for the Nonpoint Source Program.

The WMAC has been a partner with the DOW since April, 1980. The committee consults with the Division on a broad spectrum of water program issues, including nonpoint source pollution. It consists of 26

members and their alternates representing academic, economic, environmental and government interests. In addition, there are six liaisons representing EPA and key state agencies. Beyond this core group, individuals interested in being involved with DOW programs have become corresponding members. Corresponding members are kept up to date on water issues and WMAC activities and can send their written comments to the Division.

Over the years, WMAC members have discussed nonpoint source pollution as it relates to various water programs, including groundwater, community-based environmental protection programs and a watershed approach to water management. Recently the WMAC has discussed this update to the Nonpoint Source Management Program. WMAC members were reviewers of the draft document. In the future, the DOW will continue to consult with WMAC members on nonpoint source pollution issues.

E. Watershed Partnerships

Ultimately, control of most nonpoint source pollution will occur locally, rather than at the state and county levels. Actions will frequently be at a watershed level (see Chapter VI for a discussion of watershed planning). There are many examples of groups and individuals in New York with diverse interests coming together to develop and implement a plan of action for their particular waterbody. Some examples of the many watershed groups that exist in New York are the Boquet River Association in Essex County, the Canandaigua Lake Watershed Task Force in Ontario and Yates Counties, the Keuka Lake Foundation Watershed Project in Yates and Steuben Counties, and the Upper Susquehanna Coalition (also see Appendix E, Key Element II).

There have been a variety of materials produced about watershed planning. Both NYSDEC and the Natural Resource Conservation Service (NRCS) have outlined watershed planning processes, discussed in Chapter VI (also see Appendix E, Key Element V).

In addition, some materials focus on building the partnerships needed to develop a watershed plan. Cornell University's booklet entitled "Watershed Conflict Resolution: Some Guiding Principles" explores the fact that conflicts often occur in watershed

planning and suggests ways to resolve them. Cornell also produced a video tape that serves as a companion to the brochure. Another document entitled "Building Local Partnerships" was produced as part of the Know Your Watershed Campaign coordinated by the Conservation Technology Information Center in Indiana. This document explains why local partnerships are important, explores how partnerships develop, and provides suggestions on how to build consensus. The theme of DEC's 1997 Water Week was "Building Watershed Partnerships." The Water Week packet included a selection of partnership building materials targeting local government officials and educators among others.

Certain watershed partnerships cover a large geographic area, and involve multiple states or nations. These often address concerns related to a waterbody that has been identified on a federal or state level as being important. These waterbodies may be identified through special designation acts (such as the federal law designating Lake Champlain as a priority) or by acceptance into a special planning program (such as Long Island Sound as part of the National Estuary Program). Partnerships have been established to direct these programs, in the form of Management Conferences for Lake Champlain and Long Island Sound. Participants in the Management Conferences were specified by the laws establishing each of the programs. In each case, the Management Conference provided direction for the development of a management plan for the waterbody of concern.

The Management Plans developed for each of these waterbodies of statewide significance identify priorities for implementation (either in terms of pollutants or sources). These priorities are being used to guide funding decisions both by individual management conferences and for statewide programs (such as the Clean Water/Clean Air Bond Act).

NYC Watershed Protection and Partnership Program:

The New York City water supply provides drinking water to some nine million people, about half the population of New York State. The Rules and Regulations for the Protection from Contamination, Degradation and Pollution of the New York City Water Supply and Its Sources (NYC Watershed

Regulations) were developed to protect and improve water quality by providing protection to reservoirs, reservoir stems, controlled lakes, watercourses (including intermittent streams) and wetlands within the boundary of the NYC water supply watershed in the eight counties of Delaware, Dutchess, Greene, Putnam, Ulster, Schoharie, Sullivan, and Westchester. Nonpoint pollution sources are being controlled through the application of strict performance standards, through the review and approval process, and by the prohibition of certain land use activities established in the NYC Watershed Regulations. The NYC Watershed Regulations require NYCDEP review and approval for subsurface sewage treatment systems and storm water pollution prevention plans and prohibit impervious surfaces within limiting distances to certain water bodies. Non-regulatory elements of the NYCDEP's nonpoint source pollution control strategy include New York City's Watershed Protection and Partnership Programs. Through the funding of partnership programs, including storm water retrofits, sand and salt storage facilities, forestry management program, stream management program, and public education, the City reduces existing and future sources of nonpoint pollution in its water supply watershed.

Great Lakes Partnerships:

Within the Great Lakes watershed, 43 Areas-of-Concern (AOC) have been identified; 6 in New York. AOCs are located where major tributaries entering the Great Lakes are impaired, restricting beneficial uses of the waterbodies. Under the US/Canadian Great Lakes Water Quality Agreement, sources of water quality problems within these Areas-of-Concern are being identified and addressed by Remedial Action Plans (RAPs).

RAPs identify water use impairments, their causes and sources, and determine what remedial activities are needed to restore and protect beneficial uses of the waterbody. A number of formal and informal partnership agreements and memorandums of understanding are needed to implement these remedial activities such that all stakeholders' concerns are addressed. RAPs use an ecosystem approach, and public participation to assure a comprehensive solution.

Lake Ontario Partnerships:

Efforts began in 1996 to establish Basin Teams in the Lake Ontario basin. By creating this network of partners at the regional and local levels, DEC aims to foster cooperation and collaboration among existing groups (for example: Remedial Action Plan Committees, Water Quality Coordinating Committees, Regional Planning Councils, SWCD, NRCS, citizen-based watershed groups, such as the Finger Lakes-Lake Ontario Watershed Protection Alliance (FL-LOWPA), and municipalities) working to conserve and protect local water bodies in the Lake Ontario basin. Through enhanced communication and collaboration Basin Teams would: promote local and regional coordination when solving local watershed problems; provide useful information about water quality improvements in local watersheds; promote connections between local actions and Lake Ontario ("Act Locally...Think Lake Ontario") and increase involvement in and support of the Lake Ontario Lakewide Management Plan (LaMP) and other programs that manage and conserve New York's water resources.

F. Other Partnerships

In some cases partnerships have been formed to address a particular source category rather than a watershed. The best example of this is the coalition of agencies and groups headed by the NYSSWCC and the NYS Department of Agriculture and Markets (DA&M), which have come together to establish a plan for addressing agricultural sources. Through the Agricultural Environmental Management (AEM) initiative, a plan is underway to identify problems coming from agricultural sources and address them in a coordinated fashion. This effort has led to the formation of a steering committee to direct activities, an outreach subcommittee to make recommendations associated with education/outreach activities and the hiring of an Outreach Coordinator to carry out education/outreach activities.

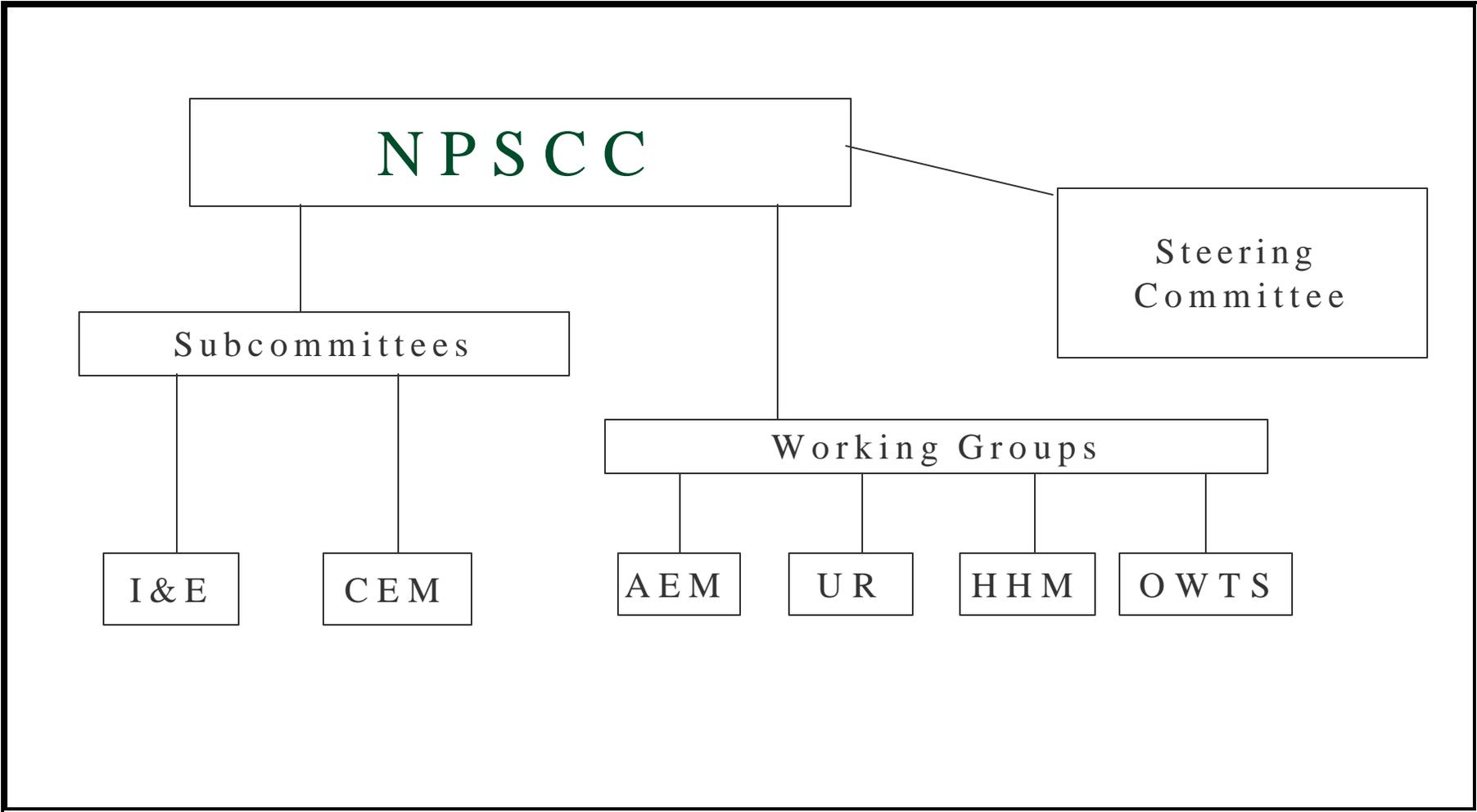
The AEM initiative has used lessons learned from the New York City watershed agricultural program and from the Skaneateles Lake watershed program to guide the development of a statewide program. In addition, much has been learned from pilot efforts in the Keuka Lake watershed and Wappingers Creek watersheds. Overall, AEM seeks to establish a

coordinated framework for protecting and improving the environment off and on the farm, while maintaining the viability of farming as a commercial enterprise. More information is given in Chapter V and Appendix E, Key Element I, under Agriculture.

G. Implementation Steps for Partnerships

1. Continue the operation of the New York Nonpoint Source Coordinating Committee.
2. Where appropriate, develop Memoranda of Understanding between DEC and other agencies to coordinate water quality improvement efforts. The MOUs will help set direction for targeting of cost-sharing funds as well as technical assistance, technical training and outreach efforts to solve documented water quality problems.
3. Continue to support the county water quality coordinating committees to encourage their operation in every county.
4. Encourage watershed partnerships; provide support to help watershed groups prepare watershed plans (e.g. directly assisting in plan development, publicizing and providing training in the use of existing planning materials, or developing new materials).
5. Use Management Plans developed for particular waterbodies of concern to guide implementation efforts in those watersheds; provide financial support for implementing those plans.
6. Initiate actions to bring more environmental and producer groups into the process of determining methods to address nonpoint source pollution.

Nonpoint Source Coordinating Committee Structure



CHAPTER III

IDENTIFYING AND EVALUATING NONPOINT SOURCE PROBLEMS

Surface Water Quality

A. Introduction and Background

As the water pollution control efforts of the 1970s significantly reduced water quality problems caused by point source discharges, more recent environmental programs, including those of the NYSDEC Division of Water, shifted focus to address nonpoint sources of water pollution. The most recent evaluation of water quality problems in New York State shows that nonpoint sources currently affect considerably more waters than point sources. Specifically, various nonpoint sources are cited as the primary cause of 94% of the water quality impairments for rivers in the state, 87% of lake and reservoir impairments, 95% of Great Lake shoreline problems and 67% of restricted bays and estuaries. Clearly, the management of nonpoint sources is critical to the success of NYSDEC water pollution control.

After documenting the presence of water quality problems, the next steps are identification of the specific contaminant(s) or disturbance(s) that causes these problems, and determination of their sources. The most current information addressing primary sources of water quality problems is outlined in Figure III-1 (This is also Figure 2 from the 1996 Priority Waterbodies List (PWL)), where it appears in color.) The first five categories shown are point sources. Nonpoint sources follow starting with acid rain.

In terms of total waterbody size (i.e., acres or miles of shoreline) affected, agricultural activities, toxic

sediments, urban runoff and failing on-site septic systems are the most significant nonpoint sources in the state. (About 85% of the total lake acreage affected by *unknown source* refers to the unknown source of contamination resulting in the fish consumption advisory in Lake Champlain.) Additionally, and in terms of the severity of the problem, acid rain and deicing agent (salt/sand) storage and application are also major sources associated with precluded water uses. Precluded segment percentages are shown by the darkest portion of the bars in Figure III-1.

Clearly, key components of the Division of Water Nonpoint Source Management Program include the accurate identification of water quality problems, including groundwater issues, throughout the state and the evaluation of the causes and sources of these problems. These components require interdivisional, regional, and local collaboration and are further discussed in this section of the plan.

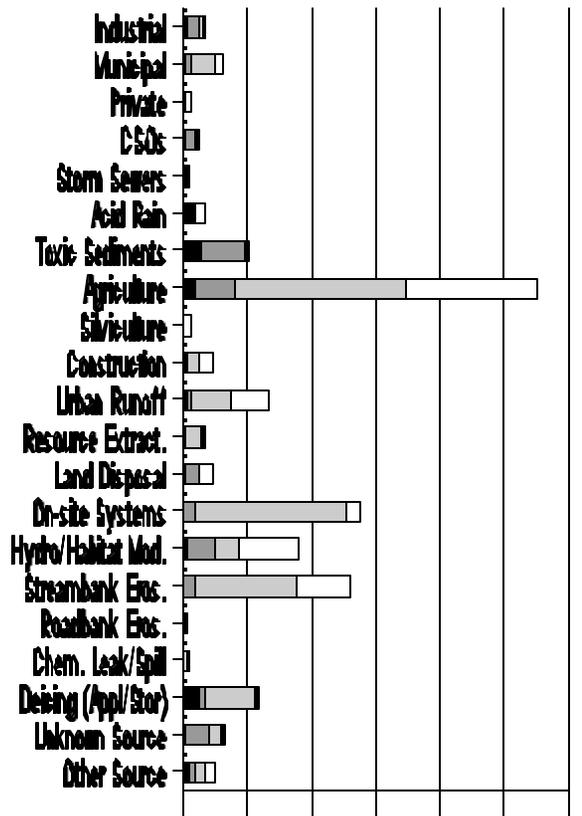
Mandate

The 1989 amendments to the New York State Environmental Conservation Law (Article 17) creating a New York State Nonpoint Source Water Pollution Control Cost-share Program also required the NYSDEC to produce an inventory of waterbodies affected by nonpoint source pollution. According to Section 17-1405, DEC (in cooperation with the State Soil and Water Conservation Committee) was required to prepare an initial report by January, 1991 that:

Figure 3-1
Primary Sources of Water Quality Impairment (by severity)

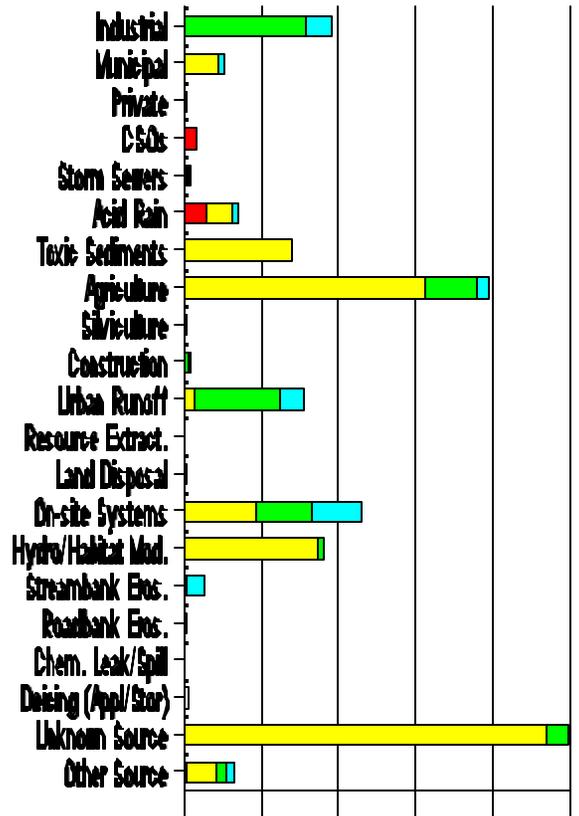
The series of bar charts on this page illustrate what sources are most frequently cited as the *primary* source of water quality impairments in New York State (as a percentage of the total waterbody area on the PWL). For each source, the frequency data is further segregated by the *severity* of water quality problem (precluded, impaired, stressed, threatened). Separate charts are presented for three of the five waterbody types. Not shown are Great Lakes shoreline segments, dominated by the Lake Ontario shoreline segment (impaired by contaminated/toxic sediments resulting in a fish consumption advisory); and ocean coastline segments, not presented since there is only one segment of this waterbody type. **KEY:** Precluded - *black*; Impaired - *dark shade*; Stressed - *light shade*; Threatened - *white*.

River Segments

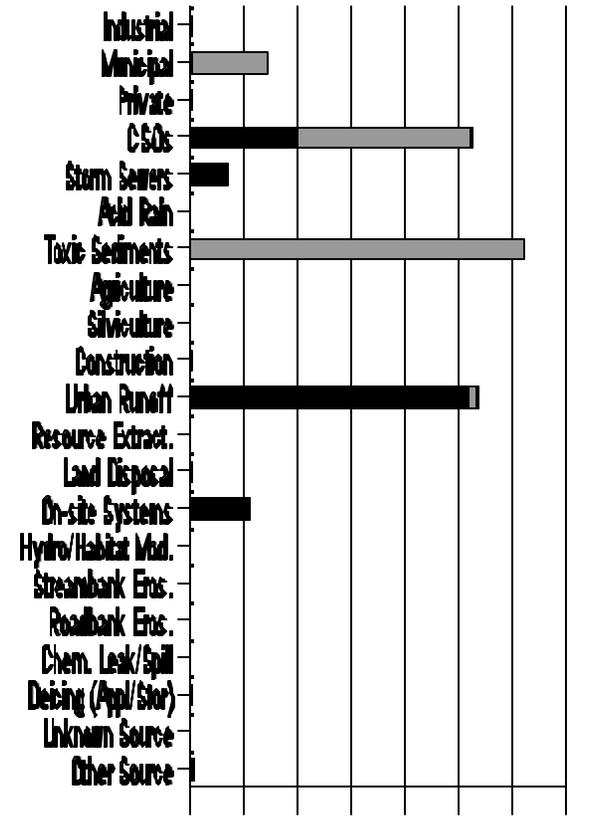


Percent of Total
 Waterbody Area
 on the PWL

Lakes/Reservoirs



Bays/Estuaries



- “a. identifies those waterbodies within the state which, without additional action to control nonpoint sources of pollution, cannot reasonably be expected to attain and maintain applicable water quality standards; and
- b. identifies categories or subcategories of nonpoint sources or particular nonpoint sources which add significant amounts of pollution to each waterbody identified above.”

The law further states that this assessment was to be updated at least every five years. The PWL serves as this assessment.

To a large extent, the regularly updated nonpoint source assessment drives the implementation of nonpoint source pollution control programs. Priorities for program development and for watershed planning are established using information contained in the assessment. Therefore, the assessment must enlist many partners both inside and outside NYSDEC in order to provide an accurate and complete description of nonpoint problems and their sources.

Nonpoint Source Assessment History and the PWL

Every waterbody in the state has been classified according to its *best use*. For the purposes of the PWL, this list of uses has been expanded somewhat. Specific standards and conditions correspond to some of the listed uses. Other uses (e.g., aesthetics) are more subjective and do not lend themselves to precise criteria. Nonetheless, for a waterbody to be included on the PWL, a specific use of the waterbody must be restricted or threatened.

The extent, or seriousness, of water quality problems in a waterbody can vary as well. For any waterbody segment, the effects on its uses are determined and assigned, in order of

increasing severity, as *threatened*, *stressed*, *impaired* and *precluded*.

When first compiled, the surface water information for the Nonpoint Source Assessment Report was based primarily on the Division of Water's Priority Water Problem (PWP) List, an inventory of those surface waters in New York State that either cannot adequately fulfill their classified best use (as defined by regulation) or have some lesser problem that damages their environmental integrity. The former are the precluded and impaired segments, and the latter are the stressed and threatened segments. The PWP List, first published in 1983, was compiled by NYSDEC Division of Water and Fish and Wildlife staff. Early editions of the PWP List focused primarily on those waters where point source discharges caused an impairment of a specific designated use (drinking water supply, swimming, fishing).

Because the Nonpoint Source Assessment Report and the PWP List both focused on tracking water quality problems in the state, the two efforts were eventually merged. In 1991 the breadth of information reported in the PWP List was expanded to accommodate information concerning nonpoint source pollution problems. County Soil and Water Conservation Districts, with DEC support, conducted a public outreach program for the identification of waterbody problems. The number of segments on the 1991 PWP List nearly doubled from the 1988 edition to more than 1400 segments, most of which were the newly added categories of severity: *stressed* and *threatened*.

The 1993 PWP List showed only a small increase in the number of segments. As with other editions of the list, the segment information was evaluated by Division of Water and Division of Fish and Wildlife staff. However, county Water Quality Coordinating Committees (WQCCs) were now solicited for input regarding the information on the 1991 list and/or for nomination of new segments to be considered for addition to the list in 1993.

The 1996 version of the list features a number of changes from previous editions of the PWP List. The first, and most obvious, is a change in name to the Priority Waterbodies List (PWL). This change was made in order to indicate that some waterbodies in the state are *priority* waters, although they may not currently exhibit any water quality *problem* (e.g., drinking water supplies threatened by proposed development). Other changes reflected in the 1996 PWL include a greater focus on drainage basins/watersheds as opposed to political boundaries, an attempt to evaluate the resolution potential of segments' problems, and the incorporation of *fish consumption* as a designated use.

Since the beginning of the Nonpoint Source Management Program, the Priority Waterbodies List (or, prior to 1996, the PWP) has been an integral tool of the program. In the future the PWL and the PWL update process will continue to play a significant role in the identification, evaluation and addressing of nonpoint water quality problems.

Over the years, attempts to incorporate groundwater into the PWL proved unworkable due to the inherent difference between surface water segments and groundwater. Consequently, in early 1998 a document entitled the "Priority Aquifer List (PAL) Objectives, Worksheet, and Instructions" was developed to initiate a list separate from the PWL. This document identifies groundwater resources that will comprise a list of priority aquifers, and also identifies specific groundwater problems to be addressed by the Division of Water. Development of the PAL is described further in section D under Groundwater Quality later in this chapter.

B. Surface Water Quality and the PWL

In 1997 the NYSDEC Division of Water began revising procedures for updating and maintaining the Priority Waterbodies List (PWL). Both the

structure of the PWL database and the review/update process were revised to bring greater consistency to the information on the PWL and make the list a more effective management tool. By the end of 1997, the Division solicited and evaluated comments regarding proposed changes to PWL database structure and PWL Worksheet, modified the database, and distributed revised worksheets. Existing PWL information was moved into the enhanced database structure in October 1997.

The following sections describe the PWL process as it will be implemented after completion of revisions begun in 1997.

Public Involvement and Input

The PWL is a largely grassroots system of water quality problem identification. The NYSDEC role in this effort is one of balancing top-down management, oversight and support with responsiveness to public input. A thorough and continuing assessment of water quality, as well as eventual improvements to the water quality of the lakes and rivers of the state, depends upon the cooperation and contributions of the County Water Quality Coordinating Committees, the Soil and Water Conservation Districts, county and local governments and citizen volunteers. These groups are more locally focused and can provide the initial screening of waterbodies for actual or potential water quality problems. Many county and regional organizations have recently developed or are currently developing monitoring programs to further address this need. These local groups are also instrumental in the implementation of nonpoint source strategies to correct problems.

The successful management of nonpoint sources depends upon the accurate identification and assessment of water quality impairments due to nonpoint sources. This is accomplished through periodic updating of the PWL. The PWL update process uses all available sources of data and water quality information and is open to a wide audience. In addition to all NYSDEC units and other federal

and state agencies, the process includes the solicitation of information and data from local governments and regional organizations as well as citizen volunteer groups. For the most part, this request for information is handled by the network of County Water Quality Coordinating Committees (WQCCs) through the use of PWL Worksheets.

Such a *grassroots approach* to the identification and assessment components of the Nonpoint Source Management Program reflects local perspectives and knowledge. Additionally this strategy is likely to expand the base of support for the implementation of nonpoint source controls where necessary. However, with many different parties participating and contributing, issues of consistency, objectivity and consensus have to be addressed. This is the primary role of NYSDEC Division of Water staff.

Water quality problems on the PWL are categorized by the degree of effect on the designated use of a waterbody. Detailed descriptions of these severity categories are outlined on page III-9.

Problem Identification: The Update Process

A multi-phase process is used for identifying and documenting problem waterbodies for inclusion on the PWL. The first phase of the PWL update focuses on the review of existing PWL segment information and the *nomination* of any additional new segments for the list. NYSDEC initiates the PWL update process for a specific drainage basin by providing the appropriate WQCCs with a PWL review package, including segment nomination worksheets and the most recent PWL data sheets. This initial review and nomination phase of the process is coordinated by the WQCCs. Each committee invites local agencies, groups and individuals from its county to participate in reviewing existing segments on the PWL and identifying additional water quality problems. Information collected during this phase is forwarded to NYSDEC. Source Water

Assessments will be conducted separately by NYS DOH; this information is also to be incorporated into the PWL process.

Priority Waterbodies List Water Uses

Drinking Water Supply
Shellfishing
Bathing (swimming)
Fishing
 Consumption
 Propagation
 Survival
Boating
Aesthetics

The second phase of the process involves the collection of additional monitoring data and documentation. The PWL review and documentation process has been developed to incorporate and take advantage of various routine NYSDEC monitoring programs, particularly the Rotating Intensive Basin Studies (RIBS). The information collected from the WQCCs during the first phase of the review is used to help focus RIBS and other NYSDEC monitoring efforts on the investigation and additional documentation of water quality problems in the target basin(s). (See Table III-1 on page III-8 for the six-year RIBS schedule.) In addition to NYSDEC monitoring, local/regional agencies and citizen volunteer groups are likely to be involved in the collection of water quality data for the documentation of problems. This approach may also lend itself to coordinated efforts between various other local and NYSDEC monitoring programs.

At the conclusion of the monitoring cycle, DEC Division of Water staff compile and assess water quality data from DEC programs and various other sources (USGS, NYS DOH, SWCDs, local agencies, colleges and universities, volunteer groups). This documentation is added to the

existing information and reviewed. The primary goal of this review is to achieve a consensus among diverse department units regarding the severity of specific water quality problems to be included on the PWL and to assure a level of statewide consistency for the information on the list. This consistency will require careful consideration: does a waterbody segment actually suffer a water quality impairment and does it belong on the list? Segments to be included on the PWL must exhibit a documented restriction of one or more of the waterbody's designated uses. The determination of the severity of water quality problems also requires careful consideration. Where possible, DEC develops guidelines outlining specific thresholds identifying waters that do not support various uses, and the degree to which their uses are restricted.

Following this review, DEC provides a draft copy of the PWL for the drainage basin(s) being updated to the appropriate WQCCs. The WQCCs distribute the draft list to others in their county and coordinate comments to DEC. If further discussion is appropriate, DEC staff meet with WQCCs and other respondents to consider the information on the draft PWL in greater detail, prior to publications of the final PWL document for the target drainage basin(s).

Documentation

The level of information available regarding a water use impairment will vary. Documentation may include the chemical analysis of multiple water samples, a rigorous biological assessment, or modeling studies. However, in some cases, the recognition of the problem is based entirely on perception and professional judgement. The level of available supporting documentation is recorded along with other information about the segment. NYSDEC evaluates whether the documentation is sufficient to definitively establish a water use impairment, and warrant the expenditure of the limited resources. If the documentation of a problem is not sufficient, the segment information

is maintained in the PWL database, but is not included on the published Priority Waterbodies List. A separate list of *Suspected Problem Segments* is issued in conjunction with the PWL. This list helps to highlight waterbodies where additional monitoring (by DEC or other groups) is needed.

Identification of Sources

Once a water use impairment has been sufficiently documented to place it on the PWL, efforts shift to determining the pollutants causing, and sources of, the impairment. In some cases, this requires additional monitoring beyond what was necessary to document the existence of the problem. This monitoring might be part of a watershed study, and may be conducted by NYSDEC or by other parties with NYSDEC guidance.

The variety of tools available to study the waterbody segments include chemical monitoring of the water column, macroinvertebrate or fishery surveys, toxicity tests, lake assessments and habitat evaluations. Investigation may also involve analysis of land use data, use of screening models, trackdown studies, etc. Such efforts may be conducted by NYSDEC central office or regional office staff. However, due to limited staff and resources, other local parties such as the WQCCs, colleges and universities, and lake associations may conduct these studies. If parties outside the DEC conduct monitoring for assessment, their work must be approved by NYSDEC so as to insure consistency and adherence to appropriate quality assurance procedures.

Once the most likely source(s) of a problem has been established, the segment is assigned to the appropriate group to develop a corrective action plan. Within NYSDEC various programs may be assigned responsibility for a segment (regional staff, lake management programs, fisheries, etc.). The progress of these programs toward the elimination of water quality problems is tracked by the Division of Water through the Water Integrated Compliance Strategies System (WICSS), a computer database.

However, the WICSS approach focuses on those problems where there is a likelihood or reasonable potential that the particular problem can be resolved given limited available resources. While local parties are welcome to tackle any problems they feel are priorities, NYSDEC will direct its work and resources toward nonpoint source problems with the greatest potential for resolution, and toward issues where the greatest benefit can be achieved.

Environmental Indicators and Measuring Progress

Managing and, eventually, remedying water quality problems caused by nonpoint sources involves, in most cases, a number of steps. The time from the identification of a problem to the development and implementation of a strategy to address the situation can be lengthy. Furthermore, measurable improvements in water quality related to corrective action can take longer still. While the ultimate goal is water quality improvement, it is useful to measure and report progress related to the identification of problems, causes and sources as well. Progress along this spectrum is tracked for each waterbody segment on the PWL as a performance indicator. This allows for the recording of incremental progress toward the eventual removal of the segment from the list.

To improve documentation of water quality in those streams where there is presently little, if any, monitoring data, the biological component of the division's RIBS Program/ambient surface water monitoring program has been expanded to include comprehensive screening of a much larger number of waterbodies. The expanded biological screening effort relies on rapid on-site macroinvertebrate assessments and serves as an environmental indicator, to determine the ability of the stream to support a healthy aquatic community. The documentation of water quality in previously unassessed waters represents a significant measure of progress, and presents a more complete picture of New York's success in improving water quality.

Reporting

Updated PWL Reports with the assessment of nonpoint source problems are published for two or three of the major watersheds of the state every year; all basins in the state are evaluated within a five-year period. The individual basin reports provide summaries identifying the most significant (i.e., most frequently cited) use impairments, causes and sources for the basin. The basin reports also evaluate progress toward resolution of problems, and comment on the percentage of waterbodies in the basin with documented water quality that supports designated uses.

Regular updating of other NYSDEC publications also contributes to reporting on progress toward the water quality improvement in the state. The periodic NYSDEC Section 305(b) Water Quality Report to Congress provides a summary of information across a variety of programs. The most recent 305(b) report was completed in 1998. At more frequent intervals, the NYSDEC Rotating Intensive Basin Studies (RIBS) Ambient Surface Water Quality Monitoring Program generates and compiles available water quality information for some selected drainage basins in the state each year.

Assessment

For some waterbodies not meeting water quality standards, a water quality assessment is conducted using the total maximum daily load (TMDL) process. The TMDL process takes a water quality-based approach toward achieving water quality standards by establishing allowable loadings of pollutants that can be allocated among pollutant sources. The TMDL method for assessing problems and developing integrated water quality protection strategies focuses on individual pollutants and can be applied to single waterbodies or entire basins/watersheds. It allows for the consideration of all sources of a

Table III-1 Priority Waterbodies List (PWL) Basin Update Schedule

| Year* | Basins |
|---|--|
| 1998 | Black River** (Chemung, St. Lawrence) |
| 1999 | Susquehanna River (Lower Hudson River***) |
| 2000 | Lake Champlain, Atlantic Ocean-Long Island Sound |
| 2001 | Genesee**, Delaware Rivers |
| 2002 | Niagara River-Lake Erie**, Mohawk River |
| 2003 | Allegheny, Oswego-Seneca-Oneida**, Upper Hudson Rivers |
| <p>* <i>Final</i> Priority Waterbodies List to be published in May of the listed year.</p> <p>** The Lake Ontario Minor Tributaries Watershed has been divided among the Niagara River-Lake Erie, Genesee River, Oswego-Seneca-Oneida Rivers, and Black River Basins.</p> <p>*** The Ramapo River and Housatonic River Basins are included in the Lower Hudson River Report.</p> | |

Severity of Water Quality Problem

Precluded

Water quality and/or associated habitat degradation precludes, eliminates, or otherwise does not support a classified use. Natural ecosystem functions may be significantly disrupted. (e.g., fishing ban due to PCB contamination)

Impaired

Water quality and/or habitat characteristics frequently impair a classified use. Also applied when the designated use is supported, but at a level significantly less than would otherwise be expected. Natural ecosystem functions may be disrupted. (e.g., CSOs result in occasional beach closures)

Stressed

Reduced water quality is occasionally evident and designated uses may be intermittently or marginally restricted. Natural ecosystems may exhibit adverse changes. (e.g., occasional concentrations above standards, but no apparent use impairment)

Threatened

Water quality presently supporting designated use and ecosystems exhibit no obvious signs of stress. However, existing or proposed land use patterns have the potential to restrict use or affect the ecosystem. (e.g., residential development proposals in water supply reservoir watershed)

pollutant, regardless of whether it originates from point sources, nonpoint sources, or natural background contributions. Each state is required to develop a list (the 303(d) list) of waterbodies, for which a TMDL analysis can be done. This list is updated every other year.

Problem Prevention

Regular updates of the PWL and the corresponding assessment of waterbody segments affected by nonpoint sources also include provisions to deal with segments that exhibit no current impairment, but may be either (1) showing evidence of a downward trend in water quality, or (2) may be threatened by a specific change in the pattern of land use in the watershed or the intensity of current land use. Such waterbodies are recorded as *threatened* in

the Priority Waterbody List. Further, there is consideration to designate a subset of the *threatened* waters as special protection waters. Special protection waterbodies are highly valued resources where extraordinary efforts are underway to protect water quality (e.g., NYC Watershed). The actions associated with *threatened* segments emphasize increased monitoring and the implementation of known management practices to limit the impact of nonpoint source activities.

In addition, NYSDEC also incorporates into the PWL update/nonpoint source assessment process the tracking and documentation of those waterbodies determined to have good water quality. With most monitoring focusing on water quality *problems*, the more frequently found healthy waterbodies are often ignored. Efforts to

document water quality of the state such as the PWL should present a more balanced picture of waterbody health.

Information and Education

One final, important component of the nonpoint source management program is education and public awareness. Due to the nature of nonpoint sources, local grassroots approaches to these problems are often the most effective. Therefore, public support for nonpoint source programs and activities are critical for success. Throughout the nonpoint assessment/Priority Waterbodies List update process, the WQCCs and many other public groups are intricately involved. By working closely with the public, primarily through the WQCCs, NYSDEC nonpoint source management efforts can have a much greater impact. Public involvement is discussed further in Chapter IV, Outreach.

C. Implementation Steps

The NYSDEC Division of Water recently revised both the structure and updating process for the Priority Waterbodies List (PWL). The objective is to bring greater consistency to the information on the PWL and make the list a more effective management tool. Some of the more important milestones in the review, revision and implementation of an enhanced Priority Waterbodies List, as well as the objectives of other associated water quality identification and evaluation efforts, are outlined below.

1. Finalize and implement the PWL Review and Updating Process and Procedures.

With appropriate Division of Water staff (regional and central office) and WQCC representatives, develop a specific process for the routine review and updating of the PWL; process should incorporate input from wide variety of NYSDEC units (within and outside Division of Water), WQCCs, SWCD staff, other federal, state and local agencies,

college/university community, and private groups/citizens.

2. Establish a procedure for measuring progress by tracking movement along spectrum of identification of problems, causes, and sources.
3. Consider designation of “Special Protection Waters” within the PWL.
4. Expand PWL to include documentation of *good* water quality waterbodies.
5. Establish volunteer monitoring network:

Establish a citizen/volunteer monitoring component to the RIBS ambient monitoring effort, develop volunteer monitoring handbook to provide appropriate guidance.
6. Create and improve GIS coverages for DOW programs including RIBS, SPDES, TMDL, stream classification, Public Water Supplies (PWS), dams, and stream gages.
7. Implement Basin Review and update PWL according to accepted schedule.

Using procedures to be established, conduct review and update of PWL information for 2 or 3 major drainage basins each year, with the entire state to be updated every five years.

8. Issuing of comprehensive RIBS Basin Study Reports.
9. Review and compilation of TMDL 303(d) List.

Groundwater Quality

A. Introduction and Background

Approximately six million people in New York State use groundwater as a source of drinking

water. About half of these people are on Long Island (including Kings and Queens Counties) and the remainder are in upstate New York. About half of the population on Long Island uses groundwater compared to one-third of the upstate population. Using the more common public perception that Long Island consists only of Nassau and Suffolk Counties, its population is entirely dependent on groundwater.

The Department of Health has reported 312 wells or springs statewide have been contaminated to some degree by organic pollutants¹. These water supply sources have a total capacity of 417 million gallons per day (MGD) and serve 93 public water systems. Of these, 121 wells on Long Island with a total capacity of 166 MGD and 39 upstate wells with a total capacity of 34 MGD remain closed or abandoned. These represent about three percent of the State's 5262 community water supply system wells (i.e. those serving cities, towns, apartments, and trailer parks). Other categories of wells regulated by NYSDOH are non-transient non-community, e.g., schools, offices, etc. (1,009 wells), and transient non-community, e.g., restaurants, motels, camps, etc. (7,307 wells). The total number of public water supply wells in New York (community, non-transient non-community, and transient non-community) total 13,578 (all well data as of April 1998).

Contaminants from nonpoint sources threaten some groundwater. These contaminants, including microbial, synthetic chemical, and naturally occurring contaminants, are described below.

¹ New York State Department of Health, Bureau of Public Water Supply Protection, "Community Water System Sources Affected by Organic Contamination." Interoffice Memorandum. November, 1991.

1. Microbial contamination including viruses, bacteria including *e. Coli*, protozoans such as *Giardia* and *Cryptosporidium* can enter groundwater aquifers from nonpoint sources. Discharge of human waste from septic tank/leachfield systems, leaks in wastewater collection (storm, sanitary and combined) sewers, and agricultural sources may introduce microbial contamination into drinking water. Another entry route may be via a poorly constructed well, whether from point or nonpoint sources. Other microbial contamination can enter water supplies from groundwater sources after the water leaves a treatment plant via infiltration into transmission mains and distribution pipelines.

Microbial contaminants may pose the most immediate health risk, while synthetic organic chemicals may present a chronic health risk.

2. The Department of Health has reported synthetic organic chemical pollutants in less than five percent of wells and springs statewide. The three categories of synthetic organic contaminants which are detected most frequently in groundwater are listed below, followed by inorganic chemical contaminants.

a. Industrial/commercial - Synthetic organic solvents (primarily 1,1,1- trichloroethane, trichloroethylene and tetrachloroethylene) have accounted for the majority of public water supply well closures that have been attributed to organic chemical contamination. These materials are widely used in industry and commerce throughout the state. They are heavier than water and sink to the bottom of aquifers, contaminating the soils of the aquifer as they travel. This makes subsequent removal difficult and expensive. Spills, leaks, and improper

handling at industrial and commercial facilities are the primary sources of organic chemical contamination in groundwater. Other sources may include SPDES effluent discharge permit violations, discharge of products used for cleaning and unclogging sewer lines and cesspools, disposal of consumer products (paint thinners, degreasing agents, etc.) via on-lot subsurface disposal systems, certain types of underground injection, and underground petroleum storage tanks.

- b. Gasoline and other petroleum products which may also contain methyl-tertiary-butyl-ether (MTBE), benzene, toluene and xylene - Many private wells have been impacted by inland petroleum product spills or leaking underground storage tanks. Many old tanks had no leak detection capability and leaks occurred at many locations. With the implementation of the bulk storage program, leak detection is required so leaking tanks should be less of a problem in the future. However, many of the abandoned tank sites may be contaminated and, to date, have not yet been remediated.

Sixty-five percent of the reported private well contamination caused by organic chemicals in upstate New York is petroleum related. The large majority of contamination cases are microbial or inorganic chemical(s). Statewide, there are approximately 110,000 active, registered petroleum storage tanks at facilities with a total capacity greater than 1,100 gallons. Over half of these tanks are buried in the ground where leaks may go undetected for long periods, unless tanks are protected from corrosion and a leak detection device or system is implemented. About 20,000 were installed after the 1985 Petroleum Bulk Storage (PBS) regulations took effect. Groundwater clean-up

operations are often marginally effective and are particularly difficult and expensive in the sandy soils such as those encountered on Long Island, and in the valley fill materials in the Upstate area.

Additional groundwater quality problems arise when MTBE is released into the environment. MTBE is a fuel additive that has been used in gasoline since 1979 as an octane enhancer. MTBE travels through soil rapidly and is much more soluble in water than most other petroleum constituents. As a result, it can travel further than other gasoline constituents and impact more domestic water supplies with relatively high concentrations of MTBE. It is also very difficult and costly to remediate MTBE contamination due to its high water solubility and resistance to biodegradation.

- c. Agricultural pesticides and herbicides - Pesticide contamination (primarily Aldicarb and carbofuran) was observed in private wells in New York State, but pesticide contamination above Maximum Contaminant Levels (MCL's) in public water supply wells is still very rare. Aldicarb, a pesticide, was observed in groundwater on Long Island in 1979 and resulted in well closure or treatment system installation at 2,900 private wells. A well sampling survey of 330 wells adjacent to farms detected Aldicarb at concentrations exceeding the Department of Health's recommended guidelines in 23 percent of the wells. Residents whose wells exceeded the guideline were advised not to use the water and were subsequently provided with activated carbon filtration systems at the expense of the Aldicarb manufacturer. It should be noted that Aldicarb is no longer registered for use on agricultural crops in New York State.

3. Nitrate and chloride contamination threatens some groundwater sources. Nitrates can originate from agricultural and domestic use of fertilizer, subsurface disposal of sewage, or other agricultural practices. Chloride contamination has been found upstate in some private wells. Uncovered piles of salt are the primary cause, although application to roads is also a source.
4. Naturally occurring groundwater quality problems will not be discussed in detail in this report. In some locations, however, such natural occurrences can be the principal cause of drinking water quality problems. The full extent of the problem is not seen in the number of public water supply wells closed due to this type of contamination, since many well sites would be abandoned in the exploration or development phase without ever becoming a public water supply source.

B. Groundwater Management and Protection in NYS

In New York State, the management and protection of groundwater resources is a responsibility shared by state agencies and local governments, as well as federal agencies. The NYSDEC in accordance with the Environmental Conservation Law, has the lead responsibility for groundwater resource management and protection. The Department of Health, which has lead responsibility for public water supply management and protection, retains legal authority to adopt watershed rules and regulations where site-specific controls are warranted. The roles and responsibilities of other state agencies are generally indirect. For example, the Departments of State and Agriculture and Markets have key roles in management of nonpoint sources of pollution, and other agencies (e.g., Transportation) have responsibility for their facilities and operations as they may impact groundwater.

Local governments, including county health departments, towns, villages and cities, share some responsibilities through state delegation of programs, but have the lead responsibility for zoning, land use planning and the management of some key potential sources of groundwater pollution (e.g., septic tanks). Local governments also have initiated many wellhead protection programs for their water supplies.

The DEC Division of Water provides for coordination of state programs to manage groundwater resources, and establishment of the basic groundwater protection goals and priorities for all relevant programs (e.g., solid and hazardous wastes, remediation, minerals, pesticides, etc.). To support the development and implementation of specific management program elements, the Division of Water adopted the Upstate Groundwater Management Program (1987) and Long Island Groundwater Management Program (1986). These programs established five fundamental policies as the basis for New York's groundwater management program:

1. Protect and conserve groundwater for best usage as a drinking water supply,
2. Address quantity as well as quality concerns,
3. Emphasize problem prevention,
4. Target the groundwater program to most effectively use available resources by focusing special emphasis on critical, high yielding aquifer systems, and
5. Foster a state/local partnership.

The policies and specific program actions that have resulted from the Upstate and Long Island Groundwater Management Programs are consistent with the criteria outlined by the United States Environmental Protection Agency (EPA) for Comprehensive State Groundwater Protection Programs (CSGWPP). The six strategic activities

outlined by EPA, and a very brief synopsis of New York's program elements pertaining to the EPA criteria, are as follows:

! Established Groundwater Protection Goal Guides Relevant State Programs

The groundwater protection goal in New York State is to preserve all fresh groundwaters (Class GA) for their designated best use - as a potential source of potable water supply. Standards and guidance values have been adopted for this goal.

! Established Priorities Support Efficient and Effective Means of Achieving the Protection Goal

Most state-level programs (e.g., petroleum and chemical bulk storage) are uniform across the state. The aquifer priority system (Primary and Principal) guides specific state program decision-making (e.g., solid waste). Wellhead protection areas (where adopted) guide local government actions.

! Authorities, Roles, Responsibilities and Coordinating Mechanisms are Established

The Environmental Conservation Law (ECL) designates the Department of Environmental Conservation as the lead state agency responsible for the "coordinated management of water resources" (ECL Section 3-0301), and the control of water pollution and maintenance of reasonable standards of purity for both ground and surface waters (ECL Article 17). The ECL and Public Health Law specify the specific authorities for regulation of sources of pollution and for protection of public water supplies. The Division of Water has the lead responsibility for program coordination.

! Information Collection and Management Supports Groundwater-Related Programs

A key need in New York's groundwater management program is the further development of a comprehensive information base on the geographic distribution, potential productivity, use, and quality of New York's groundwater resources along with geographic information system (GIS) coverage of the distribution of potential sources of groundwater contamination. Information systems include groundwater resource mapping, well-log data, water quality data, and information on the distribution of regulated facilities and other potential contamination sources. This information base will serve many program applications, including the State's Source Water Assessment Program, local government wellhead protection programs, and support for priority decisions for many state prevention and remediation programs.

The Division of Water has an operating GIS and is developing it to serve as the basis for this comprehensive, integrated information system.

! Groundwater Protection and Remediation Program Implementation

The groundwater protection program in New York is implemented through a combination of state-level actions (e.g., discharge permits, bulk storage controls, emergency spill response, solid and hazardous waste controls, pesticide management, etc.) and local government actions (e.g., wellhead protection, septic tank controls, nonpoint source management, etc.) along with supplementary federal program actions (e.g., underground injection control). Remediation programs address both hazardous substances and petroleum and are implemented under the Department of Environmental Conservation's oversight, with some sites addressed by the Environmental Protection Agency.

! Public Participation

Public participation, outreach and education programs related to groundwater are activities shared by both state and local agencies. The New York State Water Management Advisory

Committee provides for public input into the policies and program actions of the Division of Water. Other public participation is provided for through the State's Administrative Procedures Act. Other outreach partners include regional and county agencies, Cornell Cooperative Extension, Soil and Water Conservation Districts, and municipal governments.

The 1986 Amendments to the federal Safe Drinking Water Act directed the development of a Wellhead Protection Program for the purpose of protecting groundwater sources of drinking water. In order to direct New York State's implementation of this, the Wellhead Protection Coordinating Committee was formed. Public hearings and committee input were used to direct the development of New York's Wellhead Protection Plan which was submitted to the EPA and approved in 1990. The Plan provides general guidelines for the protection of groundwater drinking water sources.

Additional Amendments to the Safe Drinking Water Act were passed by Congress in 1996. These call for new investment in public water supply systems and for Source Water Assessment as the first step in Source Water Protection of both surface and ground water. All steps of the process of planning the program and distributing benefits include public participants.

Public input will continue to shape much of the implementation of the Amendments to the Safe Drinking Water Act.

C. Priority Aquifer List (PAL)

The process to create a PAL began in early 1998 after efforts to incorporate groundwater on the PWL proved unworkable due to the inherent difference between surface water segments and groundwater. The PAL will be a groundwater-only listing and serves a dual purpose:

- 1) To identify productive aquifers in order to accurately delineate their boundaries,

compile hydrogeologic information, and assist municipalities in the creation of aquifer management plans to aid in efficient use and protection of groundwater resources.

- 2) To identify groundwater problems throughout the state that are the responsibility of the Division of Water in order to aid in determining necessary resources for the mitigation/elimination of groundwater problems. Sites falling under the responsibility of other NYSDEC divisions (Division of Environmental Remediation, Division of Mineral Resources, Division of Solid and Hazardous Materials) are excluded from this list in order to avoid unnecessary duplication of efforts within the DEC. Examples of problems to be included on the PAL include salt storage/application problems, nitrate contamination, contaminated sites not falling within the legal definition of hazardous waste, and groundwater depletion. Priorities will be based on population dependent on groundwater resources (Primary aquifers) or impacted by resource problems noted above.

D. Problem Identification

Problems in public water supply wells can be detected during routine sampling. Once problems are observed, they are addressed and evaluated to see whether the problem may be a symptom of a broader contamination issue or just of limited scope.

Drinking water sources are being evaluated as one of the first steps of the Source Water Assessment Program, for which planning began in mid-1997. Groundwater and surface sources are being evaluated using available GIS and other information sources to determine whether they are or will be vulnerable to contamination.

Groundwater problems identified by Division of Water staff or nominated by WQCCs, interest groups or the public will be considered by DOW staff for inclusion on the PAL. Nominated groundwater problem areas or sites will be geo-referenced and the problem will be documented either with existing reference material or through field investigation. Evaluation of the problem, including identification of possible remedial measures, will be carried out by DOW staff to the extent possible and appropriate. Remedial measures will be implemented to the extent possible given available resources. If no action is appropriate, justification will be supplied.

E. Measuring and Reporting Progress

Activities undertaken under the Amendments to the Safe Drinking Water Act must be reported to the EPA. Additionally, results of Source Water Assessments will be available in map format. NYS DOH will continue their program of water quality monitoring at all public water supply wells. Results are available through the Health Department.

Productive aquifers will be identified in order to accurately delineate their boundaries, compile hydrogeologic information, and assist municipalities in the creation of aquifer management plans to aid in efficient use and protection of groundwater resources. Division staff will add Primary and Principal aquifers to the list as well as other aquifers that have been identified and documented as productive groundwater resources. Water Quality Coordinating Committees, interest groups and the public may nominate aquifers for inclusion on the PAL, however it should be noted that the nomination process does not ensure that an area will be placed on the list. Division staff must review all nominations for groundwater resource potential. Further, it must be noted that it is not an objective of the PAL to create another layer of regulation through PAL designation.

Those aquifers identified as potential high yield areas that are not adequately mapped will be placed on a list of aquifers to be mapped. Mapping of these areas could be done under the DEC/ U.S. Geological Survey (USGS) cooperative program given adequate funding resources.

The Division of Water's geotechnical staff is working to more fully evaluate groundwater quality as outlined in the Clean Water Act, Part 305(b) reporting guidelines and will be responding to the data requests within those guidelines.

F. Problem Prevention

The Source Water Assessments will be used as part of an effort to protect Source Water Areas. The DOH in coordination with the USGS is sampling for pesticide contamination in drinking water. Information from assessments will be used in implementing new and evolving water supply quality issues.

G. Environmental Indicators for Groundwater

The environmental indicators for groundwater are:

1. *Groundwater supply systems that are closed or are violating health-based requirements.*

The Department of Health maintains reports of contamination observed in public water systems.

2. *Source water protection plans.*

Source water assessments will delineate boundaries of source water areas, inventory significant potential contamination sources, and assess the susceptibility of drinking water sources to contamination. The information will be summarized and maps of source areas will be made available to the public. Assessments will note those source water areas for which Source Water Protection Plans are pending or in place.

In other areas, assessments may serve as a first step toward protection.

3. *Selected parameters for the 305b GW monitoring program.*

With appropriate funding levels, groundwater quality information will continue to be gathered and entered into a data base (STORET). Parameters currently sampled as part of the groundwater 305b program are: purgeable halocarbons (EPA method 601), purgeable aromatics (EPA method 602), chloride, nitrogen series (ammonia, tkn, nitrite, nitrate), metals (iron, manganese, copper, lead, nickel, zinc), and hardness. Current sources of groundwater data collected for the 305b program include NYSDOH public water supply data and sampling conducted by the Division of Water at privately owned wells.

4. *Point source loading permit violations of UIC class V well injection limits.*

In New York, the Underground Injection Control (UIC) program is administered by USEPA. Class V wells are identified through the Division of Water's normal SPDES inspection program. The Division of Water will continue to track and identify occurrences of discharges to groundwater above permitted levels.

5. *Groundwater depletion.*

Groundwater levels are collected from a statewide observation well network and tracked for trends to determine drought severity or over pumping. The current observation well network is being maintained through the USGS/DEC Cooperative Program. DOW will continue to chair the New York State Drought Management Task Force.

H. Implementation Steps

The NYSDEC Division of Water is currently reviewing and revising its groundwater

management policies. One objective of this effort is to better manage and protect New York's groundwater resources from nonpoint sources of contamination. Outlined below are possible initiatives that should be undertaken to accomplish this objective.

1. Improve the information base currently available. This is necessary in order to support an effective groundwater management program and involves updating and improving our current geographical information system (GIS) in order to serve as the basis for a comprehensive, integrated information system. One aspect of achieving this goal is requiring that programs which obtain permit and other information incorporate location data (latitude/longitude).
2. Seek funding to re-establish a cooperative mapping effort with the USGS. In the past, this effort led to high quality mapping of groundwater aquifers. The mapping of aquifers will be prioritized through the PAL.
3. Monitor the state's groundwater through the assessment activities undertaken as part of the 305(b) program. As per EPA guidance, sources of data in the assessment of ground water quality will include untreated or finished water quality data from groundwater-based-public water supply wells, and untreated or finished water quality data from private or unregulated wells. Additional sources of groundwater quality data may be derived from the new well drillers registration program (1999). Such a program is intended to include notification of wells to be drilled which would allow DOW to sample wells in key areas prior to the installation of any pumping equipment.
4. Improvements in integration of the various information systems among DEC

- programs must be carried out, locational data must be collected and/or verified, and information systems for unregulated or locally regulated facilities must be enhanced. All of this information must be made readily available via computer link to staff and the public.
- 5a. Propose legislation to enhance the water withdrawal regulatory program to include industrial, commercial, and agricultural water supply uses, as is already done for Long Island, in order to develop an adequate information base and to allow for assessments of impacts on other water supplies and on the total water resources, both surface and groundwater.
- 5b. Continue efforts to secure passage of proposed legislation which would create a statewide well-driller registration program. The purpose of this program would be to collect information detailing subsurface geology and well construction at new groundwater well sites. This will provide for better management and protection of groundwater resources in New York State. (Achieved: legislation passed in 1999; DEC began implementing and enforcing well-driller registration, preliminary notification of well drilling and well log completion reports; water well construction regulations are to be promulgated by DOH in 2001.)
- 6a. Create list of 'priority aquifers' (PAL) based on existing Primary and Principal aquifers, aquifers identified by USGS and DEC-DOW as likely Principal aquifers, and other aquifers nominated through the PAL process. The list will be prioritized for potential detail mapping efforts.
- 6b. Groundwater problems to be addressed by the DOW will be listed on the PAL. [Note: Contaminated groundwater sites which are the responsibility of other DEC programs (e.g., spill sites, hazardous waste sites, solid waste sites) will not be included. Information regarding contaminated groundwater sites which are being managed under other DEC programs are available through those programs.]
7. The Department of Health will maintain a list of public supply wells that have been closed due to contamination.
- 8a. Department of Health SWAP work is to be completed by November, 2001.
- 8b. Encourage communities to develop local management and protection programs as a follow-up to the PAL and Source Water Assessments.
- 8c. Provide technical assistance to communities to delineate areas for protection program implementation.

CHAPTER IV

OUTREACH

A. Rationale and Definitions

Rationale

Experience has shown that **outreach** (a term used here to include **information, education and technical training**) is an essential element of a successful nonpoint source management program. Partnerships, the combined efforts of groups, companies, organizations, communities, and individuals, will be needed to achieve the goals of this Management Program. Since much of the state's program is based on voluntary compliance, success depends on persuasion rather than regulation. People are more inclined to act when they know what to do, how to do it, and whether their actions make a difference.

This chapter presents outreach activities to support the goals of the Nonpoint Source Management Program. Information gathered during the development of this document has suggested directions for **statewide** nonpoint source outreach and education as well as specific **source categories** of pollutants. Increasingly, outreach activities are designed to target particular communities or regions, with the goal of strengthening watershed partnerships. Many statewide outreach activities actually focus on specific local audiences, such as county governments or watershed alliances.

Proposed below is a comprehensive list of statewide outreach and education activities. The list is intended to serve as a guide for outreach staff at DEC and other agencies with nonpoint source responsibilities as they develop workplans for statewide and watershed outreach and education.

While some background information regarding outreach for source categories is presented in this

chapter, source-specific outreach and education programs are generally discussed in Chapter Five (V) under the appropriate source category.

Definitions

Information is the general dissemination of knowledge, facts and concepts, using all media. It can be targeted to specific audiences for a specific purpose. However, information is usually delivered passively to an unseen audience whose response cannot be predicted. Those who supply information assume that the recipients, if informed, will make the "right" decision and act accordingly. Information is essential, but it seldom acts as a motivator by itself.

Education consists of interpretive activities intended to raise the level of understanding for the meaning of facts and concepts (information). Education involves active, structured learning, measurable results and personal contact, using all media. Education strives to equip targeted audiences to make informed decisions by increasing their skills in critical thinking and problem solving.

In this document, **Education** encompasses both **general education** and **technical training**. **General education** consists of activities that convey basic concepts about nonpoint source pollution, its causes and solutions. **Technical training** refers to structured instructional activities designed to teach specific audiences specialized information about what they can do to reduce nonpoint source pollution.

Public participation means an exchange of information, ideas, concerns or preferences related to decisions that are going to be made, usually by a government at some level. Its purpose is to achieve better decisions, more lasting commitment

to implementation, greater support for the final decision, and independent action by individuals and groups to accomplish program purposes.

Public participation, too, is an important component of the nonpoint source management program. Involving people affected by the program in its development helps to create a final product that those people can better support or implement. This Nonpoint Source Management Program Update has been developed with the participation of the various agencies and groups who play a role in controlling nonpoint source pollution. Appendix C includes a workplan that details the public participation activities conducted during the development of this document.

B. History of Outreach and Education Since the 1990 Management Program

In May 1991, an Information and Education (I&E) Subcommittee of the Nonpoint Source Coordinating Committee (NPSCC) was formed. It included several agencies with an active role in these efforts. Its goal was to provide information, education and participation materials and opportunities to increase stewardship by the various groups and individuals who play a role in protecting New York's waters from nonpoint source pollutants. The subcommittee provided a way to avoid duplication and share information so that improved information and education materials could be made available.

The subcommittee developed an audience model to help target outreach materials effectively. Using the audience model as a guide, it oversaw development of the following materials:

- C *Annual Outreach Plan 1994, 1995, 1996*
- C *Clean Water... A Community Commitment to Protecting New York's Watersheds*

- C *Communication, Outreach and Involvement: A Strategy for Implementing New York's Nonpoint Source Management Program*

- C *Where to Find Information on Nonpoint Source Pollution in New York State*

Other activities implemented at state level included:

- C Training for County Water Quality Coordinating Committees in developing a public outreach plan (Water Quality Symposium, Lake George, 1994).

- C A five-year cooperative agreement between DEC and Cornell Cooperative Extension under which Cornell developed educational materials and programs such as: "Water Courses," a newsletter on nonpoint source issues; the "Nonpoint Source Pollution Control Distance Learning Program," a video conference series; the "HOME*A*SYST Educational Program; as well as programs targeting specific nonpoint sources.

- C Materials and activities developed for Water Week targeting nonpoint sources. In 1994, Water Week's theme was stormwater. Since 1995, Water Week has focused on watersheds.

- C Reprinting and distributing two effective nonpoint source pamphlets originally produced by the state of Wisconsin: *Clean Water Starts with You: Nutrients and Sediments*; and *Storm Sewers -- the Rivers Beneath Our Feet*.

- C Pilot workshops held in Oswego and the Capital District in 1993 bringing together County Water Quality Coordinating Committee members, educators and other communicators to build connections and foster stewardship.

Due to staff reassignment, DEC did not convene the Information and Education (I&E) Subcommittee after 1996, although informal consultations among outreach partners continued for specific projects, such as reviewing materials for the Watershed Education campaign (Water Week), which was completed in 1998.

C. Implementation Steps

As development of the Management Program Update began, intensive discussions with representatives of County Water Quality Coordinating Committees (CWQCCs) and members of the Nonpoint Source Coordinating Committee (NPSCC) identified several priorities for needed outreach and education programs. Many of the activities listed below are proposed based on comments gathered during these discussions. The list is intended to serve as a guide for outreach staff at DEC and other agencies with nonpoint source responsibilities as they develop workplans for statewide outreach and education.

The NPSCC will convene its I&E Subcommittee periodically during implementation of the Management Program to guide and assist with selecting and implementing activities below. DEC should provide overall coordination for the subcommittee to ensure that efforts are consistent with the management program. Entities with expertise in community outreach activities such as the Cornell Cooperative Extension Service, Sea Grant, Cornell University, Syracuse University and New York State Water Resources Institute will be requested to help handle the development and implementation of these efforts. Considerations

common to the design of all of the following activities are: continuing communication among the various agencies; clear definition of the purpose, audience and messages of the activity; plans for effective distribution of materials; and evaluation and follow-up steps. Proposed activities include:

1. Reconvene the I&E Subcommittee of the NPSCC. (Achieved: January 1999)
2. Increase targeted regional and watershed outreach activities. Coordinate with ongoing regional and watershed partnership activities (e.g. basin teams, regional workshops, watershed management committees) to: promote CWQCC participation in regional partnerships; track regional and watershed activities concerning nonpoint source pollution and assess the need for targeted outreach.
3. Provide better outreach training and support to CWQCCs
 - C Develop a training course or video for new CWQCC members.
 - C Develop an orientation/training packet for new CWQCC members that could be customized locally.
 - C Offer training to CWQCCs in:
 - a. Planning, implementing and evaluating outreach and education programs
 - b. Resources and materials available at the state level
 - c. Working with consultants to implement outreach and education programs
 - d. Integrating outreach and education into NPS source-specific programs
 - e. Working effectively with the media.

4. Assist with administrative support of outreach activities by CWQCCs:
 - C Update mailing list of CWQCC contacts annually.
 - C Investigate ways to provide State staff to support local outreach efforts both for specific source areas and overall NPS program. This could include cultivating and coordinating local volunteers to work in partnership with the CWQCC.
5. Improve usability of existing resources (from all NPS partner agencies and groups) so they can be easily used by local-level organizations, especially CWQCCs. Develop a distribution plan to ensure materials reach their intended audiences.
 - C Update existing publication “Where to Get Information about NPS Pollution” or design and produce easy-to-use catalogues of NPS audiovisual resources, publications, etc.
 - C Update and redesign the outreach strategy to make it more usable.
6. Assist CWQCCs in developing their own outreach program to increase awareness of NPS pollution and create partnerships with specific audiences. Key audiences identified by the CWQCCs include: town, county and other local government officials; planning boards; homebuilders; non-profit and citizen groups. The I&E Subcommittee should assess the need for, and, if appropriate, develop:
 - C new nonpoint source general information materials for targeted audiences at the state and local levels. Comments from CWQCCs indicate that a video and accompanying brochure would be the preferred outreach tool.
 - C a targeted education initiative aimed at local officials to make them aware of the role of local government in protecting and preserving water resources and the control options available to them. A manual that outlines the control options and explains how they can be incorporated in local planning efforts is needed.
7. Provide guidance and assistance for general nonpoint source information and education activities such as: Project WET (Water Education for Teachers) in New York State, Water Week, and the DEC Earth Day Environmental Fair.
8. Investigate the need for and feasibility of creating a nonpoint source information clearinghouse and/or web site. The clearinghouse would have reports on nonpoint source research, and demonstration and implementation projects around the state. The information needs to be more readily available to people in a position to use it.
9. Survey CWQCCs to assess training needs so that appropriate training sessions can be developed for the annual Water Quality Symposium.
10. Assist the NPSCC in implementing the priorities identified by the Source Category Working Groups by identifying cross-cutting information, education and technical training issues so that the appropriate agencies and institutions can work together to target common audiences, produce materials and deliver them efficiently, without duplicative effort.

CHAPTER V

PROGRAMS TO CONTROL NONPOINT SOURCE POLLUTION

New York addresses sources of nonpoint source pollution (source categories) associated with both long-term fixed land uses and more sporadic and transitory activities. Programs for the control of sources were developed recognizing this diversity.

Pollution from most nonpoint sources is best controlled through the use of proper management practices that can alleviate any existing water quality impacts and prevent new ones from occurring. After briefly describing the source categories, pollutants, and types of source control options available, this document presents source control programs at the federal, state, and county levels of government. Volume I of the Coastal Nonpoint Pollution Control Program (a separate document) describes source categories and control programs in greater detail; the program is listed below in Table V-1. Management practices from the Nonpoint Source Management Practices Catalogues are listed in Appendix B.

A. Source Categories

Land uses and activities that are considered nonpoint sources are listed in Chapter I as Table I-1. The table identifies the major source categories and the subcategories included in each. A brief description of each of the source categories follows. The source categories are listed in alphabetical order both here and in the detailed discussion of sources in section D. Section D presents more detailed descriptions of the sources, a table of the existing programs that address them, and a set of implementation steps describing planned or recommended activities to achieve short-term and long-term goals.

1. Agriculture

Agriculture is a leading industry in New York State and one of the largest users of New York

land. Livestock operations continue to dominate. Since agricultural land is often managed intensively, runoff can cause water quality problems. Poor land management and intensive production activities on agricultural land can result in pollution of waters by sediment, nutrients and agricultural chemicals. Agricultural nonpoint sources of pollution can be classified into two groups: land use and management operations. The first group relates to the actual use of a parcel of land (e.g., row crops, pasture land, and truck farms). The second group relates to the intensity of agricultural operations (e.g., cultural techniques, pesticide and fertilizer applications, grazing techniques and manure utilization). Agricultural nonpoint sources of pollution are not a result of the land use or the operations themselves, but the inappropriate use of the land (e.g., growing row crops on land not suited for intensive cultivation), and improper management of the agricultural operation (e.g., over-fertilization or misapplication of pesticides), which increases the opportunity for contaminants from agricultural activities to reach either ground or surface waters.

2. Atmospheric Deposition

Atmospheric deposition and the subcategory of acid rain have been identified as the most frequently occurring cause of water quality impairment in the state. While lakes and ponds in the Adirondack Mountains are the predominant receptors identified, atmospheric deposition in general is affecting water bodies in other parts of the state as well. Atmospheric pollution may contribute as much as 14.3% of the nitrogen enrichment to Long Island Sound. Nitrogen enrichment is the cause of severe summertime hypoxia problems in the Sound. Airborne pollutants cause water quality problems when they fall on impervious urban areas adding to the pollution of storm water runoff.

3. Construction

Each day nearly 50,000 acres of land in New York is under development through public and private construction activities. Although this represents a small portion of the state's land area, sedimentation due to both water and wind erosion at construction sites can be locally severe. Studies have shown that rates of erosion from construction sites are the highest of any source category. A State Pollutant Discharge Elimination (SPDES) general permit is required for sites where the area of disturbance is five or more acres. Smaller sites are subject to setbacks or erosion and sediment control requirements of various state and local programs and regulations.

4. Contaminated Sediment

Sediments act as both a sink and a source for contaminants in the aquatic environment.

Chemicals that are environmentally persistent can accumulate in sediments at concentrations several orders of magnitude greater than in the water column. Sediment contaminants can be absorbed or ingested by benthic organisms or they may be released back into the water column when sediments are disturbed. Not only can adverse effects occur in benthic or pelagic organisms directly exposed to the contaminants, but such substances can bioaccumulate in fish that feed upon these organisms. Contaminants that bioconcentrate as they move through the food chain may eventually reach levels that can cause health risks to wildlife and humans.

5. Hydrologic and Habitat Modification

The hydrologic and habitat modification category includes a variety of changes to rivers and streams. Some of the items included here involve changing the flow characteristics by construction or operation of a dam, and channel modification or relocation. Removal of riparian vegetation can result in the destabilization of stream banks and subsequent erosion and sediment problems, as

well as increase the water temperature regime in streams which may have an effect on fish survival. Changing land use patterns within the watershed can also affect the runoff and flow regimes leading to erosion and sediment problems.

6. Land Disposal

Land disposal of solid wastes and wastewater can result in the contamination of groundwater and may eventually affect surface waters. The most common sources within this category, regulated by DEC, are landfills and abandoned hazardous waste sites. On-site wastewater disposal systems, regulated by NYS Department of Health, are discussed as a separate source category.

7. Leaks, Spills and Accidents

This category is primarily a groundwater concern although some surface waterbodies have also been affected. Petroleum products were originally the focus of concern in this category. The Environmental Conservation Law (ECL), as of 1986, has regulated hazardous substances. The first regulations were promulgated in 1988 and the final technical set of regulations in 1994.

8. Marinas and Recreational Boating

This category is not a major contributor of NPS pollution, however, pollutants that are generated could be released directly to surface waters. Petroleum products, wastewater from both boats and marinas, fish-cleaning wastes, floatable debris and other pollutants will vary in their severity or significance from marina to marina.

9. Onsite Wastewater Treatment Systems

Individual onsite wastewater treatment systems that are inadequately designed, improperly constructed or are not maintained can affect both surface and groundwater quality. The most common pollutants associated with this category are pathogens and nutrients. Onsite wastewater

treatment systems are identified as one of the most evenly distributed problem sources among all categories found across the state.

10. Resource Extraction, Exploration, and Development

Sand and gravel mining as well as oil and gas well fields are the most significant sources in this category. Sand and gravel operations account for 85% of the mining in the state. Most of the oil and gas well fields are located in the western and central parts of the state.

11. Roadbank Erosion and Storage and Application of Deicing Agents

Erosion from unvegetated ditches along state, county and local roads is believed to be a significant source of sediment during spring runoff each year. Many highway departments clean ditches in the fall, leaving no time to reestablish vegetation before winter. Spring runoff then results in significant erosion.

Road salt storage piles have been responsible for contamination of groundwater in many locations across the state. Application of salt is regarded as a potential problem in many areas. Road sanding has been identified as a problem on a number of streams in the Adirondack Mountain area.

12. Silviculture

Forest harvesting activities affect a small percentage of the total acreage of woodland in New York each year. However, water quality problems due to sediment and thermal stress can result if proper techniques are not followed. Improper landing locations, poor logging road construction techniques and logging adjacent to streams can result in water quality problems.

13. Urban Runoff

Stormwater runoff from urban areas can be contaminated with sediment, oxygen demanding substances, pathogens, petroleum products and a number of toxic substances. The large amount of impervious surfaces in an urban area increases the quantity of runoff and decreases the time it takes for peak runoff to occur. These factors can lead to increased flooding in addition to the water quality problems resulting from the pollutant load.

B. Pollutants and Their Effects

Nonpoint source pollutants are usually transported during hydrologic events, although some sources, such as failing on-site wastewater treatment systems or contaminated sediments, can deliver pollutants at any time. Pollutants dissolved in runoff are generally more biologically available in waterbodies than sediment-based fractions and thus are potentially more damaging. The following is a grouping of pollutants and a description of some of their effects. The pollutants are also listed within the Tables of Existing Programs in section D below.

1. Toxic Substances and Hazardous Substances

Toxic chemicals may enter surface waters either dissolved in runoff or attached to sediment or organic materials, and may enter groundwater through soil infiltration. The principal concerns in surface waters are: their entry into the food chain and bioaccumulation (a subset of this pollutant type is Bioaccumulative Chemicals of Concern, or BCCs), toxic effects on fish, shellfish, wildlife, macroinvertebrates and micro-organisms, habitat degradation, and potential degradation of public water supply sources. The groundwater impacts are primarily related to water supply sources. Pollutants in this category include: pesticides, synthetic organic chemicals, and inorganics such as metals, ammonia, and chlorine.

2. Nutrients or Fertilizers

Nutrient (phosphorus and nitrogen) enrichment of surface waters may cause excessive algae and

aquatic plant growth, choking open waters and consuming oxygen (mainly through plant die-off). Fish and aquatic organisms, recreational values, and the use of the resource for water supply are thereby affected. Nitrogen contamination of drinking water significantly above the drinking water standard may cause methemoglobinemia (a blood disease) in infants and cattle, and has forced closure of several water supplies (primarily wells). Problems may include excess turbidity, changes in fish species composition, habitat alteration, and hypoxia (see oxygen demand below).

3. Acid/Base (pH)/ Atmospheric Deposition/ Acid Rain

The deposition of sulfur and nitrous oxides in the form of acid rain can lower the pH of some ponds, lakes and streams to such a degree that they cannot support fish communities. Waters of the Adirondack and Catskill Mountains are most susceptible due to their low pH buffer capacity. In addition to acidity, other pollutants (lead, mercury) can be transported by atmospheric deposition.

4. Sediment

Sediment may destroy fish habitat through blanketing of fish spawning and feeding areas and elimination of certain food organisms; directly impact fish through gill abrasion and fin rot, and reduce sunlight penetration, thereby impairing photosynthesis of aquatic plants. Suspended sediment (turbidity) decreases recreational values, reduces fishery habitat, adds to the mechanical wear of water supply pumps and distribution systems, and adds to treatment costs for water supplies. Nutrients and toxic substances attached to sediment particles are transported to waterbodies and may enter aquatic food chains, cause fish toxicity problems, impair recreational uses, or degrade the water as a drinking water source.

5. Oxygen-Demanding Substances and Hypoxia

Organic materials may enter surface waters dissolved or suspended in runoff. Natural decomposition of these materials may deplete dissolved oxygen supplies in the surface waters. Dissolved oxygen (DO) may be reduced to below the threshold necessary to maintain aquatic life (hypoxia), or to near zero (anoxia) impairing or killing fish and other aquatic biota. Low DO can also result in degraded water supplies (surface water) and changes in fish species composition. BOD₅ is the parameter most commonly used to measure oxygen demand in ambient waters.

6. Salts: Deicing and Brine

Effects of runoff from deicing material storage and application and, in the western and central areas of the state, non-routine runoff of brines associated with oil, gas and solution mining may include increased salinity, fish survival/propagation impacts, loss of aquatic organisms, lake stratification, and groundwater contamination.

7. Thermal Stress or Changes

Elevated stream temperatures can exceed fish tolerance limits, reducing survival and lowering disease resistance. Cold water fish (such as trout) may be eliminated or the habitat may become marginally supportive of the fishery. There could also be habitat alteration or loss of other aquatic organisms.

8. Water Level or Flow Changes

Changes in the water level of lakes and ponds alter the shoreline and can have a negative impact on various recreational activities (swimming, boating, fishing). Shifting shorelines can also affect aquatic plant life that provides cover and habitat for fish communities. Fluctuating stream flows may also cause stress to the fish communities, as well as limit recreational activities. These habitat alterations may in turn

change fish species composition or cause the loss of other aquatic organisms. A reduced or degraded water supply could also result.

9. Pathogens and Pathogen Indicators

Bacteria and viruses include infectious agents and disease-producing organisms normally associated with human and animal wastes. The principal concerns are the survival and transmission of such organisms and their impacts on drinking water supplies, shellfish, contact recreational waters, and fish and wildlife or domestic animals. Indicator organisms are sampled and counts are used to approximate the presence and quantity of pathogenic organisms.

10. Aesthetics, Floatables, and Debris

Areas of debris, either in a waterbody or on the land surrounding it, can deter use of the waterbody for a variety of recreational activities including swimming, boating, and aesthetic enjoyment.

11. Oil and Grease/ Petroleum Spills

Oil, grease and petroleum can interfere with the respiration of fish in the stream, limiting the size and/or diversity of the fish population. In addition, visible sheen on the water reduces the aesthetic appeal of a water body, and may discourage various recreational activities. Fish kills, degraded water supply, limited bathing/swimming, restricted shellfishing are all possible effects.

C. Types of Programs

Programs that can be used to control nonpoint source pollution use one or more of the following methods to accomplish program goals. Such programs, while frequently led or conducted by government agencies, may also be implemented by other entities such as business and industry, educational institutions, or not-for-profit organizations.

The types of programs listed below are referenced in tables found in Sections V.D.1 - 14. Those sections, which describe existing programs for controlling various categories of nonpoint source pollution, include a column, "Type of Program" that will refer to one of the nine program types below.

1. Planning

Programs that address nonpoint source pollution through planning can focus on statewide or local (watershed) issues. Activities included under planning are:

- inventory, e.g. of water quality data, land uses, etc.
- assessment, e.g. of problem or management options;

Also included are comprehensive planning processes such as: management plans for local lakes or watersheds, plans developed under the federal National Estuary Program (e.g., Long Island Sound Study, NY/NJ Harbor Estuary Program) and activities to develop the institutional mechanisms to facilitate and ensure delivery of these programs.

2. Monitoring

Local or statewide water or air quality monitoring is often undertaken to provide input to nonpoint source planning programs. Monitoring data can provide information about long-term water quality trends or impacts. Such data often serve as input to planning activities, but may also be used to gauge the effectiveness of existing pollution control programs, or to track compliance.

3. Implementation

A federal, state or local government, or other entity can decide to act directly to implement management practices to prevent or remedy a

nonpoint source problem. Examples of such actions include:

- C removing contamination, e.g. dredging contaminated sediments; design or construction, e.g. building control structures or diversions to change water flows;

4. Regulatory Programs

Regulatory programs are programs based on laws or regulations that require (or ban) certain activities or that control the activity through some mechanism such as a permit process. They can be either statewide or watershed-based. An example of the latter would be watershed rules and regulations developed and enforced locally. Regulations could apply to the use of land or activities upon the land. They can also apply to the handling, use and storage of specific substances, such as petroleum products or pesticides. Regulations can also be used to control discharges or waste disposal onto land or into ground or surface waters. Governments can use regulatory authority to control or ban an activity. Federal, state or local governments often require permits or registrations to certify compliance with regulations.

5. Financial Incentives

Financial incentives include direct grants, low or no-interest loans, tax breaks and cost-sharing. Some of the programs in the tables that follow provide full or partial funding for specific activities.

Chapter VIII presents an overview of nonpoint source funding programs in New York.

6. Research and Demonstration Projects

Some of the programs listed promote research and demonstration projects. These projects

typically will show how a certain land use practice or series of practices can reduce pollutant loadings from nonpoint sources. Demonstration projects can be designed to test the effectiveness of promising practices in real-world applications, to gain experience with design parameters of new practices and/or to attract attention to new practices. Such projects may focus on a specific source category, such as manure spreading or landfill leachate. They may measure the effectiveness of certain control measures, such as planting vegetative buffer strips or using a new impermeable material to line landfills. Projects may also be tailored to specific watersheds.

7. Technical Assistance

Both technical assistance and training provide information to a narrowly-targeted audience that will use or directly apply the technology. Technical assistance is work done directly with a landowner, a planning board, or a land user to implement management practices that will resolve an identified problem. Technical assistance is site-specific and accounts for site conditions.

8. Technical Training

Technical training refers to structured instructional activities designed to teach specific audiences (generally NPS professionals) specialized information. Technical training is usually more general than technical assistance, focusing on the advantages and disadvantages of practices, but not on particular problems or specific sites. This category includes continuing education courses in management practices such as those provided by Cornell Cooperative Extension, and courses aimed at particular audiences such as contractor workshops for erosion and sediment control.

9. Outreach

Outreach, as used here, includes programs to increase awareness and provide more general information and education about nonpoint source pollution. Education programs to address nonpoint source pollution include any material provided as school (K-12) curriculum, or targeted for children of school age through organizations such as Scouts or 4-H. It includes any general pre-professional training offered in colleges and universities. Also in this category are continuing education courses offered to adults through institutions such as high schools, BOCES or Cornell Cooperative Extension Service and formal training at the graduate level.

Outreach activities to provide general information and increase awareness of pollution include: publications, radio or television public service announcements, slide/video shows and events such as DEC's Water Week and Earth Day Environmental Fair.

D. Existing and Needed Nonpoint Source Control Programs

The 1989 Nonpoint Source Assessment Report listed 58 programs that have a role in the control of nonpoint source pollution in New York. This Update lists the programs in table format later in this Chapter. Some of these programs have water quality as their primary focus while for others, water quality improvement is a secondary benefit. Programs that are new since 1990 are italicized in the tables.

The Implementation Steps (for each category below) generally use existing legal authority and can be implemented in the short term. Reports and accomplishments of existing programs, while integral to the success of New York's Nonpoint Source Program, are not included as Implementation Steps. The existing programs listed in the tables are assumed to continue through the next five years. A few

Implementation Steps will require legislative action and are considered long-term goals.

The remainder of this chapter presents programs and recommendations for controlling nonpoint source pollution. The first section lists programs that do not apply to any specific source category. These are general activities related to resource inventories and assessments, national and regional management programs, and state and regional planning or outreach activities. Remaining sections will each address a specific source category. Source categories are listed in alphabetical order. For each category, there will be an assessment of the source and its effects on water quality in New York, a table of existing programs that address the source, and a list of implementation steps to achieve short term and long term goals toward the program's long term objectives.

I. General Management Activities

a. Source Description

A fundamental activity within the overall management approach for nonpoint sources is assessing the sources or origins of their water quality effects. The 1996 Priority Waterbodies List (PWL) provides listings which demonstrate the extent of nonpoint source pollution across the state. More than 90% of the impaired waterbodies in New York are impacted by nonpoint sources. More specific discussions of the effects of particular source categories will be contained in the sections which deal with those sources.

b. Existing Programs

Table V-1 provides brief descriptions of existing programs that address general management activities. *Programs with names in italics are new since 1990.*

c. Implementation Steps

The programs and activities related to program planning and oversight include: providing overall program direction and oversight, implementing programs for the general protection of the resource, developing interagency collaboration to address nonpoint source problems (Chapter II), assessing the condition of the water resource and problems affecting the resource (Chapter III), developing and delivering educational materials and public participation events (Chapter IV), and encouraging watershed planning (Chapter VI). Chapters II through VI have their own Implementation Steps. The following implementation steps pertain only to overall program direction and programs for the general protection of water resources from nonpoint source pollution.

1. Develop pollution prevention guidance materials specific to NPS activities. Pollution prevention means reducing or eliminating pollution at the source. By eliminating the use of toxic substances or replacing them with less toxic chemicals, pollution prevention can contribute to reduced pollution from both point and nonpoint sources. Natural resources are conserved and cross-media contamination is prevented through many pollution prevention practices. (Also see Pollution Prevention Outreach Program in Table V-1.)
2. Continue to develop the concept of critical area protection which groups several resource management “tools” to provide special protection for critical groundwater resources in specific local areas. Critical area protection programs require strong local involvement and depend primarily on statutory authority which is exclusively in the domain of local government. The New York State Wellhead Protection Program is a key example of critical area protection (or geographic targeting).

local ordinances. Wellhead protection may include land use controls such as zoning and designation of Critical Environmental Areas under provisions of the State Environmental Quality Review Act. The use of Watershed Rules and Regulations under the NYS Public Health Law may also be an approach for wellhead protection. The development of the State’s Source Water Assessment Program (DOH) offers a valuable opportunity for DEC to establish a partnership with DOH and localities to develop inventories that will serve as the basis for the protection of groundwater sources.

Wellhead protection efforts can include a mix of both regulatory and non-regulatory elements and both state regulatory programs and county or

TABLE V-1
Programs/Activities to Implement Nonpoint Source Management
(Programs with Names in Italics Are New since 1990)

| Program Name | Lead Agency (Others Involved) | Pollutant Categories | Type of Program; Geographic Coverage | Audience; Goal | Status |
|---|--|---------------------------------------|---|---|---|
| Biological Stream Assessments | DEC | All | Monitoring; Statewide | Users of water quality data; Assess water quality by using benthic macroinvertebrates. | Ongoing assessments; works with RIBS generally, program staff also conduct about 10 separate full stream surveys per year; they have developed methods that can be used to identify the source of problems. |
| Citizens Lake Assessment Program | DEC/FOLA | All | Monitoring; Statewide | Lake associations; Collect water quality information about selected lakes through volunteers trained by DEC, identify lake problems and educate the public. | Ongoing; 95 lakes active in program. |
| Clean Lakes Program | DEC | All | Planning & Implementation; Statewide | Residents of program lakes; Conduct study and/or implementation projects for selected lakes. | No new federal funding being provided for program. Existing projects being completed. Management plans for Finger Lakes and some other lakes being done using Clean Lakes methodology. |
| Clean Water/Clean Air Bond Act: <i>Non-Ag. NPS</i> | DEC | All | Financial Incentives; Statewide | Municipalities; To provide financial assistance for implementing BMPs to reduce NPS pollution from non-ag. sources. | '97-'98: 45 non-ag projects funded. '98-'99: 47 non-ag projects funded. |
| <i>Ag. NPS</i> | State SWCC | All, primarily sediment and nutrients | Financial Incentives; Statewide | Agricultural community, SWCDs; To help farmers implement BMPs to reduce NPS water pollution. | '96-'97: 22 ag projects funded. '97-'98: 13 ag projects funded. '98-'99: 9 ag projects funded. |
| <i>Clean Water State Revolving Fund</i> | EFC/DEC | All | Financial Incentives; Statewide | Municipalities; To provide financial assistance for planning, design and construction of publicly-owned projects that prevent, reduce or remediate NPS pollution. | Ongoing; funds are available for subsidized low-interest loans for 100 percent of project cost. |
| Coastal Management Program | DOS | All | Regulatory; Coastal Area | Residents in coastal watersheds; Promote the beneficial use of certain coastal resources and provide for the management of activities which may impact coastal resources. | Ongoing through consistency review, development of LWRPs and special projects. |
| Coastal NPS Program (6217 Program) | DOS/DEC | All | Planning; Coastal Watersheds | Residents of Coastal Watersheds; For states to develop and implement programs to control NPS pollution to restore and protect coastal waters. | Programs submitted to NOAA & EPA in July, 1995; Conditional approval given November 18, 1997. (Also see Appendix D) |

| Program Name | Lead Agency (Others Involved) | Pollutant Categories | Type of Program; Geographic Coverage | Audience; Goal | Status |
|--|-------------------------------|---|--|--|---|
| Delaware River Basin Commission Activities | DRBC (NJDEP) | All | Planning & Regulatory; Delaware River Basin | Residents of Delaware River Basin; Promote interstate cooperation, remove controversies, provide coordinated and cooperative planning and water resource management. | Ongoing. |
| Dredge and Fill Permit Program (CWA Section 404 Federal Reg. 33 CFR 320-330) | U.S. Army Corps of Engineers | All | Regulatory; National | Those involved in dredge and fill discharges to waters of the U.S.; Ensure discharges to U.S. waters comply with environmental requirements. | Applies to the disposal of dredged or fill material into lakes, rivers and wetlands, and any "return water" from the upland disposal of dredged material. |
| <i>Drinking Water State Revolving Fund</i> | DOH/EFC | All | Financial Incentives; Statewide | Community water systems, both publicly and privately owned, and non-profit, non-community water systems. To provide financial assistance for planning, design and construction of eligible water system projects. Includes funding of land purchase or conservation easements for source water protection for wellheads or watersheds. | Ongoing; funds are available for subsidized low-interest loans for up to 100 percent of project costs. Grants may be available for qualified applicants with demonstrated financial hardship. |
| Environmental Initiative Program | NYS DOT | All | Planning, Implementation and Technical Assistance; Statewide | Environmental Agencies, Environmental Groups and Local Municipalities; Provide an environmental ethic throughout DOT, advance state and environmental programs and objectives and strengthen relationships with target audiences. | Completed dedicated environmental projects in 1998 construction season; Continuing meetings between management and staff to promote awareness and support of the Environmental Initiative; Developing and implementing action plans to advance the Initiative within and outside DOT. |
| Great Lakes (GL) <i>GL Toxic Reduction Effort</i> | USEPA | Toxic Pollutants (Bioaccumulative Chemicals of Concern; BCCs) | Planning; GL Basin | Residents of GL Basin; Reduce pathways and eliminate selected toxic | Program being developed; development delayed due to focus on point source GLL implementation. |
| RAPs (Remedial Action Plans) | USEPA/DEC | All | Planning and Implementation; GL Basin | Residents of areas of concern; Restore/protect beneficial uses. | Development completed December 1997; implementation ongoing. |
| <i>LAMPS (Lakeside Management Plans)</i> | USEPA / DEC / EC / OME | All | Planning; Lk. Erie & Lk. Ontario Basins | Residents of Basins; Restore/protect beneficial uses; Address loadings of pollutants. | Developing Stage 1 problem definition. |
| Phosphorus Reduction Strategy | USEPA / EC | Phosphorus | Planning; GL Basin | Residents of GL Basin; Reduce phosphorus loads. | Reduction targets met and some exceeded. |

| Program Name | Lead Agency (Others Involved) | Pollutant Categories | Type of Program; Geographic Coverage | Audience; Goal | Status |
|--|---|--|--|---|---|
| <i>Hazardous Air Pollutants</i> | USEPA | Hazardous Air Pollutants (HAP) | Planning; Statewide | All state residents; Air monitoring/research to reduce loads. | Clean Air Act implementation of "Great Waters" Program; mercury is pollutant of concern in GL Basin. |
| Niagara River Toxics Mgt. Plan | DEC / USEPA / EC / OMEE | Toxic Pollutants | Planning; Niagara River Watershed | All residents of watershed; Reduce toxic loads to river and Lake Ontario. | Implementation ongoing; up- stream/down-stream monitoring studies and track downs. |
| Lake Classification Inventory | DEC | All | Monitoring; Selected areas across the state | Users of water quality data; Collect water quality data on lakes in a defined geographic area. | Reinitiated in 1996; 15 lakes monitored in 1996; 10 different ones in 1997. |
| Local Waterfront Revitalization Program (LWRP) | DOS & Local Entity | All | Regulatory; Coastal Area | Residents in areas with LWRPs; Develop a full partnership between local governments and DOS to refine and supplement Coastal Management Program by incorporating local needs and objectives. | Ongoing; DOS is working with more than 100 municipalities, 52 of which have approved LWRPs. |
| Management Conferences Lake Champlain | USEPA | All, primarily Phosphorus (Nutrient) | Planning; Lake Champlain Watershed | Watershed residents, users of resource and regulatory/funding agencies; To identify areas of concern and provide recommendations for addressing those concerns. | Management Plan approved in October, 1996. |
| Onondaga Lake | USEPA, USACOE, DEC, AG, City of Syracuse, Onondaga Co. | All, emphasis on Mercury (Toxic) and Phosphorus (Nutrient) | Planning; Onondaga Lake Watershed | Watershed residents, users of resource, and regulatory/funding agencies; Reduce loadings of pollutants to meet standards and attain best use. | Amended Consent Judgement Approved in Aug 1997; CERCLA Remedial Investigation and Feasibility Study in progress. |
| National Estuary Programs <i>Hudson River Estuary</i> | DEC, Hudson River Estuary Management Advisory Committee and HRE Work Group | All, emphasis on Contaminated Sediments (Toxics) | Planning; Hudson River Estuary Watershed | Watershed residents, users of resource and regulatory/funding agencies; Protect, restore and enhance the productivity and diversity of natural resources of the Hudson River estuary to sustain a wide array of present and future human benefits. | Management Plan approved and released July, 1996. |
| <i>LIS (Long Island Sound)</i> | USEPA, DEC, CT DEP | All | Planning; LIS Watershed | Watershed residents, users of resource and regulatory/funding agencies; Protect and improve the health of LIS while ensuring compatible human uses in the Sound ecosystem. | CCMP approved in 1994 and reaffirmed in 1996. |

| Program Name | Lead Agency (Others Involved) | Pollutant Categories | Type of Program; Geographic Coverage | Audience; Goal | Status |
|---|---|---------------------------------------|--|---|---|
| <i>NY-NJ Harbor</i> | USEPA, DEC, NJ DEP | All | Planning; NY-NJ Harbor Watershed | Watershed residents, users of resource and regulatory/funding agencies; To establish and maintain a healthy and productive Harbor/Bight ecosystem will full beneficial uses. | CCMP completed in 1996; recieved concurrence by Governors of New York and New Jersey and EPA approval in 1997. |
| <i>Peconic Estuary</i> | Suffolk Co. DOH (EPA) | All | Planning; Peconic Estuary Watershed | Watershed residents, users of resource and regulatory/funding agencies; Protect the health of the Peconic Estuary, while ensuring compatible human uses in the estuary ecosystem.. | Draft Action Plan completed Dec. 1994. Comprehensive Conservation and Management Plan for program drafted Summer, 1999; final plan expected in Winter 1999. |
| <i>South Shore Estuary Program</i> | DOS | All | Planning; South Shore of Long Island | Local residents, local governments, interest groups; Develop management recommendations to alleviate and prevent water pollution, improve shellfishing; Protect appropriate investments and maintain a balance between preserving the estuary's natural integrity and promoting recreation, tourism and water dependent business. | An Interim Report has been prepared. A draft comprehensive management plan expected by Fall 1999. |
| <i>NYC Watershed Protection Program</i> | NYC DEP (Parties to the New York City Memorandum of Agreement) ² | All | Regulatory and Non-Regulatory; NYC's Water Supply Watershed (200 sq. mi.) | Watershed residents, state, county and municipal governments, and commercial, industrial and institutional entities; To protect water supply by meeting filtration avoidance criteria. | January 21, 1997: Watershed Memorandum of Agreement signed. May 1997: Revised NYC Watershed Regulations became effective. |
| Nonpoint Source Cost-Share Program (Env. Protection Fund, 319, 604(b)): | | | | | |
| <i>Ag. Sources</i> | State SWCC | All, primarily Sediment and Nutrients | Financial Incentives; Statewide | Ag. community, SWCDs; To help farmers implement BMPs to reduce NPS water pollution. | 98 projects funded between 1992 and 1998. Funded thru Environmental Protection Fund (EPF) 319 and 604(b). |
| <i>Non-Ag. Sources</i> | DEC | All | Financial Incentives; Statewide | Municipalities; To provide financial assistance for implementing BMPs to reduce NPS pollution from non-ag. sources. | 114 projects funded between 1992 and 1998. Funded primarily thru EPF 319 and 604(b). |

² Parties to the New York City Watershed Memorandum of Agreement (MOA) include the State of New York, City of New York, U.S. Environmental Protection Agency, Coalition of Watershed Towns, Catskill Watershed Corporation, NYS Department of Environmental Conservation, NYS Department of Health, NYS Department of State, NYS Environmental Facilities Corporation, New York City Department of Environmental Protection, Catskill Center for Conservation and Development, Hudson Riverkeeper Fund, Inc., New York Public Interest Research Group, Inc., Open Space Institute, Inc., Trust for Public Land, and every town, village and county in the NYC water supply watershed.

| Program Name | Lead Agency (Others Involved) | Pollutant Categories | Type of Program; Geographic Coverage | Audience; Goal | Status |
|--|-----------------------------------|---------------------------------------|--|--|--|
| Plant Materials Program | USDA - NRCS (SWCDs) | Sediment and Nutrients | Implementation and Technical Assistance; Statewide | Municipalities and farmers with gravel pits; Provide native plants to revegetate mined land sites, restore wetlands, protect stream bank and riparian areas, stabilize coastal dunes, reduce erosion, and improve water quality. | 1997: Three new plants released to commercial growers for use in CRP, EQIP, WRP, and WHIP. Study completed on the attenuation of nitrates in soil water by grasses. Assisted The Nature Conservancy. |
| Pollution Prevention Outreach Program | DEC | All | Outreach; Statewide | Regulated community; To educate the regulated community that pollution can often be prevented by reducing or eliminating the use of toxic substances. | Ongoing; numerous documents (including fact sheets, brochures, manuals) published; annual pollution prevention conference held; staff conducts workshops for local governments and small businesses. |
| Public Water Supply Program | DOH | All | Planning; Statewide | Public water supply users. Assure that water supply is safe to drink. | Ongoing oversight of over 3,000 community and 2,000 non-community water systems. |
| Resource Conservation & Development Program | USDA NRCS & RC&D Councils (SWCDs) | Sediment, Thermal stress | Planning; implementation, financial incentive (assist with securing loans or grants), technical assistance, and outreach; 7 RC&D Councils serve 48 counties in NYS. | Local landowners, units of government, and water based associations; RC&D priorities vary from Council to Council. Watershed inventory and stream bank stabilization projects are accomplished. | Annual and long-range plans are developed statewide by USDA-NRCS and on a Council basis by each RC&D Council. Progress reports of RC&D activities are normally prepared annually. |
| Rotating Intensive Basin Studies (RIBS) | DEC | All | Monitoring; Statewide | Users of water quality (wq) data; Evaluate overall wq (including sediment analysis) and provide a database for recommended site-specific assessments. | RIBS is an ongoing assessment process; process is being revised; work has started in several basins; revised process will be implemented over the next 5 years. |
| Shellfish Land Certification | DEC | All | Planning; Marine Waters | Shellfish consumers; Protect public health by accurately classifying shellfish growing areas. | Ongoing. |
| Soil and Water Conservation District Program | SWCDs | All, primarily Sediment and Nutrients | Planning, outreach & technical assistance; Various programs exist in each county | All state residents; Special purpose district created to develop and carry out a program of soil, water and related natural resource management by providing technical assistance and other programs to residents. | Ongoing. |
| State Environmental Quality Review (SEQR) | DEC (or can be a local entity) | All | Regulatory & Planning; Statewide | All state residents; To ensure that potential environmental impacts of any proposed action regarding land use and development are identified. | Ongoing program; vast majority of development since SEQRA was enacted has undergone an environmental review. |

| Program Name | Lead Agency (Others Involved) | Pollutant Categories | Type of Program; Geographic Coverage | Audience; Goal | Status |
|---|---|---|---|---|---|
| Stream Classification Program | DEC | All | Planning; Statewide | Water users; Classify every waterbody in the state according to its best usage taking into account stream flow, water quality, past, present and desired uses of water in the best interest of the public. | Every waterbody in state that supports fishing has been classified; process of updating classifications is nearly complete. |
| Susquehanna River Basin Commission Activities | SRBC | All | Planning, Monitoring & Regulatory; Susquehanna River Basin | Residents of Susquehanna River Basin; To improve lives of the citizens and economies of NY, PA & MD thru comprehensive planning and management of water resources in the basin. (Commission's Comprehensive Plan currently under revision.) | 1998: Using a geomorphological stream restoration method in demonstration project. Providing Chesapeake Bay Program pass-thru funds to Upper Susquehanna Coalition for ag survey. Conducting habitat, water quality, and macroinvertebrate surveys in the Chemung and Upper Susquehanna sub-basins. |
| Water Quality Certification Program (CWA Section 401 Federal Reg. 40 CFR 121) | NYS DEC's Division of Environmental Permits (US Army Corp of Engineers) | All | Regulatory (pre-requisite for 404 permit); National | Those involved in dredged and fill discharges to waters of the U.S.; Require state to evaluate water quality impacts prior to federal approval. | August, 1993—program delegated to NYS. |
| Water Resources Institute Programs | WRI | All | Planning, outreach & technical assistance; Statewide | All state residents; To sponsor and pursue water related activities through investigations/experiments, education, outreach activities and providing technical assistance. | Ongoing. |
| Water Resources Research Grants Program | NYS Water Resources Institute | All (NPS a priority area but not exclusive) | Research, Outreach; 13 states and DC | Colleges and university faculty and students, general public, businesses; To improve knowledge base for decisions, train future water professionals, disseminate information to public. | 1996-98: \$2.4 M (\$800,000+ annually) awarded competitively. \$300,000 went to 4 2-year projects in New York. Research results from projects in other states are often applicable to NY NPS issues. |
| Water Week | DEC (partners) | All | Outreach; Statewide | All state residents; Provide information, stimulate action and knit together activities so that watershed partnerships are formed and work to restore, preserve and protect New York's waters. | 1998: Completion of a four year campaign focusing on watersheds and watershed partnerships. |
| Wild, Scenic and Recreational Rivers | DEC | All | Planning; Statewide | River users; Protect, preserve and enhance significant rivers and river areas throughout the state. | 125 river segments (1202.3 miles) are protected by this program. |

2. Agriculture

Since the Statewide 208 Report, an extensive program to assess and manage water quality influences of farms has evolved and involves a number of federal and state agencies. The program is built around voluntary participation of farmers, provision of technical and financial assistance, and farm-specific tailoring from a list of standard BMPs. Integrated, watershed-based farm planning programs recently have been developed to cope with water supply source protection issues.

a. Source Description

Agriculture continues to be one of the largest users of New York land. Despite a long-term decline in acreage and a steeper decline in the number of individual farms, 36,000 farms still used about 7.7 million of New York State's 30.3 million land acres in 1996. Livestock operations continued to dominate, accounting for about two thirds of New York's \$3.25 billion agricultural gross revenues in 1995. (Data from USDA annual estimates.)

There are three shifts underway that are relevant to water quality management. First, the average size of farms (in land area, production, and revenue terms) is increasing. While the family farm is still the most common, the professional farm with more hired personnel is becoming more frequent. Second, since livestock farming is stable to declining in aggregate and crop farming (including greenhouses and nurseries) is increasing, the latter's share is increasing at the expense of livestock's share. Third, in a trend less evident from Census statistics, the intensiveness of use of agricultural land is increasing as smaller and less intensively managed farms are closed for financial and family reasons, more intensive farms remain in operation, and entrepreneurial farms increase their intensity to maintain or improve profitability in the face of increasing production costs and property taxes.

The extent and intensity of this major land use leads to concern about agriculture's contribution to nonpoint source pollution. Agricultural activities often include soil disturbance in preparation for planting, periodic fertilizer and pesticide applications, concentrated animal populations, and animal waste storage and spreading. Agricultural water quality problems generally arise when improper management, excessive intensity, or inappropriate land uses are part of the agricultural operation. In these instances agricultural nonpoint source pollutants have included eroded sediment, dissolved nutrient and pesticide residues, pathogens, and oxygen demanding substances. Areas of animal concentrations including overgrazed areas can contribute nutrients, organic matter, ammonia and pathogens. Removal of riparian vegetation and unrestricted livestock access to streams can result in increased streambank erosion as well as increases in stream water temperature which adversely affects fish.

It is difficult to estimate the extent to which New York agriculture or other nonpoint sources cause impairment of the State's waters because a consistent statewide evaluation has never been considered feasible. The qualitative assessments and local evaluations in DEC's 1988-89 Nonpoint Source Assessment Report and subsequent County Water Quality Coordinating Committee work indicate that, in New York, lakes and impoundments are more likely to be affected by agricultural nonpoint sources than streams or rivers. This is logical since these water bodies are often the depositories for the sediment, nutrients, organic matter, and chemicals lost from agricultural land. Furthermore, lakes and impoundments more readily manifest the consequences of these contaminants, regardless of the source.

The 1998 Priority Waterbody List (PWL) includes nearly 200 segments across the state where agriculture is the perceived primary source of impairment and another 200 segments where agriculture is a perceived secondary source.

Together these account for nearly 30% of the total number of segments on the PWL.

b. Existing Programs

There have been many developments in agricultural water quality management in New York since the prior edition of the Nonpoint Source Management Program in 1990. Programs reach a larger number of farms, they better integrate activities by different agencies, they have many more resources, and they can draw from a stronger scientific foundation.

Agricultural Environmental Management

Agricultural Environmental Management (AEM) is the umbrella initiative which is being used to implement the agricultural nonpoint source management programs in New York. AEM coordinates programs from the federal, state and local level with private sector efforts. It also coordinates various program aspects, including education, planning, implementation, priority setting, incentives, certification and evaluation. The New York State Soil and Water Conservation Committee, with guidance from its AEM Steering Committee, provides the leadership for planning, coordinating and policy setting for the AEM initiative. Locally, county teams consisting of representatives from the soil and water conservation district, Natural Resources Conservation Service-Farm Services Agency (NRCS-FSA), and Cornell Cooperative Extension provide leadership for coordination, policy setting, planning and implementation. Cornell Cooperative Extension assists the State Committee with outreach, education and public participation.

Agricultural Environmental Management is based on the “tiered” planning and implementation approach on individual farms, and is most effective when done on a more comprehensive basis with a number of farms in a prioritized watershed or “priority area” setting. Watersheds, or other

“priority area” designations, are identified and prioritized for submittal of AEM implementation projects through the efforts of County Water Quality Coordinating Committees or County Local Working Groups. Individual farms, especially those identified as Concentrated Animal Feeding Operations (CAFOs), may be considered high priority candidates for planning and implementation.

Throughout the various AEM processes, there are opportunities or needs for communicating with a variety of audiences. These audiences include farmers, agri-business, community leaders, watershed associations, environmentalists and others. Each AEM watershed initiative would benefit from a coordinated communication component consisting of outreach, education and public participation activities.

AEM collects information, assesses farm management practices for potential environmental concerns and recommends individual practices or systems of Best Management Practices (BMPs) to address those concerns.

The NRCS nine step planning process is used to:

- collect information
- determine farmer objectives
- analyze information
- identify and select alternative management practices or systems
- formulate a plan
- implement the plan
- evaluate the results and future directions

Tools developed in the planning efforts being conducted in the Skaneateles Lake Watershed Agricultural Program (SLWAP), the New York City Watershed Agricultural Program (NYCWAP) and various ongoing AEM projects are used in the beginning steps of the NRCS planning process. The “tiered approach” is a phrase coined in the SLWAP which addresses the logical sequence of developing, implementing and

evaluating the plan. Tiers I-III are used to develop the plan. Tier I consists of a questionnaire designed to collect information about the farm operation. Tier II consists of a group of worksheets which are used to evaluate the potential environmental concerns of various phases of the farm operation. Tier III is the selection by the farmer of appropriate BMPs to address environmental concerns that are identified in concert with the AEM County Project Team. All implementation and participation decisions are made by the farmer, based on his or her business objectives, information gathered from Tier I and II, and knowledge of issues in the watershed, community or society.

Implementation of BMPs is done under Tier IV of the AEM "tiered approach." The BMPs will often be completed using cost-share incentive payments from the State Agricultural Nonpoint Source Abatement and Control Program or one of several USDA Farm Bill programs. The state program is funded through the Environmental Protection Fund (EPF) and the Clean Water/Clean Air Bond Act. Projects consisting of assessment, planning and implementation (Tiers I-IV) can be funded through the EPF statewide. The Bond Act emphasizes implementation of BMPs (Tier IV) in several management plan areas, although planning and assessment directly related to implementation of BMPs can be funded also. The federal effort consists of funding programs for natural resource protection to include water quality and quantity, soil erosion, wildlife habitat improvement and wetland protection. BMPs used in the state program are identified in DEC's Agricultural Management Practices Catalogue, while those in the federal program are identified in NRCS's National Handbook of Conservation Practices.

The evaluation of AEM efforts at the watershed and farm level is considered Tier V. The AEM Steering Committee appointed a working group to develop evaluation approaches to determine effectiveness at the following four levels: individual management practices, the whole farm,

the watershed, and the AEM program. The AEM Steering Committee has developed specific recommendations for the approaches considered high priority, and will incorporate these in the annual AEM strategy.

General SPDES Permit for Concentrated Animal Feeding Operations (CAFO)

The New York State Department of Environmental Conservation published a draft General SPDES Permit for Concentrated Animal Feeding Operations on March 3, 1999. The effective date of the CAFO discharge permit is July 1, 1999, and the expiration date is June 30, 2004. A CAFO is: 1) an animal feeding operation of 1000 animal units or more; or, 2) an animal feeding operation with greater than 300 animal units and less than 1000 animal units that discharges to surface waters of the State either through a man-made ditch, flushing system, or other similar man made device, or directly into the surface waters of the State. (*Generically, one animal unit is equal to that of 1000 pounds of live animal weight. The equivalent animal units for common livestock species are listed in the draft permit.*) An animal feeding operation is defined as a facility where animals are confined for a total of 45 days in any twelve consecutive month period.

The General Permit focuses on two principal areas of water quality protection. First, there may be no discharge of process wastewater (as defined in the permit) from the animal feeding operation to surface waters of the State for storm flows less than the 25 year - 24 hour storm as defined by the National Weather Service. Second, the permittee must develop and implement an Agricultural Waste Management Plan (AWMP) in accordance with the *Natural Resources Conservation Service (NRCS) - Conservation Practice Standard - Waste Management System No. 312 - NY*. In addition, the permittee and a qualified Agricultural Environmental Management

Planner must submit a certification to the Department that the AWMP was prepared in accordance with the NRCS CPS - 312.

Pemittees that are eligible for coverage under this permit will be able to obtain coverage by filing a Notice of Intent with DEC. Existing CAFOs must file an NOI with the Department within 180 days of the issuance of the General Permit and new CAFOs must file an NOI with DEC 30 days prior to commencing operation in order to discharge. DEC retains the authority and discretion to determine that a CAFO may not be eligible for coverage under this permit and, as such, may require the CAFO to submit an application for coverage under an individual SPDES permit.

In addition to issuing the final draft permit, DEC conducted four information meetings during the Spring 1999 public notice period. The purpose of these meetings was to answer questions about the draft CAFO General Permit and to help prepare participants who plan to submit comments on the draft permit.

Table V-2 (Implementation Steps) catalogues other current programs that include agricultural nonpoint source management as a primary or secondary goal. Some of these programs may be components for existing or future comprehensive programs at a county or watershed level under the AEM program.

c. Implementation Steps

The Agricultural Implementation Steps are organized as follows. The Agricultural Environmental Management (AEM) program is presented first, followed by implementation steps for the General Permit for CAFOs, and then other programs.

AEM Program

1. Formalize the Agricultural Environmental Management (AEM) Initiative:

! NYS Department of Agriculture and Markets completes AEM Guide and presents to AEM Steering Committee (completed)

! NYS Soil and Water Conservation Committee adopt guide as policy for agricultural environmental planning in New York (completed)

! AEM Steering Committee develop and implement a coordinated and comprehensive statewide public information campaign aimed at key audiences to introduce the AEM initiative

! Appropriate agencies recognize AEM, through policy, as the process for addressing:

- Clean Water Act requirements (EPA, DEC)

- Safe Drinking Water requirements (DOH)

- Coastal Zone Management Act requirements (DEC, DOS)

- Farm Bill program requirements (USDA-NRCS, USDA-FSA)

(Partially Achieved: On August 24, 2000 Governor George E. Pataki signed into law legislation creating the Agricultural Environmental Management Program (AEM). The Agricultural Environmental Management Act amends the Agriculture & Markets Law, the Environmental Conservation Law, the Executive Law, and the Soil & Water Conservation District Law. The primary goal of AEM is to protect and enhance the environment while maintaining the viability of agriculture in New York State.)

- ! NYS Soil and Water Conservation Committee will update the AEM guide, as necessary, based on recommendations from the AEM Steering Committee, and distribute to the current database of AEM guide holders as well as new prospects.
2. Provide Direction to the Agricultural Environmental Management (AEM) Initiative:
 - ! AEM Steering Committee develops a long-range plan for AEM, to be approved by the NYS Soil and Water Conservation Committee
 - ! AEM Steering Committee develops, based on the AEM long-range work plan, an annual work plan including an outreach plan, to be approved by the NYS Soil and Water Conservation Committee.
 3. Develop Staffing Capability to Implement Agricultural Environmental Management (AEM) Statewide:
 - ! AEM Steering Committee and involved agencies (CCE, FSA, NRCS and SWCC) evaluate capabilities of County Project Teams regarding:
 - Staffing vs. workload
 - Training needed
 - Degree of teamwork established
 - ! AEM Steering Committee and involved agencies (CCE, FSA, NRCS and SWCC) conduct Regional Training for County Project Teams to:
 - Introduce AEM Guide
 - Help define roles and an implementation strategy
 - Update team on current AEM developments
 - Inform teams of incentives to farmers for participating in AEM.
- Select, design and implement best management practices for individual farms
 - ! AEM Steering Committee and Certification Subcommittee work with NYS Department of Agriculture and Markets and NRCS to establish and maintain a program for certification of AEM planners.
4. Develop and Provide Materials Necessary for a Comprehensive Agricultural Environmental Management Initiative:
 - ! AEM Outreach Subcommittee develop educational supplements for AEM worksheets
 - ! AEM Steering Committee and Technical Subcommittee develop additional AEM technical materials and worksheets as needed to provide capability to assess all resources on the farm
 - ! AEM Outreach Subcommittee develop AEM outreach and education materials and worksheets to meet communication needs identified in AEM annual work plan
 - ! AEM Outreach Subcommittee provide to County Project Teams a list of AEM outreach and education materials.
 5. Maintain an Updated Prioritized Listing of Watersheds and Wellhead Areas for Agricultural Environmental Management Implementation:
 - ! AEM Steering Committee obtain most recent priority lists for:
 - Wellhead protection/source water protection under the SDWA
 - Priority Waterbodies List under the CWA

- Local Priority Areas under the Farm Bill.
6. Incorporate Agricultural Environmental Management Initiative into Watershed and Wellhead Protection Efforts:
 - ! AEM Steering Committee and lead program agencies use AEM processes to address agricultural issues in:
 - Wellhead Protection/Source Water Protection (SDWA)
 - Nonpoint Source Watershed Protection (CWA, CZMA)
 - Natural Resource Protection (Farm Bill)
 - ! New York State Soil and Water Conservation Committee selects and funds highest priority AEM planning efforts under the Agricultural Nonpoint Source Abatement and Control Program
 - ! AEM Steering Committee recommends that appropriate lead agencies establish policy to complete AEM Tiers I-III as requirement for funding implementation based on program policy decisions in:
 - Agricultural Nonpoint Source Abatement and Control Projects (NYSSWCC)
 - Environmental Quality Incentive Program (EQIP) projects (USDA NRCS and USDA FSA)
 - Other USDA Farm Bill Incentive Program projects (USDA NRCS and USDA FSA)
 - Wellhead Protection/Source Water Protection projects (NYSDOH).
 7. Implement Agricultural Environmental Management Tiered Plans through Best Management Practices (BMPs):
 - ! County Project Teams prioritize AEM plans for inclusion in funding applications to:
 - Agricultural Nonpoint Source Abatement and Control Program (funded through the 1996 Clean Water/Clean Air Bond Act and the Environmental Protection Fund)
 - Environmental Quality Incentives Program (EQIP)
 - Other Farm Bill programs such as CRP, CREP, WRP, WHIP, SIP, etc.
 - ! County Project Teams work with farmers to implement Best Management Practices (BMPs) selected for funding through existing grant programs
 - ! County Project Teams and AEM Steering Committee recommend new BMPs to NRCS and DEC as appropriate.
 8. Implement Agricultural Environmental Management Tiered Planning Approach on Large Animal Livestock Operations:
 - ! County Project Teams address Concentrated Animal Feeding Operations (CAFOs) through permit process in cooperation with DEC
 - ! County Project Teams address other livestock operations below the CAFO threshold using procedures outlined in AEM tiered planning process and Best Management Practices (BMPs).
 - ! DEC and County Project Teams investigate sources of agricultural water pollution from other livestock operations below the CAFO threshold using procedures outlined in DEC's Technical

Operation and Guidance Series (TOGS) memo.

9. Enhance State and Local Capability to Implement Agricultural Environmental Management:

- ! AEM Steering Committee works with appropriate entities to increase ability to fund projects, including personnel, to plan and implement priority AEM initiatives
- ! AEM Steering Committee works with appropriate entities to develop new incentives to facilitate farmer participation
- ! AEM Steering Committee works with USDA State Technical Committee to coordinate State/Federal incentive programs

10. Involve Private Sector as Key Participant in Agricultural Environmental Management Initiatives:

- ! AEM Steering Committee, Certification Subcommittee and appropriate agencies/organizations establish the following:
 - Criteria for certification
 - Training needs for certification (initial and annual updates)
 - Evaluation of certified planners, including spot check requirements
- ! AEM Steering Committee maintains the registry for certified planners for the NYS SWCC and NYS DAM
- ! AEM Steering Committee and Certification Subcommittee provide training updates for AEM certified planners.

11. Evaluate Level of Participation and Environmental Effectiveness in Agricultural Environmental Management Initiative:

- ! NYS Soil and Water Conservation Committee works with the farm community and regulatory agencies to establish criteria for successful achievement of AEM participation and effectiveness
- ! AEM Steering Committee will seek input from various sources as part of evaluation process and develop recommendations for the NYSSWCC to evaluate program and farm-level effectiveness
- ! New York State Soil and Water Conservation Committee revises initiative to reflect needs identified during program evaluation.

12. AEM Steering Committee develops mechanisms to formally recognize both farmers' and local staff successes in implementing practices.

13. The coordinated statewide programs delivered at local levels could benefit from more efficient communication mechanisms (such as greater use of the Internet), resource materials in more depth, and mechanisms for priority setting for State and Federal funding allocation.

14. While the knowledge bases for nitrogen, sediment, and pesticides are generally adequate to guide BMP selection and implementation, the bases for pathogen and phosphorus management are not as good. New York should continue to conduct research, in conjunction with other States and nations, related to environmental transport and management practices related to these pollutants:

- ! AEM Steering Committee should provide research results to AEM staff
- ! AEM Steering Committee and staff should provide training to farmers on the implementation of BMP modifications based on research results.

CAFO General Permit

15. NYS DEC's Bureau of Water Permits will implement the CAFO General Permit program.

Other Programs

16. NYS DEC's Bureau of Watershed Assessment and Research should investigate how information from the Pesticide Reporting Law can be incorporated into New York's PWL process. (July, 1998, after first annual report is due).
17. Based on the November 18, 1997 final conditional approval of New York's Coastal Nonpoint Pollution Control Program by EPA and NOAA, DEC, DOS and DA&M will have two years to modify New York's program to address storage of manure, facility wastewater, and facility runoff for large and small confined animal facilities. For remainder of agriculture program, New York will have one year to develop a strategy to implement the management measures and identify measurable results to demonstrate implementation.

TABLE V-2

Programs/Activities to Implement Agricultural Nonpoint Source Management
(Programs with Names in Italics Are New since 1990)

| Program Name | Lead Agency (Others Involved) | Pollutant Categories | Type of Program; Geographic Coverage | Audience; Goal | Status |
|---|---|---|--|---|--|
| County Lead Programs | | | | | |
| Conservation Plans | SWCDs, (USDA-NRCS, CCE, Private Sector) | Primarily Sediment, Nutrients, and Pathogens | Technical assistance; National with county lead | Individual farmers; To develop farm-specific plans for resource conservation; | Long term program that is diversifying from former emphasis on erosion control; hundreds of plans developed per year. |
| <i>USDA local working groups (EQIP)</i> | Soil and Water Conservation Districts, (USDA-NRCS, USDA-Farm Service Agency, CCE) | Primarily Sediment, Nutrients, and Pathogens | Planning, Outreach; National with county lead | Governmental and representative private stakeholders; To involve local stakeholders in conservation planning | Work groups formed in NY during 1997 |
| Federal Lead Programs | | | | | |
| USDA Conservation Reserve Program (CRP) Annual sign-up Continuous CRP Enhanced CRP | USDA Farm Service Agency | Primarily Sediment, Pesticides (Toxics) and Nutrients | Financial Incentive; National | Farmers; To protect highly erodible and environmentally sensitive land with grass, trees, and other long-term cover. | Up to 36.4 million acres enrollable nationally though 10- 15-year contracts FY'98 (16 th sign-up): 419 bids covering 13,000 acres in NY. FY'97: \$2.9 M for 905 bids; 29,775 acres |
| | | | | Farmers; To enhance water quality and wildlife habitat by using a continuous sign-up provision and emphasizing filter strips and riparian buffers. | Funded from CRP budget. |
| | | | | Farmers; To address national water quality and wildlife habitat concerns with an emphasis on endangered species. 80% federally funded with 20% combined state and local match. | States allowed up to 100,000 acres per year on a competitive basis (2 M acres nationwide) according to an approved plan for a high-priority watershed. FY'98: NY has prepared a 5-year proposal for \$30 M and 20,000 acres. |
| USDA Wetland Reserve Program (WRP) | USDA-NRCS | Primarily sediment and nutrients | Financial Incentive; National | Farmers; "No net loss" of wetlands, implemented through easement contracts and restoration agreements. Grants pay 75% to 100% of conservation easements; Contracts pay 75% of restoration costs. | Up to 975 thousand acres enrollable nationally for 30-year or permanent easement contracts, or restoration agreements. FY'98: NY spent \$6.2 M for thirty 30-year contracts and 75 perpetual easements for restoration of 7800 acres. |

| Program Name | Lead Agency (Others Involved) | Pollutant Categories | Type of Program; Geographic Coverage | Audience; Goal | Status |
|---|---|---|---|--|---|
| <i>USDA Environmental Quality Incentives Program (EQIP)</i> | USDA NRCS, (USDA-FSA, Soil and Water Conservation Districts, local work groups) | Primarily Sediment, Nutrients, Pesticides (Toxics), and Pathogens | Outreach (education), Technical Assistance, Financial Incentives; National | Farmers; To provide technical assistance and cost-sharing, and to plan and implement conservation practices using 5-10 year contracts. Farmers must address natural resource concerns identified within local priority areas. | \$200M authorized annually for the nation. \$6.2 M allocated for NY for FY'98. \$3.7 M received in FY'97. Program replaces Agricultural Conservation Program and Water Quality Incentives Program. |
| <i>USDA Farmland Protection Program</i> | USDA NRCS | All | Financial Incentive; National | Farmers, State or local government staff; To maintain land in farming by State or local government purchase of conservation easements on farmland. | Authorizes \$35M nationally over six years to purchase 30 year and permanent conservation easements on 170,000 to 340,000 acres. FY'97: NY purchases totaled \$400,000. |
| USDA Flood Risk Reduction Program | USDA-NRCS | Sediment, Nutrients | Financial Incentive; National | Farmers who farm land with high flood potential; To restrict uses of land with high flood potential via voluntary contracts. | FY '98: No budget; program not yet operational. |
| <i>USDA Wildlife Habitat Incentives Program (WHIP)</i> | USDA-NRCS | Any affecting habitat of concern. | Financial Incentive; National | Landowners who wish to improve wildlife habitat on private land; To improve wildlife habitat including wetlands. Emphasis in NY on grasslands and songbird habitat. | \$50M authorized nationally. 75% cost-sharing provided through State based on a WHIP plan. FY '98: NY is eligible to receive \$612,000. |

| Program Name | Lead Agency (Others Involved) | Pollutant Categories | Type of Program; Geographic Coverage | Audience; Goal | Status |
|---|--|---|--|--|---|
| State Lead Programs | | | | | |
| <i>Agricultural Environmental Management program</i> | NYS Soil and Water Conservation Committee, (USDA-NRCS, NYS College of Agriculture and Life Sciences, SWCDs, CCE, DA&M, others) | All, primarily Sediment, Nutrients, and Pathogens . | Outreach, Technical training, Technical assistance; Statewide | Farmers and non-farm public; To reduce risk of environmental problems on farms while maintaining profitability. | (1997) AEM Resource Guide development; initial training begun in 46 counties; conference held May 1997; nearing implementation phase. Regional training held for county project teams statewide |
| <i>Agricultural Nonpoint Source Abatement and Control Program</i> | NYS Soil and Water Conservation Committee, (Soil and Water Conservation Districts) | All, primarily Sediment, Nutrients and Pathogens. | Financial Incentive; Statewide | Agricultural land owners; To reduce, abate, control, or prevent nonpoint source pollution from agricultural activities through watershed-based and individual farm assessments, and implementation of BMPs. | FY94 and FY95: Environmental Protection Fund (EPF) provided \$1.5M for 33 projects. FY96: Environmental Bond Act allocated \$1.6M for 22 projects; EPF provided \$1.9M for 43 projects. FY 97: Bond Act - \$2M for 13 projects; EPF - \$2.8M for 34 projects. |
| Cornell Agricultural Commodity Programs | NYS College of Agriculture and Life Sciences | Nutrients, Toxics (Pesticides) | Tech. training, Tech. assistance, Research; Statewide | Farmers; To develop and recommend tactics for efficient use of fertilizers, pesticides, and other crop production factors. | Mature programs that are slowly integrating water quality concerns into agricultural production recommendations. |
| <i>Cornell animal pathogen research projects (including epidemiological risk assessment and basic microbiology)</i> | NYS College of Veterinary Medicine and NYS College of Agriculture and Life Sciences | Pathogens (parasites - Giardia sp. and Cryptosporidium sp.) | Research; Statewide with emphasis on New York City watersheds | Livestock farmers; To develop knowledge about occurrence, fate, transport, and management options for <i>Cryptosporidium</i> and <i>Giardia</i> . | 1996-97: Funded at roughly \$400k/year primarily within NYC watershed ag program. 1998: \$100k/year federal research funds |
| Cornell Cooperative Extension Pesticide Management Education Program | Cornell Pesticide Management Education Program, (NYS DEC) | Toxics (Pesticides) | Technical training; Statewide | Certified pesticide applicators and applicants. (Applicants must have 3 yrs. experience prior to exams.); To improve technical and legal literacy of pesticide users. | 1996: 8,552 persons trained; and 1,250 courses held. Currently there are 35,917 active certified applicants who recertify every 6 yrs., by testing or training. |

| Program Name | Lead Agency (Others Involved) | Pollutant Categories | Type of Program; Geographic Coverage | Audience; Goal | Status |
|--|---|---|--|---|---|
| <i>Dairy Farm Profitability and Productivity Project (Pro-Dairy) Program</i> | Pro-Dairy Program at Cornell University | Primarily Nutrients, Sediments and Pathogens. | Technical training; Statewide | Dairy farmers and dairy industry service/support professionals; To improve farmer stewardship and farm profitability through adoption of best management practices. | 1988-98: Over 50% of NYS Dairy Farms have participated in the programs curriculum. 1998: 45 workshops included 735 participants. |
| <i>Environmental Bond Act – Agricultural and Farmland Protection Program</i> | NYS Department of Agriculture and Markets | All | Financial Incentive; Statewide | County ag and farmland protection boards, towns, villages, or cities; To maintain land in agriculture | Environmental Bond Act authorizes \$150 M statewide for Open Space Preservation. Ag. and Farmland Protection projects will receive an allocation from that amount. In FY97 \$1.0M funded 2 projects. Also, EPF funded 10 farmland protection projects (\$3.5M) in FY 97 and 8 projects (\$3.7M) in FY 96. |
| Integrated Pest Management (IPM) program | Cornell University IPM Program and NYS Dept. of Agriculture and Markets (co-leads), (Cornell Cooperative Extension associations, NYS DEC) | Toxics (Pesticides) | Tech. training, Tech. assist, Research; Statewide | Farmers, community leaders, and superintendents of buildings and grounds ; To reduce pesticide usage while maintaining profitability. | 1995-96: 90 percent of New York's 36,000 growers use at least one IPM method, and hundreds of growers use the complete set of IPM practices. New outreach programs demonstrating IPM methods to schools, golf courses, parks and other community facilities. |
| <i>Nonpoint Source Implementation Grant Program</i> | NYS DEC's Division of Water - Bureau of Watershed Management | All, primarily Sediment, Nutrients and Pathogens. | Financial Incentive; Statewide | Municipalities; To reduce, abate, control, or prevent nonpoint source pollution from agricultural activities through watershed-based assessments, education, and implementation of BMPs. | The Nonpoint Source Implementation Grants Program provided funding for a total of 4 agriculture pollution control projects in 1994-95 and 1995-96. One additional agriculture pollution control project was funded with the 1996-97 grants announced in May of 1997. |

| Program Name | Lead Agency (Others Involved) | Pollutant Categories | Type of Program; Geographic Coverage | Audience; Goal | Status |
|---|---|--|--|--|---|
| Pesticide Reporting Program | NYSDEC, Division of Soil & Hazardous Materials, Pesticide Reporting Section, (Cornell University; NYSDOH) | Toxics (Pesticides) | Regulatory, Monitoring; Statewide | Pesticide applicators, sellers, businesses, importers, manufacturers and compounders; To investigate correlation between pesticide use and illness by requiring reporting of the "location of intended application" of pesticides used in agricultural crop production. | New law as of 1996. Annual reports begin July 1998. |
| Pesticide Registration Program | NYS DEC's, Division of Soil & Hazardous Materials, Pesticide Registration Sections, (Cornell University) | Toxics (Pesticides) | Regulatory; Statewide | All users of restricted pesticides; To protect environment, workers, and consumers via registration of pesticide products and businesses. | Ongoing |
| Soil Testing Service | Cornell Nutrient Analysis Laboratory | Nutrients | Technical assistance; Statewide | Farmers; Provide advice for agronomically efficient use of nutrients, reducing excessive applications. | Thousands of samples tested annually, each result returned with fertilizer and manure application recommendations. |
| Watershed Lead Programs | | | | | |
| <i>New York City Watershed Agricultural Program</i> | Watershed Agricultural Council, Inc., (USDA-NRCS, CCE, NYS WRI, NYS DEC, NYC DEP, SWCDs, NYS DOH, American Farmland Trust, NYS SWCC, NYS DA&M, EPA) | Pathogens, Nutrients, Sediment, Oil and Grease (Petroleum spills), Pesticides (Toxics) | Technical assistance, Financial incentives, Implementation, Technical training, Outreach, Research; New York City water supply watersheds | All farmers in NYC water supply watershed; To reduce risk of pollutant escape and improve economic viability, and to involve 85% of watershed farmers. | July, 1998: 311 farmers participating; 171 farm plans developed, with 795 BMPs implemented and over 55,000 acres managed. \$35M budget from NYC for Phase II. Farmer participation status reported monthly. |

| Program Name | Lead Agency (Others Involved) | Pollutant Categories | Type of Program; Geographic Coverage | Audience; Goal | Status |
|--|--|---|--|--|--|
| <i>Wallkill Demonstration Project</i> | CCEs of Orange, Ulster, and Sullivan Counties (CCE and Cornell University, USDA-NRCS, USDA-Farm Service Agency, Soil and Water Conservation Districts) | Nutrients, Pesticides, Sediment | Tech. training; Wallkill-Roundout Watershed in Orange, Ulster and Sullivan Counties | Horticultural and dairy farmers; Demonstrate delivery of water quality protection programs to farms through teams drawn from several USDA agencies. | Active since 1991. |
| <i>Watershed Agricultural Program (Skaneateles Lake)</i> | Skaneateles Lake Watershed Agricultural Committee, (City of Syracuse, CCE, SWCDs, USDA- NRC) | Sediment, Nutrients (nitrogen and phosphorus), and Pathogens. | Technical assistance, Outreach, Tech. training; Skaneateles Lake watershed | All farmers in the watershed; Voluntary implementation of whole farm plans that maintain water quality while sustaining the economic viability of the farm. | 1995: Program started As of 7/31/98: 47 farms have completed Tier I. 44 farms have completed Tier II. 20 Tier III plans and 3 Tier II have been completed. 3 more plans in progress. Annual Reports available. |

3. Atmospheric Deposition

a. Source Description

Atmospheric deposition is recognized as a major nonpoint source of pollution. Acid rain is the most well known form of atmospheric deposition, but there are other aspects of the problem that are equally damaging. Deposition occurs during all forms of precipitation and even occurs as dustfall on sunny days. Pollutants released to the air will eventually fall back to earth. The airborne pollutants are deposited on the landscape and then carried to waterbodies during runoff events.

The problem of acid rain largely originates from pollutants emitted into the air when fossil fuel is burned. The primary pollutants are sulfur oxides which combine with water to form sulfuric acid, and nitrogen oxides which combine with water to form nitric acid. The oxidation reaction is aided by metallic catalysts such as iron and manganese oxides which are commonly present in the fly ash emitted during the burning process. Acid rain results in lower pH and higher levels of aluminum in surface waterbodies. The aluminum is leached from soil and sediments by low pH water. The higher aluminum levels cause fish to produce excess mucus which clogs their gills and causes their death.

The entire ecosystem can be affected by acid rain. The sensitivity to acidic conditions varies among different animals and plants. In the most severe cases mortality and reproductive failure among certain fish are experienced. Impacts may be in the form of reduced food supply or death of newly hatched fry, the stage most sensitive for fish species.

Acid rain has been listed as the primary source of impairment on 397 waterbodies within the Black, St. Lawrence, Lake Champlain, Upper Hudson and Mohawk basins. In southeastern New York, atmospheric pollution, falling directly onto Long Island Sound's surface and entering indirectly from the Sound's watershed, may contribute as much as 14.3% of the nitrogen enrichment to Long Island Sound (nitrogen enrichment is the cause of severe summertime hypoxia problems in the Sound). Many

other waterbodies are affected by acid rain as a secondary source although the PWL lists only 22. For example, waterbodies within the Catskill Park and in higher elevations in southeastern New York are affected by acid rain.

Atmospheric deposition has been shown to be a significant source of pollutants in urban areas as well as Adirondack lakes. It is likely that it contributes to, or compounds, pollution problems in some of the nearly 400 segments on the 1998 Priority Waterbody List (PWL) that are impaired, primarily or in part, due to urban runoff. Nationwide Urban Runoff Program (NURP) projects (mostly in the northeastern states) attributed heavy metals concentrations in urban runoff to rainfall pH effects. However, further study was recommended to verify this possibility.

Atmospheric deposition of airborne pollutants has become a national and regional environmental issue as well as a localized watershed issue. Long range transport of persistent toxic substances which bioaccumulate in the food-chain, such as mercury, have been receiving special attention. During the summer of 1997, USEPA's 2nd report to Congress on airborne toxic substances and their deposition was made available to the public. The report contains the most recent toxic substance deposition information gathered from an international atmospheric deposition monitoring network. USEPA released to the public, in December 1997, a national study of the sources, deposition, human health effects, and ecological effects of mercury in the atmosphere which eventually enters the surface waters and contaminates fish tissue. In the northeast region, New York State, New Jersey, and the New England States developed and released, in February 1998, a detailed report of refined mercury emissions inventory and deposition, current mercury fish advisories and multimedia pollution prevention activities related to removing mercury from the solid waste stream.

Precipitation causes gases, aerosols and large particles to be removed from the atmosphere and deposited on the surface. Pollutants contained in precipitation may include acidity, toxic materials, organic chemicals, phosphates and nitrogen compounds. Dry fallout is of significance during

times between precipitation events, but in some cases the overall loadings have been found to be on the same order of magnitude as wet fallout.³

In 1990, the federal Clean Air Act Amendments (CAAA) were passed. Title IV established a national cap on SO₂ utility emissions of 8.95 millions tons per year, and 5.6 million tons per year for non-utility industrial sources by the year 2010. SO₂ utility emissions will be reduced by 10 million tons per year from 1985 levels in two phases. The CAAA also calls for a 2 million tons per year reduction in utility NO_x emissions by the year 2000. However, unlike SO₂, there is no national cap.

Sulfur dioxide sources affected by the cap in Phase I are large, high-emitting, primarily coal-fired utility plants. Phase II begins in 2000 and affects virtually all existing utility units greater than 25 megawatts and most new utility units. In 1995, 85.5% of the national sulphur dioxide emissions were associated with fuel consumption. Industrial processes were second at 11.2% and transportation third at 3.3%.

Again at the national level, USEPA estimated in 1990 that 45% of NO_x are emitted by mobile sources, 50% from fuel combustion, and 4% from industrial emissions. In New York, a significant portion of the 2 million tons per year utility reduction will be achieved by the installation of low NO_x burner technologies on coal-fired utility boilers that must meet new emission standards.

In October of 1998, through the leadership of New York State, the concerns of northeastern states were reflected in the final federal regulations under Section 110 of the Clean Air Act that were announced September 24, 1998. The regulations will reduce emissions of nitrogen oxides from utility and other large sources in 22 states in the eastern United States. This action will reduce the amount of ozone that is transported into New York during the summer months. Most of the atmospheric deposition affecting

New York State's waters originates outside of the State.

The *Acid Deposition Standard Feasibility Study*, a Report to Congress mandated by the Clean Air Act Amendments of 1990⁴ and completed in October, 1995, recognized that just to maintain the "status quo" or maintaining the proportion of chronically acidic target surface waters in the Adirondacks near proportions observed in 1984 may require reducing anthropogenic sulfur and nitrogen deposition by 40 to 50 percent or more below levels achieved by the 1990 Clean Air Act Amendments (CAAA). Currently the emissions of SO₂ and NO_x have been reduced on a state/national basis by various control programs. To establish programs enabling further reductions, it is necessary to know where you have been, where you are, and where you may be going. It is also necessary to have a sense of the current and future distribution of emissions by source category. Additionally, an holistic approach to pollution control programs is necessary since the primary precursor contaminants associated with acidic deposition (SO₂ and NO_x) are also controlled to achieve Ambient Air Quality Standards for SO₂, NO_x, O₃.

Allowances

Compliance with the SO₂ limitations is enforced through a system of "allowances," or allowed levels of pollution, which are allocated to affected sources, limiting the amount of SO₂ which they may emit. One allowance authorizes the emission of up to one ton of SO₂. The allowance system is described in 40 CFR Part 73 of the federal regulations.

Permits

Federal regulations also specify enforceable requirements and timeframes for permitting Title IV affected facilities. They allow for flexible emission limits and contain compliance plans for program requirements. For NY, Phase I applies to 10 units at 5 plants, and Phase II applies to 92 units at 29 plants.

³ Novotny, V. and G. Chesters, Handbook of Nonpoint Pollution, 1981, p. 137.

⁴ Section 404 in Title IV (Appendix B of the Act).

For oxides of nitrogen, New York regulations prescribing Reasonably Available Control Technology (RACT) under Title I are already more stringent than the new federal regulations prescribed under Title IV.

Continuous Emissions Monitoring (CEM)

The acid rain CEM program requires owners and operators to continuously measure, record and report SO₂, NO_x, volumetric flow data, and CO₂ emissions. Two distinctive features of this program are the use of economic incentives for compliance control and national consistency in program implementation. New York is currently not participating in this program due to insufficient resources.

b. Existing Programs

Deposition Study

The Division of Air has been conducting deposition monitoring since 1986. Completion of this monitoring initiative has been proposed, but remains unfunded, and would include the following components:

- ! installation of 15 NO_x Low Level monitors
- ! development and installation of dry deposition monitoring
- ! installation of 4 automated pH and conditioning equipment
- ! installation of 3 monitoring enclosures
- ! maintenance of existing equipment throughout the period
- ! replacement of the ion chromatograph
- ! continued data system acquisition development
- ! computer equipment

The Division of Air has planned to further expand its program in support of Title IV of the Clean Air Act

Amendments of 1990. The objectives of this expanded monitoring network are:

- ! Provide consistent, quality assured, long term acid deposition data.
- ! Measure at sensitive locations, as well as upwind and downwind locations.
- ! Provide a special and temporal analysis of acidic deposition, its precursors and its effects.
- ! Track the changes occurring as a result of state and national control programs.

Again, this work has yet to be funded.

New York's network consists of 21 sites located at traditional remote and rural sites along with urban and suburban monitoring locations. Additional deposition monitoring results are available from two national monitoring networks and one Canadian network.

Adirondack Lake Monitoring Study

This program, first started by Syracuse University in 1982 to study 17 lakes, was taken over by the Adirondack Lakes Survey Corporation (ALSC) in 1992 and expanded to include 52 lakes monitored on a monthly basis. Administered by the Division of Fish, Wildlife & Marine Resources, results have shown that over half of the monitored lakes are very sensitive to acid deposition. Other activities not covered in Table V-3 include weekly monitoring of three Adirondack streams, and more intensive monitoring during the critical spring snowmelt period. The proposed continuation of the project includes fish sampling and analysis for mercury.

Table V-3 lists the programs presently operating in New York which address atmospheric deposition. All operate at the state level, continue to monitor and document the problem, and explore control options. It will not be possible to control atmospheric deposition by New York State efforts alone. To achieve long-term success, sulfur and nitrogen emissions, as well as other forms of atmospheric

deposition, which originate out of state must be reduced.

c. Implementation Steps

As the scientific and regulatory community clarify the need for further reductions and the most cost effective mechanisms, it will be an absolute necessity to take an holistic viewpoint of all the control programs dealing with these contaminants.

1. The Division of Air and the Division of Fish, Wildlife, and Marine Resources should seek funding for the continuation of long-term monitoring for acid deposition and lake water chemistry, respectively. Maintaining funding for these programs continues to be difficult, even though the data gathered by the programs is critical to our understanding of nonpoint source pollution. Numerous models have been developed to demonstrate the impacts of this source but monitoring data is needed to determine the validity of the models. Although New York has limited control of sources outside the state, documentation of the effects of atmospheric deposition on waterbodies is needed to help track progress of regulatory programs on both sides of the state boundary.
2. Research and demonstration projects should be conducted to explore possible mitigation measures for waterbodies affected by acid rain. Projects should include documentation of the effectiveness of the measures employed.
3. A pilot integrated airshed/watershed/water quality model should be developed to assess fate and impact of atmospheric nitrogen on a waterbody. Water quality impacts of implementation of the Clean Air Act should be further evaluated and incorporated into a phased TMDL for Long Island Sound.
4. The Division of Air will track NO_x, SO₂, and emissions reductions via Title IV implementation.
5. Currently the Department lacks a comprehensive overview and interpretation of various Acid Rain monitoring efforts. This is essential to provide the public meaningful insight into the benefits that may or may not be realized as a result of the Title IV program. The Division of Air Resources, in cooperation with the Division of Fish and Wildlife and the ALSC should seek to further expand its data analysis and fill this void.
6. USEPA and NYSDEC will continue to enforce existing air regulations limiting the emission of toxic pollutants and nitrogen. However, Federal legislation which provides additional regulatory controls over precursors is required to control out-of-state sources. New York State and 22 other eastern states worked with EPA in finalizing the 1998 federal regulations under Section 110 of the Clean Air Act to reduce emissions of nitrogen oxides from utilities and other large sources in the midwest that have been impacting New York's waters.
7. Under CAA amendments, USEPA will develop emission standards, based on maximum achievable control technology, for all the source categories by the year 2000.
8. USEPA will develop regulations for area or small sources of hazardous air pollutants (HAPs) by the year 2000.
9. Through implementation of the CAA requirements, USEPA projects an 85% reduction in atmospheric deposition of metals, nationwide, over the next 10-15 years. This reduction will contribute to the attainment of ambient water quality standards for mercury in the NY/NJ Harbor/Bight.

**TABLE V-3
Programs/Activities to Implement Nonpoint Source Management of Atmospheric Deposition
(Programs with Names in Italics Are New since 1990)**

| Program Name | Lead Agency (Others Involved) | Pollutant Categories | Type of Program; Geographic Coverage | Audience; Goal | Status |
|--|--|--|---|---|--|
| <i>Adirondack Effects Assessment Program</i> | Rensselaer Polytechnic Institute, NYS DEC's Division of Water, NYS Museum, and U.S. Geological Survey | Acidic deposition (pH) | Research (USEPA-funded), Planning, Outreach (education); 30 lakes and ponds in the Southwest Adirondacks | EPA, DEC; To evaluate the extent and permanence of effects from acid deposition on aquatic biota community structure and function, the potential for ecosystems to recover under different scenarios of regional atmospheric deposition of nitrogen and sulfur during the future, and, thereby, to measure the success of the 1990 Clean Air Act Amendments. | 1998: starting fifth year of program; conducting a nitrogen cycling study in two subwatersheds. |
| Adirondack Lake Monitoring Study | Adirondack Lakes Survey Corporation (ALSC), NYS DEC's Division of Fish, Wildlife and Marine Resources, Empire State Electric Energy Research Corporation (ESEERCO) | Acidic deposition (pH) | Research, Planning, Monitoring, Outreach (education) funded by US EPA and ESEERCO; Western Adirondacks (Oswegatchie-Black and Upper Hudson watersheds) | Public, scientists, modelers, EPA and DEC; To reduce deposition so that lake water will become less acidic and once again suitable for most aquatic life; and to determine the effects of atmospheric pollution (acid rain) on lakes in the Adirondack region in response to implementation of the CAAA of 1990. | 1998 (14th year of program): monitoring the water chemistry of 52 Adirondack lakes since June 1992. A new proposal for five years has been approved by EPA and ESEERCO. Funding commitments are in place through 2001. |
| Atmospheric Deposition Monitoring Network | NYS DEC, Bureau of Air Quality Surveillance (BAQS) | Low pH rainfall, NH ₄ , NO ₃ , SO ₄ | Monitoring; Statewide | Public, scientific and regulatory communities; To document deposition levels and changes effected by regulatory control programs. | Ongoing since 1987, necessary improvements on hold due to lack of funding |

| Program Name | Lead Agency (Others Involved) | Pollutant Categories | Type of Program; Geographic Coverage | Audience; Goal | Status |
|--|---|--|--|--|--|
| <i>Continuous Emissions Monitoring Program</i> | NYS DEC's Division of Air Resources | Acidic deposition from stack emissions: SO ₂ , NO _x | Monitoring, Regulatory (Title IV Clean Air Act); About [25 sites] 102 units across the state. | Public, scientific and regulatory communities; to provide Quality Controlled / Quality Assured Emissions Data. | Monitoring in progress, however, without DEC oversight due to lack of funding. |
| Long Island Sound Study | NYS DEC's Division of Fish, Wildlife and Marine Resources | Nitrogen (from NO _x in atmospheric deposition). | Research, planning funded by CT DEP; Long Island Sound Watershed | Public, scientists, modelers, EPA, CT DEP and DEC; To analyze Connecticut atmospheric deposition data for 1994-1995; to model the deposition of air pollutants to Long Island Sound and its associated watersheds; and nitrogen deposition monitoring at eight monitoring stations in Connecticut to include NO _x in TMDL calculations | 1997-1999 (three studies to be completed); since 1989 atmospheric deposition has been monitored in Connecticut (both dry and wet deposition). |
| <i>Title IV/Title V Permitting</i> | NYS DEC, USEPA | Acidic deposition | Regulatory; Statewide | Public; To reduce the state's contribution of acidic deposition. | Phase I permits issued by EPA and are being incorporated into Title V permits being issued by DEC. |

4. Construction

a. Source Description

Construction, like other nonpoint sources, generates pollutants during runoff and wind events. However, it is also a transitional land use, disturbing the land surface and creating a vulnerability to erosion and the production of sediment for a period of time and then occurring again as another site is disturbed. This discussion will be limited to the immediate impacts of construction activities. The long-term effects on stormwater runoff by the construction of buildings, roads, parking lots, etc., will be addressed in section 14. Urban Runoff. Roadway and right-of-way maintenance, including deicing material application and storage, is covered in section 12 of this chapter.

Soil erosion from sites disturbed by construction activities can have a serious impact on water quality. Studies have shown that rates of erosion from construction sites can be the highest of any source category. During transport, sediment can increase turbidity in waterbodies, affecting aquatic life through abrasion and reduced light penetration. Water supply uses can also be affected through increased treatment costs. As a result of sediment deposition, aquatic habitats can be blanketed, capacities of hydraulic structures decreased, and navigational uses affected.

The pollutants associated with the construction category include the soil particles and the substances attached to the individual particles. Nutrients and toxic substances attached to sediments can become dissolved in the water column and enter the aquatic food chain, leading to problems other than those caused by the sediment. A source of excess nutrients associated with construction may be over-fertilization in an attempt to establish grass on disturbed areas. Poor housekeeping and spills around construction sites can lead to toxics entering the water.

The 1998 Priority Waterbodies List shows construction as the primary source for 40 segments (an entire waterbody or a designated reach or portion of a waterbody) and a secondary source of water use impairment for about 160 more. The worst conditions occur where development is on steep slopes or where all vegetation is removed from large tracts of land and left exposed to wind and rain. Associated problems come from road construction and disposal of demolition and construction debris.

b. Existing Programs

(See Table V-4 below.)

There are a number of existing programs which assist in the control of nonpoint source pollution from construction. They exist at all levels of government but the primary activities are at the state and local levels. While state level programs provide requirements for permits in certain instances, their focus is primarily on responses to complaints of water quality violations. Typically, control of local stormwater runoff (including protection and enforcement) is left to local municipalities and citizen involvement to affect.

Construction activities involving the disturbance of five acres or more are subject to permitting by DEC. (EPA Phase II Stormwater Regulations would lower this threshold to one acre.) Presently, smaller sites are subject only to the State Environmental Quality Review procedures and existing regulatory programs (wetlands and stream protection programs). These programs use either the regulatory approach, technical training, or technical assistance.

Due to the nature of the current statewide construction permitting program, and the fact that smaller sites are not required to get permit coverage, often enforcement does not occur until pollution complaints draw the attention of pollution control officials. In addition, review of stormwater pollution prevention plans is at the option of local

government. These are problems that both DEC and EPA have recognized and hope to address in the implementation of Phase II of the EPA Stormwater Program. In the near future, a greater level of local involvement will be required in the review of construction proposals as well as the monitoring of construction activities. These and other aspects of the Phase II Program are more fully outlined in the Urban Runoff section of this document.

The effectiveness or degree of success of current programs is difficult to measure in terms of water quality improvement or protection because construction is a short-lived land use. Data on comparisons between construction sites "with-control" and "without-control" are not available for sites in New York.

In terms of program coverage, the various programs intended to protect specific critical resource areas can generally deal with erosion originating within the area of concern. However, protection from sediment impacts from upstream areas are only partially covered in most critical resource programs since the area covered usually includes only a limited buffer or transitional area, not the entire upstream tributary area. The municipal and county programs that regulate land usage and require building permits or other approvals prior to land development offer the best opportunity for comprehensive control of construction impacts.

Statewide erosion and sediment control guidelines were first prepared by a committee headed by the Soil Conservation Service, now the Natural Resources Conservation Service (NRCS). April 1997 marked the fourth printing of "New York Guidelines for Urban Erosion and Sediment Control". It included extensive revisions. The guidelines contains standards and specifications for 38 vegetative and structural management practices to control off-site sediment damage from construction activities. A "Contractor's Field Notebook" that provides design and installation

information for 19 key practices was developed in 1995 by a similar group of state agencies and private organization under NRCS leadership for use in the field.

Local land use regulation, through site plan review, or through local erosion and sediment control ordinances, are other means to address the nonpoint source effects of construction. Informal interactions during the 180 seminars and workshops held in the 1990's, throughout the state, indicate that a very small percentage of municipalities have erosion and sediment control ordinances.

Monroe County and NYC DEP are two examples of municipalities that are addressing erosion and sediment control from construction sites. The NYCDEP's programs are significant as they are effective throughout the NYC water supply watershed, an area covering 2,000 square miles.

c. Implementation Steps

The primary control options used for construction activities are a combination of regulation, technical assistance and technical training. Continuing this approach with appropriate modification of existing programs and new initiatives is recommended. Additional educational efforts to increase public awareness of water quality issues relating to construction are also needed.

1. EPA is expected to promulgate Phase II Storm Water Regulations. (Achieved: EPA published the final regulations in the December 8, 1999 Federal Register.)
2. Investigate alternatives (amending ECL, revising permit, adding staff, promulgating regulations, etc.) to strengthen the implementation of the SPDES general permit for construction.
3. Take steps to involve local government in the enforcement and administration of the

- SPDES general permit for construction as part of Phase II stormwater controls.
4. DEC and EPA should work together to encourage passage of local laws for stormwater and erosion and sediment control.
 5. EPA should work with Congress to amend Clean Water Act to allow use of 319 funds for stormwater control implementation.
 6. Programs to disseminate the information contained in the New York Urban Erosion and Sediment Control Guidelines should be expanded. Soil and Water Conservation Districts should be encouraged to sponsor training sessions on the guidelines. Groups such as local building inspectors should be encouraged to participate in the training sessions.
 7. NYSDEC should seek to continue funding the following courses for the next five years:
 - Train the trainer program: to increase the number of available trainers.
 - Erosion and sediment control training for contractors
 - Short courses on water quality with instruction by the State SWCC's Engineering Specialist.
 8. Based on the November 18, 1997 final conditional approval of New York's Coastal Nonpoint Pollution Control Program by EPA and NOAA, DEC and DOS will have three years to revise the State Uniform Fire Prevention and Building Code to incorporate pollution management in new construction and reconstruction, or provide other means to do the same.

**Table V-4
Programs/Activities to Implement Nonpoint Source Management on Construction Sites
(Programs with Names in Italics Are New since 1990)**

| Program Name | Lead Agencies (Others Involved) | Pollutant Categories | Type of Program; Geographic Coverage | Audience; Goal | Status |
|--|--|--|--|--|---|
| Adirondack Park Land Use and Development Program | Adirondack Park Agency | Primarily sediment control | Regulatory and Planning; Within the Adirondack Park. | Builders, developers and residents undertaking new land use and development projects which require Agency permits; To avoid undue adverse impacts on the resources of the Park through proper siting, best management practices, stormwater pollution prevention plans, etc. | Regulatory program in effect since 1973. |
| <i>Construction Stormwater Permit Program (SPDES General Permit GP-93-06)</i> | NYSDEC's Division of Water, (USEPA developed regulations) | All | Regulatory; Statewide | Those operating on construction sites over 5 acres; To control erosion and protect water quality. | August 1993: general construction permit issued. As of April 1998, 1348 complete Notices-of-Intent on file at DEC. Provisions from TOGS 5.1.10 are in the permit. |
| <i>Environmental Specifications for Standard Contracts</i> | NYS DOT | All, with emphasis on sediment control | Planning, Regulatory; Statewide | Contractors with State Contracts for roadwork; To incorporate environmental protection into road and bridge construction using DEC General Permit conditions. | DEC/DOT Memorandum of Understanding (MOU) signed 1993. |
| Erosion and Sediment Control Training Programs: Train the Trainer; Water Quality Mitigation Design; Contractors Training | NYS SWCC, SWCDs | Sediment and associated pollutants | Technical assistance, Technical training, Outreach; Statewide | Contractors, engineers, local planning board members, state agency staff and many environmental groups; To teach the principles from the <i>New York Guidelines for Urban Erosion and Sediment Control</i> . | As of March 1997, over 180 seminars and workshops have been held throughout NY by all involved agencies. |
| Freshwater Wetlands Protection Program | NYSDEC's Division of Fish, Wildlife & Marine Resources, and Adirondack Park Agency | All | Regulatory; Statewide | Planners, Developers, Excavators and Single Family Home Builders; To preserve, protect and conserve wetlands and their benefits. Prescribes setbacks for construction and other land uses. | Effective since September 1, 1975. Last amended July 30, 1987. |
| <i>Nonpoint Source Implementation Grant Program</i> | NYS DEC's Division of Water - Bureau of Watershed Management | All | Financial Incentive; Statewide | Municipalities; To reduce, abate, control, or prevent nonpoint source pollution from construction activities through watershed-based assessments, education, and implementation of BMPs. | Program funded one nonpoint source pollution control project addressing construction sites with the 1996-97 grants announced in May of 1997. |

| Program Name | Lead Agencies (Others Involved) | Pollutant Categories | Type of Program; Geographic Coverage | Audience; Goal | Status |
|---|---|--|---|--|---|
| <i>NYC Water Supply Watershed Protection Program</i> | NYC DEP, (Parties to the NYC MOA, e.g., NYS DEC and Watershed Towns) | All, with emphasis on pathogens and nutrients | Regulatory, Financial Incentive; Within the NYC Water Supply Watersheds (2,000 sq. miles) | Watershed residents; state, county and municipal governments; and commercial, industrial and institutional entities; To protect water supply by meeting filtration avoidance criteria. | January 21, 1997: Watershed Memorandum of Agreement signed. May 1997: Revised NYC Watershed Regulations became effective. |
| State Environmental Quality Review Process | NYS DEC, Division of Environmental Permits, or municipalities | All | Regulatory and Planning; Statewide | Planners, developers, contractors and any public or private entity doing construction; To review project proposals in the planning stage to mitigate any significant environmental impacts. | Ongoing program; vast majority of developments since SEQRA was enacted has undergone an environmental review. |
| <i>Stream Protection Program</i> | NYSDEC's Division of Fish, Wildlife, and Marine Resources, and Adirondack Park Agency | All | Regulatory; Statewide | Public conducting activities on Class A, B & C(t) streams; Promote sound environmental construction of dams and impoundments, and docks and moorings. | Law effective as of December 18, 1994. Regulated activities include any alteration (includes adding fill) or excavation of the bed or banks of a protected waterway. |
| <i>Technical Operations and Guidance Series (Document 5.1.10)</i> | NYSDEC's Division of Water | All | Technical Assistance; Statewide | Regional DEC staff; To provide guidance on Erosion and Sediment Control procedures. | Issued April 1991. For use in conjunction with TOGS 5.1.8 Stormwater Management Guidelines. |
| Tidal Wetlands Protection Program | NYSDEC's Division of Fish, Wildlife & Marine Resources | All | Regulatory; Suffolk, Nassau, Rockland and Westchester Counties, all boroughs of NYC. | Planners, Developers, Excavators and Single Family Home Builders; To preserve, protect and enhance value of tidal wetlands. Prescribes setbacks for construction and other land uses. | February 1992 Regulations reprinted. |
| Wild, Scenic and Recreational Rivers Program | NYSDEC's Division of Fish, Wildlife and Marine Resources and Adirondack Park Agency | All | Regulatory; Statewide | River users; To protect, preserve and enhance significant rivers and river areas throughout the state. Prescribes setbacks for construction and other land uses. | 125 river segments (1202.3 miles) are protected by this program. |

5. Contaminated Sediment

a. Source Description

Contaminants in sediments are a continuing problem because they bioaccumulate in fish and other aquatic animals at levels that can cause harmful effects to the animals themselves and those that consume them. Fish consumption advisories and fishing bans frequently result from pollutants found in contaminated sediment. Fish flesh data collected by DEC's Division of Fish and Wildlife have led the NYS Department of Health to issue consumption advisories for more than 60 waterbodies. The advisories range from a complete ban on fishing to guidelines for frequency of consumption. PCBs are the most common contaminants causing fishing advisories; others include dioxin, chlordane, DDT, mirex, cadmium and mercury.

The 1998 New York State Water Quality Report (submitted pursuant to Section 305(b) of the Clean Water Act) states that, "Contaminated/toxic sediment, urban runoff and combined sewer overflows are the most frequently noted sources of major or primary impairment [of sources causing use impairments for bays and estuaries]" (p.55). The Priority Waterbodies List (PWL) cites contaminated sediment as the primary source of pollutants causing use impairments in about 30 waterbodies on the list. About 60 waterbody segments attribute secondary water use impairments to this source. Many major waterbodies are affected by this source including the Hudson River, the Buffalo River, the Niagara River, Lake Champlain and Lake Ontario.

According to the 305(b) report, in the Great Lakes, toxic pollutants from contaminated sediments are the dominant cause of water quality impairments. (p. 55) The Great Lakes Sediment Inventory report (NYSDEC 1995, updated 1996) contains chemical of concern data for 550 sampling stations (encompassing approximately 120 waterbodies in the Great Lakes basin). Four

hundred fifty-seven (457) sites contain sediment chemistry concentrations exceeding levels of concern for one or more chemicals. The RIBS monitoring program (see Table V-1) conducts analysis of sediment for heavy metals, organochlorine pesticides and PCBs, and provide a database for recommended site-specific assessments.

In addition to impairments to biota, contaminated sediments threaten the viability of some commercial ports due to restrictions on dredging of navigational channels and disposal of dredged sediments.

b. Existing Programs

(See Table V-5 below.)

c. Implementation Steps

DEC should begin to inventory, assess and remediate waterbodies affected by sediment contamination.

In 1998, DEC initiated the Contaminants Assessment and Remediation Program (CARP), an extensive monitoring program and database that will form the basis for evaluating all future remediation programs. The program will also determine existing conditions to guide the dredging program in the NY/NJ Harbor Estuary. The program conducts three types of monitoring:

1. Ambient and source monitoring to identify major contributors of toxic contaminants to the harbor. Summary report to be completed by end of 2000.
2. Sediment sampling to identify the historical depositional areas of contaminants. Also, the program will assist in evaluating the options for disposing of dredged material. This work will continue for the next several years.

3. Biological sampling to provide information about the bioaccumulation of toxic chemicals through the food chain. Most of this work will be completed by the end of Fiscal Year 2000-2001.

In 1993, funding was made available to DEC to undertake this work in the Great Lakes basin. The program::

1. Expands the current electronic database for NYS Great Lakes contaminated sediment information, and creates a similar database for NY Harbor.
2. Evaluates, edits and formats sediment data for parts of the state not covered under #1.
3. Adds biological effects data to Great Lakes basins site prioritization scheme (by April 1999).

**TABLE V-5
Resources to Implement Contaminated Sediment Nonpoint Source Management
(Programs with Names in Italics Are New since 1990)**

| Program Name | Lead Agency (Others Involved) | Pollutant Categorie s | Type of Program; Geographic Coverage | Audience; Goal | Status |
|--|--|--------------------------------------|---|--|--|
| Assessment and Remediation of Contaminated Sediments (ARCS) | EPA's Great Lakes National Program Office. | Toxic and hazardous substances | Research and Demonstration; The Buffalo River was one of five demonstration projects included in this Great Lakes basin-wide program. | Entities responsible for water quality protection; To assess best ways to remove toxic pollutants from bottom sediments and to develop guidance on assessing and dealing with contaminated sediment problems. The projects included an assessment of the waterbody and sediments, a study of potential remedial technologies, and an evaluation of the environmental and economical effectiveness of the project. | Demonstration projects completed between 1986 and 1993. EPA also published reports and developed guidance on assessment and remediation. |
| <i>Clean Water State Revolving Fund</i> | EFC/DEC | All | Financial Incentives; Statewide | Municipalities; To provide financial assistance for planning, design and construction of publicly-owned projects that prevent, reduce or remediate NPS pollution. | Ongoing; funds are available for subsidized low-interest loans for 100 percent of project cost. |
| Contaminants Assessment & Remediation Program (CARP) | DEC's Division of Water (NNY/NJ Harbor Estuary Monitoring Program) | Toxic and hazardous substances | Monitoring and Trackdown Program; Establish baseline water quality, sediment and biological status of the harbor area (both NY and NJ) | State and Federal Agencies responsible for water quality management; other interested parties. Perform a synoptic study to document the total environmental conditions within the harbor and assess contaminant levels in sediments, water column and biological species (zooplankton to fish to cormorants). Sample tributaries to determine quantities of toxic substances coming into the harbor from both point and nonpoint sources. | Initiated in fall of 1998 and continues through spring of 2000, with sediment sampling continuing into FY 2002-2003. |
| Coastal Management Program (Coastal Zone Mgt. Act; 15 CFR 923) | NYS DOS | All | Regulatory; Coastal Area (including Great Lakes) | Those involved in dredging, disposal in water, or construction in the coastal zone; Promote beneficial use of certain coastal resources and provide for management of activities which may impact coastal resources. | Ongoing through consistency review, development of LWRPs and special projects. |

| Program Name | Lead Agency (Others Involved) | Pollutant Categories | Type of Program; Geographic Coverage | Audience; Goal | Status |
|--|---|---|--|--|---|
| <i>Contaminants Assessment and Remediation Program (CARP)</i> - part of the NY/NJ Harbor Estuary Monitoring Program | DEC Division of Water and DEC Division of Fish, Wildlife and Marine Resources | Toxic and hazardous substances | Planning and Monitoring NY/NJ Harbor and Harbor Estuary | Entities responsible for water quality protection; Identify major contributors of toxic contaminants to the harbor; identify the historical depositional areas of contaminants in order to assist in evaluating the disposal options of dredged material; and assess contaminant levels in sediments, water column and biological species (e.g.: zooplankton, fish, cormorants) | Initiated in Fall of 1998 and continuing through Spring of 2000, with sediment sampling continuing into FY 2002-2003. |
| <i>Drinking Water State Revolving Fund</i> | DOH/EFC | All | Financial Incentives; Statewide | Community water systems, both publicly and privately owned, and non-profit, non-community water systems. To provide financial assistance for planning, design and construction of eligible water system projects. Includes funding of land purchase or conservation easements for source water protection for wellheads or watersheds. | Ongoing; funds are available for subsidized low-interest loans for up to 100 percent of project costs. Grants may be available for qualified applicants with demonstrated financial hardship. |
| Remedial Action Plans (RAPs) | NYSDEC's Division of Water (Monroe Co. Dept. of Health for the Rochester Embayment RAP) | Toxic and hazardous substances, and others. | Planning and Implementation; Six "Areas of Concern" (AOCs) in the NYS. (43 AOCs throughout Great Lakes basin) | Residents and stakeholders of AOCs; To further develop and implement a remedial strategy to restore/ protect beneficial uses. | Development and certification to EPA of the six NYS RAPs completed by 12/97; focus is now on implementation of strategies and activities. |
| <i>Sediment Assessment and Management Program</i> | NYS Dept. of Environmental Conservation | Toxic and hazardous substances | Planning, Monitoring, Tech Assistance; Statewide with focus on Great Lakes drainage basins | DEC and other entities responsible for water quality protection; To provide technical assessment and management options: maintain, validate and report on inventory of sediment quality data; maintain, update and employ protocols for the biological and chemical evaluation of sediments; develop a current working knowledge of dredging issues and techniques. | NYSDEC established the Sediment Assessment and Management Section in 1994. The activities of this section are funded by EPA Region II and EPA's Great Lakes National Program Office (GLNPO). |
| <i>Sediment Assessment and Remediation in the Great Lakes Basin</i> | EPA's Great Lakes National Program Office (GLNPO). | Toxic and hazardous substances, and others | Financial Incentives, Technical Assistance; Six AOCs in the NYS portion of the Great Lakes basin. | Entities responsible for water quality protection; To foster remediation of contaminated sediments at Great Lakes AOCs. Grants program developed to continue the efforts of the ARCS program. | Initiated in 1993. GLNPO has funded 40 projects performed by state, tribal, and federal agencies and educational institutions. A number of guidance documents are available. |

| Program Name | Lead Agency (Others Involved) | Pollutant Categories | Type of Program; Geographic Coverage | Audience; Goal | Status |
|--|---|--|---|---|--|
| State Pollutant Discharge Elimination System (SPDES) | DEC's Division of Water | Toxic and hazardous substances, and others | Regulatory; Statewide | Owners of facilities that discharge to surface water; To regulate which pollutants the permit holder may discharge, and set limits, as needed, to meet effluent and receiving water standards and any other state or federal requirements. This system should greatly reduce the chance of further contamination of sediment from point sources. | Approximately 3000 permit holders statewide. Over 500 of these discharges include toxics. Also, under this program, 56 publicly owned treatment works have DEC-approved industrial pretreatment programs to limit the discharge of toxics to the POTWs and the receiving waters. |
| Toxic Substances Monitoring Program | DEC's Division of Fish, Wildlife & Marine Resources | Toxic and hazardous substances | Monitoring, Research; Statewide and specific geographic locations | Users of toxic substance data, e.g. state and federal agencies, academics, environmental groups; To monitor extent of toxic and bioaccumulative contamination in biota associated with waterbodies, sediments and adjacent lands. | Ongoing. Reports summarizing data printed in periodic technical letters, published reports and data provided upon request. |
| Upland Mgt. of Navigational Dredge Material (6 NYCRR Part 360) | DEC Division of Solid and Hazardous Materials | All | Regulatory; Statewide | Those involved in dredged material disposal or beneficial use that is to take place on land (i.e., any excavation of disposal not regulated by Section 401 permits); Regulate upland management of navigational dredge material. | Sediment processing, dewatering, placement, or disposal, activities typically carried under a Part 360 permit, are exempted from Part 360, if they are covered by other permits (i.e.: 401 W.Q. Cert.; Articles 15, 24, 25, and 34 of the ECL). |

6. Hydrologic and Habitat Modification

a. Source Description

This category includes a variety of activities which change the nature of a stream corridor or a wetland area. Changes to the bed and banks of a stream, modification to flow patterns of streams and dredging/filling of wetlands are considered here. Sometimes the problems experienced in the stream or wetland can be the result of changing land use patterns within the watershed. However, this section

focuses on the changes to the water resource itself. Land uses and other activities associated with hydrologic and habitat modification include gravel mining (in-stream), dam and flood control operations, dredging, channelization, grading, removal of riparian vegetation, drinking water withdrawals and loss of groundwater recharge through sewers. Stream-bank erosion can be caused by increased runoff from urbanizing areas, construction sites, or agricultural lands. Livestock can also be a direct cause of stream bank erosion.

Nonpoint source water quality problems in streams deal primarily with impacts to fishery habitat. Fish survival can be affected through changes to the habitat and through actions which damage fish spawning and incubation areas as well as their food sources. There can also be an impact on drinking water supplies. Increased treatment costs and reduced volume of reservoirs are among the problems experienced due to increased sediment loads.

Modifications to wetland areas can affect the entire ecosystem. Dredging or filling a wetland can result in habitat loss and the loss of its various buffering capacities. These problems have been observed in numerous locations in the coastal district where the loss of wetlands has impacted

shellfish through bed closures and potential declines in production.

Sediment and increased water temperature regimes are the primary impacts resulting from hydrologic modification. Sediment can increase turbidity reducing light penetration which may impact fish as well as the aquatic habitat which affects fishery reproduction. Increased temperatures may cause the elimination of coldwater fish and their ecosystem, from the stream. Fluctuating water levels in reservoirs and reduced flow in segments downstream of dams can also contribute to this source. 28 of 53 Priority Waterbodies List (PWL) segments affected by hydrologic or habitat modification are related to dam release or operation problems.

There are detrimental effects both upstream and downstream of the dam. The water level fluctuations within the impoundment can disturb fish habitat and expose spawning areas used by warm water fish. The change in downstream flow conditions can also affect fish survival. Limited releases can cause the stream temperature to rise. In some cases, stream segments may be completely dewatered during the operation of a hydroelectric power plant. Problems are best addressed during relicensing for federal dams; however, some licensing agreements are good for 30 years.

Increases in impervious surfaces associated with development of the landscape may result in increases in the magnitude and frequency of downstream flooding. These increased flows can cause incision, over widening and destabilization of stream channels, threatening public infrastructure and private property. This flooding is sometimes addressed through channelization projects. This often results in channels with an inappropriately high width/depth ratio, reducing sediment transport effectiveness at channel-forming bankfull discharges (1.5 - 2 year return flows) and causing

bed aggradation and channel instability. Channelization also generally homogenizes instream slope (gradient); thereby eliminating pool/riffle structure that is critical to fish habitat.

Hydrologic and habitat modification is the primary source of nonpoint source pollution for 53 PWL segments listed in the 1998 PWL including 40 stream segments and 13 lakes or reservoirs. When considering both primary and secondary sources, a total of 159 segments, primarily streams, are affected. Improperly designed and implemented dredging projects may cause sediment problems. Thirteen of the 53 segments have problems due to dredging, channelization, grading, etc.

Streambank or shoreline erosion is considered a separate source category in the PWL, but for this document is included with hydrologic and habitat modification. Streambank or shoreline erosion affects about 60 segments as a primary source (90% are streams 10% are lakes/reservoirs). As a secondary source, about 200 segments are affected; 80% are streambanks, the rest are shorelines. Thermal changes and water level or flow changes are both listed as "pollutants" in the PWL. Thermal changes are a primary pollutant for over 30 segments; all streams. Water level or flow fluctuations affect over 20 streams and about 10 lakes or reservoirs. As primary and secondary pollutants, both jump to just over 120 segments each.

Mining of sand and gravel from streambeds and bars can also contribute to channel and bank instability by not respecting proper channel dimensions, excavating point bars and changing the local slope of the streambed. These types of problems are covered in Section 12, on resource extraction.

b. Existing Programs

Several state and federal programs have regulatory jurisdiction over activities that would modify waters of the state or their habitats. A NYSDEC Joint Application for Permit(s) is available at all regional DEC Offices. The permit programs applicable to this and other nonpoint source categories are in Table V-1 (Coastal Management Program, Dredge and Fill-Section 404, Water Quality Certification-Section 401). Table V-6 shows programs applicable primarily to this source category.

The most likely minimum permit requirement will be an Article 15, Title 5 Protection of Waters Permit. Activities regulated by this program include disturbance of bed or banks of protected waters; construction and maintenance of dams; and excavation or filling in navigable waters. Further details can be found in the "Protection of Waters Program Applicants' Guide".

Activities conducted in freshwater wetlands that are regulated generally include any that may adversely affect the wetland. More specific to the source category of hydrologic and habitat modification, regulated activities include construction of dikes and dams; placement of fill, excavation or grading; modification, expansion or extensive restoration of existing structures; drainage; and application of pesticides in wetlands. For more details, see the "Freshwater Wetlands Program Applicants' Guide".

Regulated activities in tidal wetlands are generally similar to those regulated under the Freshwater Wetlands Program with some added activities specific to coastal areas (e.g. construction and reconstruction of structures such as weirs, groins, jetties, breakwaters, bulkheads, sea walls, retaining walls, rip-rap, gabions and drainage structures). Earth-moving activities regulated include dredge spoil placement, dune building, beach nourishment, clear-cutting and those listed under freshwater

wetlands. Other details should be sought in the "Tidal Wetlands Program Applicants' Guide".

Regulated activities under the Wild, Scenic and Recreational River Systems Program are specific to the type of river system under construction (i.e. wild, scenic or recreational). Some added activities not previously mentioned are water withdrawals, stream improvement structures for fishing management purposes, fencing, public utility uses involving stream crossing or projects within 500 feet of stream bank, and vegetative cutting, thinning or other disturbance of vegetation. Further program details are in a separately published document on Part 666 of Title 6 of the New York Code of Rules and Regulations (NYCRR).

Besides the Department of Environmental Conservation permits and project review, other agencies may have jurisdiction over hydrologic or habitat modifying activities. The U.S. Army Corps of Engineers oversees federal permits. NYS Department of State reviews coastal projects, and provides consistency review for federal projects. NYS Office of General Services must be notified of projects involving underwater lands of New York State. Projects in the Adirondack Park may require permits from the Adirondack Park Agency, PO Box 99, Raybrook, NY, 12977. And finally, local governments may have building permits, floodplain permits or other local requirements that must be met before a management practice from this Catalogue may be implemented or installed.

The NYC DEP has a number of new or revised programs which address the water quality issues including nonpoint sources within the boundaries of the New York City Water Supply Watershed.

The Engineering Design and Review Section is the arm of the NYCDEP charged with the implementation of the permit program and covers

the entire Watershed from offices located both east and west of the Hudson River. According to the "NYC Watershed Regulations" promulgated May 1, 1997, a permit will be required from the NYCDEP for all piping, crossing and diversions of streams not regulated by the other governmental agencies. This would include actions involving all DEC designated class "C" and "D" streams. A permit will also be required from the NYCDEP for certain construction activities. NYCDEP will review and approve of Stormwater Pollution Prevention Plans in accordance with the requirements of Part III of the NYSDEC General Permit No. GP-93-06 "SPDES General Permit for Stormwater Discharges from Construction Activities." The "NYC Watershed Regulations" also require setback distances from watercourses and NYSDEC wetlands for certain activities including septic systems and impervious surfaces. The Office of Engineering Design Review also reviews projects through SEQRA that apply for permits from the Army Corps of Engineers under Section 404 of the Clean Water Act and Section 10 of the Rivers and Harbors Act and permits from the NYSDEC under Article 15 and Article 24. Comment letters are provided to the appropriate regulatory authority for consideration and technical expertise is offered to the applicant for the particular project.

The private sector has also been active in projects to control this source problem. Many local chapters of Trout Unlimited (TU) have programs revegetating streambanks and installing habitat improvement structures. TU has also been actively advocating stricter enforcement of stream disturbance permit conditions, and supports research and demonstration projects implementing habitat restoration. Land conservancy groups also have focused efforts on acquiring riparian and wetland parcels, toward the goal of habitat protection.

(See Table V-6 below.)

c. Implementation Steps

1. To better provide integrated technical and financial assistance to local efforts at stream corridor management planning, an ongoing forum should be developed for coordination between federal, state and local agencies dealing with stream corridor management issues (such as stormwater management, flood hazard mitigation, habitat and drinking water supply protection). The principles advocated in DEC's Stream Corridor Management manual need to be more widely disseminated across the state.

Training sessions should be held for soil and water conservation districts as well as Resource Conservation and Development Councils (which presently include 48 upstate counties) to encourage the application of these principles.

Included in this effort should be educational activities to increase public awareness of the benefits of stream corridor management. Stream conservation can have numerous benefits to a community. The programs should encourage the creation of community stream protection programs to implement management practices.

2. The benefits of wetlands as nonpoint source filters should also be highlighted in outreach and educational programs. Development of local wetland protection regulations, and establishing new, or improving existing enforcement capabilities or incentives are needed.
3. Promotion of the existing cost-sharing programs (such as the Conservation

Reserve Program under FSA, or Stream Corridor Protection and Stormwater Mitigation Programs under NYC DEP) for treatments such as vegetative buffer strips, or the establishment of conservation easements is needed.

- 4a. The Memoranda of Understanding which are required for local governments under the provisions of the Stream Protection Permit program should include requirements for utilizing best management practices to minimize stream disturbance. Granting of MOUs should be conditioned on satisfactory completion by town highway department personnel of a certification program, to be developed by the DEC.

- 4b. DEC should develop a certification program consisting of workshops on the stream disturbance permitting process, how to effectively install BMPs to minimize disturbance, and basic principles of stream hydrology, including the relationship between channel form and sediment transport. (This recommendation also applies to the resource extraction category.)

5. Regulatory programs which control runoff to prevent damage to streams should be developed by DEC in conjunction with the stormwater management program. There should be requirements for the attenuation of peak runoff from newly developed areas. Riparian restoration should be pursued to reduce sedimentation and erosion problems, and to control flooding problems in the upper, less impacted portions of the watershed.

6. A program should be developed to assess and classify the morphology of NYS

streams and rivers, prioritized by DEC's use classification (i.e., beginning with highest use streams). An essential element of this program should be to develop regional curves relating stream geometry and discharge to drainage area. This would then allow stream disturbance permits under Article 15 to include conditions specifying the cross-sectional dimension, plan and profile appropriate to a stream's morphology type and bankfull discharge.

7. Based on the November 18, 1997, final conditional approval of New York's Coastal Nonpoint Pollution Control Program by EPA and NOAA, DEC and DOS will have three years to:
 - a.) address problems (i.e., water quality and habitat) in existing channels, [where channel modification has altered or has the potential to alter instream and riparian habitat such that historically present fish and wildlife are adversely affected].
 - b.) Address problem of eroding streambanks or shorelines causing pollution where not reviewed under existing permit authorities.

Table V-6

**Programs/Activities to Implement Nonpoint Source Management for Hydrologic & Habitat Modification
(Programs with Names in Italics Are New since 1990)**

| Program Name | Lead Agency (Others Involved) | Pollutant Categories | Type of Program; Geographic Coverage | Audience; Goal | Status |
|---|---|---|--|--|---|
| <i>Clean Water State Revolving Fund</i> | EFC/DEC | All | Financial Incentives; Statewide | Municipalities; To provide financial assistance for planning, design and construction of publicly-owned projects that prevent, reduce or remediate NPS pollution. | Ongoing; funds are available for subsidized low-interest loans for 100 percent of project cost. |
| <i>Drinking Water State Revolving Fund</i> | DOH/EFC | All | Financial Incentives; Statewide | Community water systems, both publicly and privately owned, and non-profit, non-community water systems. To provide financial assistance for planning, design and construction of eligible water system projects. Includes funding of land purchase or conservation easements for source water protection for wellheads or watersheds. | Ongoing; funds are available for subsidized low-interest loans for up to 100 percent of project costs. Grants may be available for qualified applicants with demonstrated financial hardship. |
| Freshwater Wetlands Program | DEC's Division of Fish, Wildlife and Marine Resources, Adirondack Park Agency | Sediment, Toxics (including Pesticides), Nutrients | Planning, Regulatory, Outreach, Technical Assistance, Research and Financial Incentive; Statewide | Wetland landowners, local governments; To protect and regulate use and development of freshwater wetlands. | 1996: reviewed and issued 933 permits (DEC) |
| <i>Land Acquisition Program</i> | NYC DEP Division of Watershed Planning and Community Affairs | Sediment, Nutrients, Pathogens, Toxics (Pesticides) | Planning, Financial Incentive; NYC Water Supply Watershed | Property owners, local governments and state agencies; Limitation of development of water supply lands. | Owners of a total of 355,050 acres must be contacted over a 10 year period. 1997: contact and solicit sale of 50,000 acres of land from watershed landowners. |
| <i>Natural Resources and Environmental Monitoring Network</i> | NYC DEP Division of Water Quality Control | Sediment, Nutrients, Pathogens, Toxics (Pesticides) | Research, Monitoring; NYC Water Supply Watershed | Landowners and local governments; To monitor the effects of reservoir management on fish populations, air and water quality. | 1997: Integrated meteorological and water quality discharge monitoring networks. |

| Program Name | Lead Agency (Others Involved) | Pollutant Categories | Type of Program; Geographic Coverage | Audience; Goal | Status |
|--|---|--|---|--|--|
| <i>Nonpoint Source Implementation Grant Program</i> | NYS DEC's Division of Water - Bureau of Watershed Management | All | Financial Incentive; Statewide | Municipalities; To reduce, abate, control, or prevent nonpoint source pollution from agricultural activities through watershed-based assessments, education, and implementation of BMPs. | The Nonpoint Source Implementation Grants Program provided funding for a total of 13 projects in this category, primarily streambankerosion projects, in 1994-95 and 1995-96. An additional 8 projects, again primarily stream bank erosion projects, will be funded with the 1996-97 grants announced in May of 1997. |
| <i>NYC Watershed Regulations (revised)</i> | NYC DEP Office of Engineering Design and Review | Sediment, Nutrients, Pathogens, Toxics (Pesticides) | Regulatory; NYC Water Supply Watershed (2,000 sq. miles) | NYC Water Supply Watershed residents; Increased regulatory review and control of development. | New regulations promulgated May 1, 1997. |
| <i>NYC Watershed Protection and Partnership Programs</i> | NYC DEP Division of Watershed Planning and Community Affairs | Sediment, Nutrients, Pathogens, Toxics (Pesticides) | Financial Incentive; NYC Water Supply Watershed | NYC Water Supply (W.S.) Watershed residents; Funding for diverse pollution prevention programs. | Programs commenced in 1997, with various terms of completion. Stream protection is one of many new programs for the NYC W.S. Watershed. |
| <i>Stream Management Program</i> | NYC DEP Division of Watershed Planning and Community Affairs | Sediment, Nutrients, Pathogens | Outreach, Technical Assistance and Financial Incentive; NYC Water Supply Watershed | Landowners and local governments; To develop and implement and monitor stream corridor management plans. | 1997: Completed three workshop series on Stream Management; initiated development of local Stream Corridor Management plans on several sub-basin watersheds. |
| Stream Protection Program | DEC's Division of Fish, Wildlife and Marine Resources, Adirondack Park Agency | Sediment, Thermal stress | Planning, Regulatory, and Implementation; Statewide | Property owners, local governments and state agencies; To protect water resources by regulating activities that could adversely affect water quality, quantity, or associated ecosystems. To preserve fish habitat within the stream. | Dec. 1994: implementing regulations revised; 1996: DEC reviewed and issued 5112 permits. |
| Wild, Scenic and Recreational Rivers Program | DEC's Division of Fish, Wildlife and Marine Resources, Adirondack Park Agency | Sediment, Thermal stress | Planning, Regulatory, and Implementation; Statewide | Property owners, local governments and state agencies; To preserve and protect designated river segments and their immediate corridors by regulating use and development within them. | 1994: implementing regulations revised; 1996: DEC reviewed and issued 91 permits. |

7. Land Disposal

a. Source Description

The primary sources which are included in this category are landfills and inactive hazardous waste sites. Junkyards are a lesser problem being addressed by management practices through a pollution prevention initiative. Related source categories are Leaks, Spills and Accidents and Onsite Wastewater Treatment Systems. Each are covered in following sections.

When properly designed, constructed and operated, land disposal facilities should not cause water quality problems. In the past, however, numerous solid waste management disposal facilities did not meet currently accepted standards and pollutants leached from these facilities resulting in impaired waters. Absent the construction techniques used in today's landfills, the contents of these older landfill sites had, and have, the potential to leach out into surrounding waters, potentially contaminating groundwater.

Pollutants from land disposal activities can also reach surface water bodies. When this occurs, the pollutants can affect fish propagation and survival. The pollutants can also result in restrictions on consumption of fish taken from fresh waters and on shell fishing in marine waters as well as on contact and non-contact recreation in both marine and fresh waters. The pollutants associated with land disposal vary among the different sources included in this category. The leachate from landfills and inactive hazardous waste sites may contain a number of toxic substances which can affect surface water and groundwater. The Division of Environmental Remediation maintains a Registry of Inactive Hazardous Waste Disposal Sites.

The PWL addresses surface water and shows relatively few land disposal problems compared to

the whole and to other source categories. The 1996 Priority Waterbodies List of 1426 assessed segments contains 31 segments where land disposal is the primary source of impact on a classified water use. There are 84 more segments where land disposal is a secondary source. Water quality problems caused by landfills and hazardous wastes continue to exist but they are being addressed by current programs.

b. Existing Programs

(See Table V-7 below.)

During 1996, the Division of Environmental Remediation, which oversees the inactive hazardous waste disposal site cleanup program, was formed by the merger of the Division of Hazardous Waste Remediation with the Division of Spills Management. The combined programs have created an organization responsible for the cleanup of sites contaminated by petroleum and hazardous wastes.

In addition, the cleanup program has been expanded by the passage of the Environmental Bond Act of 1996 which will provide funds to municipalities to investigate and remediate abandoned, idled, or under used properties (a.k.a. "brownfield sites") contaminated by past industrial use. The Bond Act allotted \$200 million for the program. The cleanup program has also instituted the Voluntary Cleanup Program. This Program encourages volunteers willing to remediate contaminated sites and return them to productive uses.

Regarding prevention, state legislation passed on June 21, 1983, required the elimination, by December 18, 1990, of landfilling of all solid waste in the deep flow recharge zones of Long Island and the elimination of landfilling of untreated solid waste outside the deep flow recharge areas

through the implementation of solid waste treatment systems that reduce the volume and toxicity of the waste. By October 9, 1993, the goals of the Long Island Landfill Law had been accomplished. The DEC's solid waste management regulations also contain a prohibition on siting new landfills and vertical and lateral expansions of existing landfills over upstate principal and primary aquifer areas.

In 1994, Governor Pataki signed into law amendments to the ECL and Public Health Law which commissioned NYSDEC and NYSDOH to a study which estimated the number and cost to remediate the hazardous substance sites which are not being remediated under the State's current inactive hazardous waste disposal site remedial program's statutory authority. Some of these sites, which are possible contributors of contamination to groundwater and surface waters, are currently being addressed by the new programs mentioned above as well as the enforcement actions under, among other authorities, the Department's general statutory authority. The inventory found that of an additional 375 hazardous substance sites, 26 would pose a threat and up to 192 more may pose a significant threat.

Approximately \$103.5 million in State funds have been provided to communities for municipal solid

waste landfill closure projects under the DEC's Landfill Closure State Assistance Program. In addition, the 1996 Clean Water/ Clean Air Bond Act provided \$50 million in State assistance for municipal solid waste landfill closure projects and Adirondack landfill projects.

The Clean Water State Revolving Fund (CWSRF) also has assisted communities close their municipal solid waste and inactive hazardous waste landfills. Financing from the CWSRF has provided short-term loans with terms of less than three years, totaling \$94.3 million, providing the money needed to pay contractors in advance of receipt of State grants. The local share of project costs, which is 25 percent for inactive hazardous waste projects, and up to 50 percent of municipal solid waste landfill closure projects, totalling \$304.3 million, has been funded through long-term loans of up to 20 years through the program.

There are several non-regulatory efforts that have been taking place in the process of regulating landfills. These can generally be categorized as education and technical assistance and are discussed in the Division of Solid & Hazardous Materials' Annual Technical Assistance Report.

**Table V-7
Programs/Activities to Implement Nonpoint Source Management for Land Disposal
(Programs with Names in Italics Are New since 1990)**

| Program Name | Lead Agency (Others Involved) | Pollutant Categories | Type of Program; Geographic Coverage | Audience; Goal | Status |
|---|---|---|---|--|--|
| <i>Brownfields Program (Clean Water/Clean Air Act of 1996 Environmental Restoration Projects)</i> | NYSDEC's Division of Environmental Remediation, (NYSDOH) | Toxics, Hazardous Substances (including petroleum) | Financial Incentive; Statewide | Municipalities; To provide grants to fund voluntary remediation of abandoned, idled or under-used properties where redevelopment is complicated by contamination. | 77 Investigation and 4 Remediation Grants have been awarded with 40 more in the process. Final program guidance was issued in Dec., 1997 and regulations in Jan., 1998. |
| <i>Clean Water State Revolving Fund</i> | EFC/DEC | All | Financial Incentives; Statewide | Municipalities; To provide financial assistance for planning, design and construction of publicly-owned projects that prevent, reduce or remediate NPS pollution. | Ongoing; funds are available for subsidized low-interest loans for 100 percent of project cost. |
| <i>Drinking Water State Revolving Fund</i> | DOH/EFC | All | Financial Incentives; Statewide | Community water systems, both publicly and privately owned, and non-profit, non-community water systems. To provide financial assistance for planning, design and construction of eligible water system projects. Includes funding of land purchase or conservation easements for source water protection for wellheads or watersheds. | Ongoing; funds are available for subsidized low-interest loans for up to 100 percent of project costs. Grants may be available for qualified applicants with demonstrated financial hardship. |
| Hazardous Waste Management Program | NYSDEC's Division of Solid and Hazardous Materials, (USEPA) | Toxics/ Hazardous Substances | Regulatory; National | Owners/operators of hazardous waste treatment, storage and disposal facilities (TSDFs); To ensure that hazardous wastes are properly stored, transported, treated and disposed, including corrective action programs. | As of 3/31/98, there were 65 active TSDF's; 55 of these had permits and 10 were under interim status. |
| Inactive Hazardous Waste Disposal Site Remedial Program | NYSDEC's Division of Environmental Remediation, (NYSDOH, and USEPA) | Toxics, Hazardous Wastes (subset of Hazardous Substances) | Regulatory; Statewide | Responsible parties; To require owner, operator, or chemical contributor to remediate site, or state hires contractor if viable responsible party unknown or uncooperative. | As of 1997 there are 327 sites which have been remediated; 878 sites are currently on the State's Registry, either being investigated or remediated. There is a quarterly update on the status of active projects and an annual update of the entire Registry. |
| Solid Waste Landfill Closure Program | NYSDEC's Division of Solid and Hazardous Materials | Toxics/ Hazardous Substances | Regulatory; Statewide | Owners/operators of inactive solid waste landfills; To ensure that these landfills are closed properly to minimize impacts on the environment. | Most landfills not currently permitted for operation or properly closed are under consent order by the DEC to be closed, capped with an impervious material and monitored. |
| Solid Waste Landfill Permitting Program | NYSDEC's Division of Solid and Hazardous Materials, (USEPA) | Toxics/ Hazardous Substances | Regulatory; National | Owners/operators of solid waste landfills; To ensure that landfills are properly sited, designed, constructed and operated to protect public health and safety and the environment. The program includes facility inspections and operator training. | As of 12/31/97, there were 57 active municipal, incinerator ash, and non-hazardous industrial waste landfills, 46 had permits. |
| Voluntary Cleanup Program (VCP) | NYSDEC's Division of Environmental Remediation, (NYSDOH) | Toxics, Hazardous Substances (including petroleum) | Financial Incentive; Statewide | Primarily private parties; To promote voluntary investigation and remediation of contaminated properties in ex-change for certain releases from liability from DEC such that these properties can be redeveloped. | Over 80 agreements have been signed addressing over 120 sites. More detailed program guidance is expected in fall of 1998. |

c. Implementation Steps

Older land disposal facilities have caused water quality problems in New York. However, programs to effectively regulate these sources do exist and the water quality problems caused by this category are being minimized. Continuous work needs to be done to investigate, monitor, and, where necessary, remediate areas which pose a threat to the waters of the State. New sites brought to the Department's attention are routinely investigated and incorporated into closure programs. No recommendations for modifying these programs are included in this report.

1. In support of the Lake Ontario Lakewide Management Plan and the Niagara River Toxics Management Plan (NRTMP), NYSDEC is conducting special sampling of potential sources of priority toxics. These samples utilize low detection level sampling and analytical methods for the purpose of "tracking down" ongoing sources of priority pollutants such as inactive hazardous waste sites and landfills. The sampling will be done by the regional offices during State Fiscal Year '98-'99 per the Great Lakes Project workplan schedule and project scope. The results of the track down efforts will be passed on to the appropriate program for follow-up, and incorporated into the LaMP and NRTMP.
2. Reassess and clarify inter-divisional groundwater contamination site responsibility at DEC. Several programs at DEC are involved with the investigation and remediation of groundwater contamination. Specifically included are groundwater contamination response, oil and hazardous materials spill response, inactive hazardous site remediation and water supply emergency and contingency planning. The DOW, under current Memoranda of Understanding with the Division of Solid and Hazardous Materials, is responsible for the evaluation of unknown sources of contamination, recurring point sources, spills

and leaks of material other than hazardous materials and petroleum and waste material spills and leaks. As sources of contamination are identified, they become the responsibility of the appropriate Division (e.g. Environmental Remediation or Solid and Hazardous Materials). Resource and staff limitations have limited the DOW's and DS&HM's abilities to respond to groundwater contamination problems.

8. Leaks, Spills and Accidents

a. Source Description

Leaks and spills of petroleum products and other hazardous materials are a significant problem in New York. Subsurface leaks have the greatest potential to contaminate groundwater while surface spills can cause either groundwater or surface water problems.

Most leaks and spills are to land surfaces or the soil; few are directly to waterbodies. Most of the water quality problems that have been identified involve contaminated groundwater. All fresh groundwater in the state is classified to protect its use as a potential source of drinking water. The toxic materials that are leaked and spilled can affect this use. Spills to surface water can impair designated uses of these waterbodies as well.

Many of the pollutants in this category are hydrocarbons (synthetic organic chemicals). In the case of petroleum contamination, the dissolved constituents such as benzene, ethyl benzene, toluene and xylene (BETX) and MTBE are the primary pollutants from gasoline, and petroleum aromatic hydrocarbons (PAHs) from other petroleum products. Chlorinated solvents, such as TCE, are the most important of the hazardous materials due to their mobility.

Spills and leaks of petroleum products and of chlorinated solvents are significant sources of groundwater contamination. The Bureau of Spill Prevention and

Response (BSPR) maintains a data management system on all reported petroleum and hazardous material spills. An indication of the magnitude of the problem is the number of spills that occur each year. The Priority Waterbodies List (PWL) contains information from the Spill Response data base pertaining to spills and leaks affecting water quality.

Over 12,000 petroleum spills and more than 600 hazardous material spills are reported each year. The majority of the spills have been either underground or to the land surface. Only 10% of the spills drained directly to surface water. The 1998 PWL does not contain groundwater segments. NYS DOH maintains a list of closed municipal wells. The Division of Water will incorporate groundwater information into a Priority Aquifer List (PAL), as described in Chapter III.

The effect that a particular spill or leak has depends on its proximity to wells or to a surface waterbody, the type of pollutant, and the geology of an area. Petroleum products most often cause contamination of shallower wells while the more mobile chlorinated solvents can cause problems in deeper municipal water supply wells. The most important problem areas are in aquifer recharge areas where high storage tank density and high dependency on shallower groundwater coincide.

b. Existing Programs

(See Table V-8 below).

There are several different efforts that have been taking place and will continue to take place in the process of implementing the bulk storage regulations. These generally can be categorized as education and enforcement.

Education

1. Tank Bulletin

The Bureau of Spill Prevention and Response (BSPR) publishes the "Tank Bulletin", a newsletter that is mailed to owners/operators of facilities that are registered under the PBS, CBS and MOSF program. This newsletter provides information needed to be in compliance with the regulations including deadlines, updates on requirements and even some information on what we find acceptable to meet the requirements of the regulations.

2. Seminars

Staff from BSPR serve as speakers at numerous workshops and seminars throughout the year. In addition, as the need dictates, they also schedule and sponsor their own workshops to provide the necessary information to the regulated public.

3. Compliance Initiative

BSPR completed a special project in 1997 to send a site specific letter to each of the facilities that are regulated by the federal UST program detailing exactly what is needed to be in compliance with the 1998 upgrading deadline. In addition, a seminar was also offered at which all of the requirements were detailed as well as the various options that can be used to be in compliance. There were approximately 12,500 facilities that received letters.

Enforcement

4. Inspections

Each year regional spill prevention staff inspect numerous facilities for compliance with the regulations. The goal is to inspect every petroleum facility at least once every 5 years, and every MOSF annually. The inspection normally begins as an educational effort and, if necessary to achieve compliance, moves to a legal enforcement case.

c. Implementation Steps

Spills, leaks and accidents continue to cause water quality problems in New York. However, programs to effectively regulate these sources do exist and the water quality problems caused by this category are being minimized. One area where further control efforts were considered was the protection of critical watersheds from hazardous materials. Rather than having two sets of standards, stricter uniform statewide requirements were established to protect the environment regardless of location.

1. BSPR should continue working with other state and local agencies (DOH, Regional Planning Boards, and counties) to inventory and map petroleum and chemical storage facilities within important aquifer areas. This will help identify potential problem areas for local government. GIS also helps coordinate with other utility and transportation activities.
2. Communities should be encouraged to hold cleanup/disposal days for pesticides and other hazardous chemicals. These cleanup days should be held in conjunction with an educational program to make homeowners aware of the damage which can be caused by improper disposal of hazardous chemicals.
3. In setting DEC's bulk storage inspection and enforcement priorities, BSPR in conjunction with other DEC staff will recognize the importance of primary water supply aquifers.

Table V-8

**Programs/Activities to Implement Nonpoint Source Management for Leaks, Spills and Accidents
(Programs with Names in Italics Are New since 1990)**

| Program Name | Lead Agency (Others Involved) | Pollutant Categories | Type of Program; Geographic Coverage | Audience; Goal | Status |
|---|---|--|--|---|---|
| <i>1996 Amendments to Federal Safe Drinking Water Act</i> | NYS DOH, (NYSDEC's Division of Water and other Divisions federal and local gov't. representatives) | Toxics/ Hazardous Substances, Pathogens, (regulated drinking water contaminants) | Planning; Statewide | State,local governments,watersuppliers, public,other states where source waters cross state lines; To develop a basis for management and protection of source areas for public water systems. | Source Water Assessment Program planning has begun. Work Plan due to EPA in Feb. 1999; Assessments completed by 2001. |
| <i>Clean Water State Revolving Fund</i> | EFC/DEC | All | Financial Incentives; Statewide | Municipalities; To provide financial assistance for planning, design and construction of publicly-owned projects that prevent, reduce or remediate NPS pollution. | Ongoing; funds are available for subsidized low-interest loans for 100 percent of project cost. |
| Chemical Bulk Storage | NYSDEC's Division of Environmental Remediation, (May eventually be delegated to counties) | Toxics/ Hazardous Substances | Regulatory; Statewide | Owners and operators of USTs and ASTs that store chemicals listed in Part 597 of CBS regulations; Prevention by leak detection, tank inspection, facility upgrading and new construction standards. | As of 1998, there are almost 2,000 facilities with over 6,400 tanks registered. Approximately 53% of USTs are corrosion resistant. |
| Continuing Education Courses | SUNY College of Environmental Science and Forestry | Toxics/ Hazardous Substances (Petroleum) | Outreach and Technical Training; Statewide | Owners/operators of USTs and ASTs, and other handlers of hazardous substances; To prevent pollution by improving management of oil and gas brines, hazardous waste handling and emergency response. | Classes arranged with SUNY- ESF on a need/demand and availability basis. |
| <i>Drinking Water State Revolving Fund</i> | DOH/EFC | All | Financial Incentives; Statewide | Community water systems, both publicly and privately owned, and non- profit, non-community water systems. To provide financial assistance for planning, design and construction of eligible water system projects. Includes funding of land purchase or conservation easements for source water protection for wellheads or watersheds. | Ongoing; funds are available for subsidized low-interest loans for up to 100 percent of project costs. Grants may be available for qualified applicants with demonstrated financial hardship. |

| Program Name | Lead Agency (Others Involved) | Pollutant Categories | Type of Program; Geographic Coverage | Audience; Goal | Status |
|---|--|---|---|---|--|
| Health & Safety Training | NYSDEC's Division of Environmental Remediation | Toxics/ Hazardous Substances (Petroleum) | Outreach and Technical Training; Statewide | 300 DEC field staff; To ensure employee safety and full OSHA compliance through education | Active program with over 20 components. |
| Major Oil Storage Facilities | NYSDEC's Division of Environmental Remediation | Toxics/ Hazardous Substances (Petroleum) | Regulatory; Statewide | Owners and operators of USTs and ASTs that store petroleum, and vessels storing and transporting oil; Prevention by requiring leak detection, tank inspection, and setting standards for new construction. | As of 1998, there were 244 facilities licensed with approximately 5000 tanks. Approximately 61% of the USTs are corrosion resistant. 221 vessels were also licensed. |
| Petroleum Bulk Storage | NYSDEC's Division of Environmental Remediation, (4 delegated counties Cortland, Nassau, Rockland and Suffolk, fifth county expected in 1998) | Toxics/ Hazardous Substances (Petroleum) | Regulatory; Statewide | Owners/operators of USTs & ASTs that store petroleum products; Prevention by requiring leak detection, tank inspection, and setting standards for new construction. | As of 1998, there are nearly 40,000 facilities registered with 88,000 tanks. Approximately 59% of USTs are corrosion resistant. |
| Spill Prevention, Containment and Counter Measures (SPCC) | US EPA (NYSDEC's Division of Environmental Remediation) | Toxics/ Hazardous Substances (Petroleum) | Regulatory; National | Owners and operators of above ground storage tanks (ASTs); To prevent leaks and spills from reaching navigable waters by requiring SPCC plan development. | Regulations in effect since 1973. |
| Spill Response Program | NYSDEC's Division of Environmental Remediation | Toxics/ Hazardous Substances (Petroleum) | Regulatory, Implementation (direct government action); Statewide | Responsible parties; To require spiller to clean up spill, or state hires contractor if spiller unknown or uncooperative, or unable (State initiates legal action against spiller to recoup costs.) | 8,630 responses in 1997. |
| Underground Storage Tank (UST) | USEPA (NYSDEC's Division of Environmental Remediation) | Toxics/ Hazardous Substances (Petroleum) | Regulatory; National | Owners/operators of USTs; To prevent leaks and spills by requiring leak detection, facility upgrading, and setting standards for new construction. | As of 1997 there are 33,000 tanks registered with DEC. Approximately 59% of USTs are corrosion resistant. |
| UST & AST Education | NYSDEC's Division of Environmental Remediation | Toxics/ Hazardous Substances (Petroleum) | Technical Training; Statewide | Owners/operators of USTs & ASTs; To teach about UST and AST regulations. | Continuous training classes- 25 to 35 per year. |

9. Marinas and Recreational Boating

a. Source Description

The NYS Department of Environmental Conservation does not consider marinas to be significant sources of nonpoint source pollutants. However, this source category has been added to this update of the Management Program because of the proximity to coastal waters of any and all nonpoint pollutants generated by boats or marina operations. Numerous studies in coastal waters (Nationwide Urban Runoff Program [NURP], Long Island Sound Study, Peconic National Estuary Program, 208 Areawide Waste Treatment Management study, etc.) have shown marinas and boating have minimal environmental impacts compared to other nonpoint sources.

The Priority Waterbodies List (PWL) does not list marinas as a source, however, it does appear several times in the “other” source category. Marinas are listed as the primary cause of less than ten seasonal shellfishing closures, and as a secondary cause of less than ten more, all in the Long Island Sound basin. Another marina is listed as the possible source of petroleum leaks or spills to a tributary of Chautauqua Lake listed as *threatened*. There are three segments where marina waters are stressed by problems resulting from other source categories.

Boating has increased in popularity as New York’s coastal areas and locations near inland water bodies have become more developed. Because marina and boating activities take place on the shoreline or directly on the water they have the potential for adversely impacting water quality.

Water quality problems in this category can result from a variety of sources:

- C Lack of storm water runoff controls
- C Improper boat maintenance and repair practices

- C Fueling vessels can pose a risk of releasing petroleum products directly into the water
- C Untreated or poorly treated sewage; improperly handled liquid and solid wastes

- C Inadequate shoreline stabilization

- C Stagnant water

b. Existing Programs

(See Table V-9 below.)

Many of the activities and potential pollution sources associated with marinas and recreational boating activity are presently covered under various laws and regulatory programs. For example, the former State Office of Business Permits and Regulatory Assistance found that, depending on the location and services provided, a marina facility in New York may have to obtain over 60 permits and licenses to operate. Over 20 of these permits are administered by the DEC and are related to environmental programs. DEC’s Division of Environmental Permits conducts meetings of the Ad Hoc Marina Advisory Committee to address current issues with several state agencies, marina associations, and marina owners and operators. The following table (V-9) contains a partial listing of several existing programs that address marina NPS pollution.

c. Implementation Steps

1. NYSDEC and partner agencies should use the Management Practice Catalogue for Marinas to encourage impementation or installation of recommended practices.
2. Based on the November 18, 1997, final conditional approval of New York’s Coastal Nonpoint Pollution Control Program by EPA and NOAA, DEC and DOS will have two years to achieve stormwater runoff management at new and expanding marinas, and at existing marinas for at least the hull maintenance areas.

Table V-9

**Programs/Activities to Implement Nonpoint Source Management for Marinas and Recreational Boating
(Programs with Names in Italics Are New since 1990)**

| Program Name | Lead Agency, (Others Involved) | Pollutant Categories | Type of Program; Geographic Coverage | Audience; Goal | Status |
|--|---|---|--|--|---|
| Ad Hoc Marina Advisory Committee | DEC's Division of Environmental Permits, (NYSG, ESMTA, DEC Divisions of F, W & MR, and Water, DOS and others) | Sediment, Water level or flow variation, Toxics, Nutrients, Pathogens | Outreach; Statewide | Marina owners and operators, and boaters; To exchange information and discuss changes to regulatory programs and permits, and other boating or marina issues in the planning stage. | NYSDEC convenes the committee two to three times per year, or as needed. It is chaired by the Division of Environmental Permits' Chief Permit Administrator. |
| <i>Clean Water State Revolving Fund</i> | EFC/DEC | All | Financial Incentives; Statewide | Municipalities; To provide financial assistance for planning, design and construction of publicly-owned projects that prevent, reduce or remediate NPS pollution. | Ongoing; funds are available for subsidized low-interest loans for 100 percent of project cost. |
| Commercial Pesticide Applicators Certification | DEC's Division of Solid and Hazardous Materials, (Cornell Cooperative Extension, ESMTA) | Toxics (Pesticides) | Outreach (Education), Technical Training, Regulatory; Statewide | Marina operators, certified pesticide applicators and applicants. (Applicants must have 3 yrs. experience prior to exams.); Improve technical and legal literacy of pesticide users. | 1997: 6,815 persons trained and 1,306 courses held statewide. 35,917 active certified applicants must recertify every 6 yrs., by testing or training. Of these, 661 certify under section 7h, anti-fouling paints. |
| <i>Drinking Water State Revolving Fund</i> | DOH/EFC | All | Financial Incentives; Statewide | Community water systems, both publicly and privately owned, and non-profit, non-community water systems. To provide financial assistance for planning, design and construction of eligible water system projects. Includes funding of land purchase or conservation easements for source water protection for wellheads or watersheds. | Ongoing; funds are available for subsidized low-interest loans for up to 100 percent of project costs. Grants may be available for qualified applicants with demonstrated financial hardship. |
| Empire State Marine Trade Association Self-Education | Empire State Marine Trade Association (ESMTA) | Sediment, Water level or flow variation, Toxics, Nutrients, Pathogens | Outreach; NY's marine district and Great Lakes | Marina owners and operators; To encourage environmental responsibility and safety, and provide regulatory and business information through education. | The Empire State Marine Trade Association is a member of the NYSDEC Ad Hoc Marina Advisory Committee. |
| Freshwater Wetlands | DEC's Division of Fish, Wildlife, and Marine Resources, (APA, U.S. Army Corp of Engineers) | Sediment, Water level or flow variation, Toxics, Pathogens | Regulatory; Statewide with delegation of Adirondack Park to APA | Boaters, and marina owners and operators; To preserve/protect freshwater wetlands greater than 12.4 acres, any of unusual local importance, and adjacent areas within 100 feet. | Regulations effective since September 1, 1975. (1996) DEC reviewed and issued 933 permits. |

| Program Name | Lead Agency, (Others Involved) | Pollutant Categories | Type of Program; Geographic Coverage | Audience; Goal | Status |
|--|---|---|--|--|--|
| Marine Sanitation Device (MSD) Discharge Enforcement | US Coast Guard, (USEPA) | Pathogens, Oil and Grease (Petroleum), Toxics/ Hazardous Substances | Outreach, Regulatory; Federal Navigable Waters | Boaters; To eliminate untreated overboard discharges. | Since 1980. |
| New York Sea Grant Outreach Programs | New York Sea Grant Extension (NYSG), (CCE) | Sediment, Water level or flow variation, Toxics, Nutrients, Pathogens | Outreach; Statewide | Boaters, and marina owners and operators; To encourage environmental responsibility through education | NYSG is a member of the NYSDEC Ad Hoc Marina Advisory Committee. |
| No Discharge Zone Enforcement | NYS DEC (Local law enforcement agencies) | Pathogens, Oil and Grease (Petroleum), Toxics/ Hazardous Substances | Outreach, Regulatory; Waters of New York State | Boaters and marina owners and operators; To eliminate <i>untreated</i> overboard discharges within the NDZ and provide adequate transfer and pump-out facilities. <i>Untreated</i> discharges are already prohibited within three miles from shore. | 1998: 2 NDZs in the coastal zone - Lloyd- Huntington, and Mamaroneck Harbors; several inland on L. Champlain, L. George, Skaneateles and Owasco Lakes; and 60 miles of the Hudson R. is an EPA-designated Drinking Water Intake Zone. |
| NY Clean Vessel Act Program | NYSDEC's Division of Fish, Wildlife, and Marine Resources, with grants administered by Environmental Facilities Corp., (USFWS, NY Sea Grant) | Pathogens, Nutrients | Financial Incentive, Technical Assistance, Outreach; NY coastal areas | Boaters, municipal officials, marina owners and operators; To fund sanitary pump-out facilities for vessels and dump stations for portable toilets at marinas. Marinas on inland waters are not eligible for the grant program. | As of 1998 funds have been distributed to more than 200 marinas; Approximately \$200,000 is remaining until depleted or end of program (9/30/99). |
| SPDES Stormwater Program | DEC's Division of Water, (USEPA) | Sediment, Water level or flow variation, Toxics, Nutrients, Pathogens | Regulatory; Statewide | Marina owners and operators; To control the discharge of pollutants to state waters from stormwater (GP-93-05) and industrial stormwater. There are no marinas with industrial permits. | There are 72 facilities listed under Standard Industrial Classification (SIC) Code 4493 (marinas) that have coverage under the general permit. |
| Tidal Wetlands | DEC's Division of Fish, Wildlife, and Marine Resources, (U.S. Army Corps of Engineers, Dept. of State) | Sediment, Water level or flow variation, Toxics, Pathogens | Regulatory; Long Island, NYC, Westchester and Rockland Counties. | Boaters, and marina owners and operators; To preserve/protect wetlands now or formerly connected to tidal waters, and adjacent areas within 300 feet. | Regulations effective since January 16, 1991. |

10. Onsite Wastewater Treatment Systems

a. Source Description

Individual onsite wastewater treatment systems (OWTS) are an essential component of approximately 1.5 million residential homes throughout New York State. In addition to serving much of New York's residential population, OWTS are also the method of wastewater treatment for numerous commercial and institutional facilities wherever public sewers are not available. When properly designed, installed and maintained OWTS have little impact on water quality. However, failing systems or older systems not constructed in conformance with current design standards are likely to result in impaired surface and ground waters.

In general, properly functioning OWTS are capable of near complete renovation of individual system wastewater before the effluent enters the ground water at the zone of soil saturation. Wastewater treatment by OWTS is limited by their capacity to effectively remove nitrogen and, in very porous soils, pathogens.

The 1998 Priority Waterbodies List (PWL) identifies nearly 150 segments (entire waterbodies or designated reaches or portions of a waterbody) in the state impacted *primarily* by on-site wastewater treatment systems (OWTS). More than 220 list OWTS as a secondary source. OWTS rank fourth in total PWL segments affected. The majority are stressed and threatened segments, but there are about 40 precluded and impaired segments where OWTS are the primary source.

Domestic and commercial wastewater contains a myriad of pollutants. These pollutants may include biodegradable organics (resulting in a biochemical oxygen demand, BOD), pathogens, nutrients (i.e., ammonia and phosphorus), inorganic compounds, metals and surfactants to varying degrees. OWTS treat and ultimately dispose of renovated wastewater through a combination of biological, chemical and physical processes.

OWTS are documented as problems for surface water bodies, but are also considered to be a threat for groundwater. For streams, the problems involve the lack of systems or failing systems within stream side hamlets. For lakes, dwellings along the shoreline can contribute excess nutrients which cause weed and algal problems. Excess nutrients can also cause drinking water supplies to exceed federal water quality standards for parameters such as color and dissolved oxygen. The most common threat to groundwater from on-site systems is degradation of individual water supplies by bacteria and/or nitrates. There is also a concern that new high density development or development with inadequate systems will result in contamination of surface or groundwater.

The authority for control of OWTS is based on New York's Environmental Conservation Law (ECL) and the Public Health Law (PHL). A Memorandum of Understanding (MOU) established in 1984 between the DEC and DOH defines the responsibilities for regulating OWTS in New York State. The DOH promulgates the minimum statewide standards for the design and construction of new individual household OWTS. New individual household OWTS must conform with 10NYCRR Appendix 75-A, titled Wastewater Treatment Standards - Individual Household Systems. The New York State Uniform Fire Prevention and Building Code (Section 1250.4 of 9NYCRR Part 1250) also lists Appendix 75-A as the generally accepted standard for individual sewage treatment systems. The minimum statewide standards for the design and construction of commercial, institutional and large residential OWTS is the DEC, Design Standards for Wastewater Treatment Works Intermediate Sized Sewerage Facilities, 1988 edition. Some county health departments, watershed protection agencies, NYC DEP, and the Adirondack Park Agency have adopted more stringent standards that apply to OWTS constructed and operated in their jurisdictions.

In 1996, DEC began issuing SPDES General Permits for sanitary wastewater discharges to groundwater of 1,000 to 10,000 gallons per day. Discharges to surface water still require an individual SPDES permit

from DEC. NYSDOH continues to regulate sanitary wastewater discharges to groundwater from systems with a design volume of less than 1,000 gallons per day.

In May 1997, the NYCDEP promulgated regulations for the City's Catskill-Delaware and Croton Water Supply Watersheds that include standards for individual and commercial septic systems, and the authority to enforce those standards. The design standards are consistent with state requirements, however the NYCDEP's siting standards are in some cases more stringent than the state's. Except in counties which have signed delegation agreements, NYCDEP review and approval is required for new systems. In all counties, NYCDEP review and approval is required for modifications to or replacements of existing systems, excluding routine repairs. The regulations also require that failing systems be upgraded to meet the standards to the fullest extent possible. The regulatory requirement and design standards will be strictly enforced. Further, the New York City Watershed Agreement, of which the regulations are a part, provide funding for a pump-out program for failing systems, infrastructure improvements (including construction of community septic systems and extensions of sanitary sewers), and septic system rehabilitations and replacements.

Appendix 75-A classifies OWTS as conventional or alternative treatment systems. Conventional systems may be used at sites with adequate in-situ soil depth and percolation. Sites that are not suitable for conventional treatment systems because of insufficient soil or percolation may be candidates for an alternative treatment system. Alternative systems require more elaborate designs and construction techniques to assure proper treatment of sewage. In order to disseminate information on both types of systems, NYS DOH hosted six two-day workshops in 1994 for environmental health employees, design professionals and code enforcement officials on the design and construction of OWTS. The workshops were attended by more than 400 individuals.

In addition to regulating the design and installation of new OWTS, the ECL and the PHL provide for the review of proposed wastewater treatment systems for realty subdivisions. As defined in the PHL, a realty subdivision is any tract of land divided into five or more lots of five acres or less and offered for sale, lease or rent in any consecutive three year period. Plans for realty subdivisions with lots served by OWTS must be reviewed and approved by the local health department having jurisdiction prior to the sale, rent or lease of any subdivision lots. The PHL requires community sewerage for realty subdivisions comprising 50 or more lots, or where in-situ soil conditions are not amenable to conventional onsite wastewater treatment.

OWTS have an average useful lifespan of 25 years when used continuously and regularly maintained. OWTS that have reached the end of their useful life may begin to exhibit symptoms of failure. These symptoms may include household plumbing backups, sluggish drains, sewage on the surface of the ground, or excessive algal growth in nearby watercourses. The PHL also empowers local boards of health to enforce state and local sanitary codes. Local boards of health are responsible for investigating nuisance complaints concerning failed OWTS. Local boards of health can issue orders for the abatement and correction of failed OWTS under Part 8 of the State Sanitary Code.

b. Existing Programs

(See Table V-10 below.)

Programs to control pollution from this source operate primarily at the state level. More stringent regional, county and local programs exist to address unique local concerns. The existing programs employ regulatory and educational approaches as their primary tools.

c. Implementation Steps

1. Model sanitary code requirements for individual OWTS should continue to be implemented on a local level. Counties whose codes do not meet or exceed the requirements of the provisions should be encouraged to adopt such.
2. Programs should be developed to provide for more frequent inspection of septic systems and septic tank pumping. Alternatives such as creation of wastewater management districts, local watershed authorities and implementation of self-help programs should be considered.
3. Existing enforcement authority should be used to require corrective actions by persons causing water quality problems due to inadequate on-site wastewater systems. Priorities should be established based on the Priority Waterbodies List (PWL), and appropriate inventories of groundwater problems.
4. Propose legislation so that financial incentive programs, such as the New York State Clean Water Revolving Fund (CWSRF), can be expanded to assist property owners in financing the construction of new or rehabilitated OWTS.
5. Foster interagency and financial institution efforts to identify potential methods for financing replacements of failing OWTS where such replacements would result in financial hardship to system owners. This information could then be made available to system owners.
6. Demonstration projects should be used to illustrate new methods for solving the problems caused by failing on-site systems. Alternatives to conventional collection systems and treatment plants should be studied. Projects using methods such as cluster systems that collect sewage from small-lot residences and distribute it to nearby sites with suitable soil should be encouraged.
7. Further develop educational programs to make the public aware of water quality impacts resulting from improperly functioning or maintained OWTS.
8. Re-examine the DEC/DOH MOU regarding OWTS regulatory responsibility in order to increase the role of local health departments for regulating commercial and institutional OWTS.
9. Funding options for local health department administration of a commercial and institutional OWTS program should be developed.
10. The 1988 DEC Design Standards for Wastewater Treatment Works Intermediate Sized Sewerage Facilities should be updated to include recent technology advances and to provide consistency with DOH standards.
11. Based on the November 18, 1997, final conditional approval of New York's Coastal Nonpoint Pollution Control Program by EPA and NOAA, DEC and DOS will have three years to address:
 - a) OWTS issues impacting nitrogen limited waters.
 - b) Inspection of operating systems.

Table V-10
Programs/Activities to Implement Nonpoint Source Management for Onsite Wastewater Treatment Systems
(Programs with Names in Italics Are New since 1990)

| Program Name | Lead Agency (Others Involved) | Pollutant Categories | Type of Program; Geographic Coverage | Audience; Goal | Status |
|---|--|--|--|--|---|
| Adirondack Park Local Government Assistance | Adirondack Park Agency, participating municipalities | Pathogens and Nutrients. | Technical Assistance, Outreach; Adirondack Park | Municipalities within the Park; To delegate OWTS standards protective of pristine waterbodies. | 1996 new model ordinance developed for adoption by municipalities. |
| Adirondack Park Permit Program | Adirondack Park Agency | Pathogens and Nutrients. | Regulatory; Adirondack Park | Individuals and some subdivisions; Protection of pristine waters with regulations more stringent than Part 75-A. | Since 1970. Vertical separation to groundwater or bedrock 2' more than 75A. Horizontal separation (setbacks) for highly permeable soils 100' more than 75A. |
| <i>Clean Water State Revolving Fund</i> | EFC/DEC | All | Financial Incentives; Statewide | Municipalities; To provide financial assistance for planning, design and construction of publicly-owned projects that prevent, reduce or remediate NPS pollution. | Ongoing; funds are available for subsidized low-interest loans for 100 percent of project cost. |
| <i>Drinking Water State Revolving Fund</i> | DOH/EFC | All | Financial Incentives; Statewide | Community water systems, both publicly and privately owned, and non-profit, non-community water systems. To provide financial assistance for planning, design and construction of eligible water system projects. Includes funding of land purchase or conservation easements for source water protection for wellheads or watersheds. | Ongoing; funds are available for subsidized low-interest loans for up to 100 percent of project costs. Grants may be available for qualified applicants with demonstrated financial hardship. |
| <i>Individual Septic System Program</i> | NYC DEP (Delegated Counties) | Pathogens, Nutrients, Oxygen demand (BOD ₅), Metals, and Surfactants, with an emphasis on nutrients and pathogens. | Regulatory, Financial Incentive, Implementation, Technical Assistance; ~ 2,000 sq. miles in 8 counties. Includes Catskills, Lower Hudson and Delaware Watersheds. | Watershed residents and municipalities; To design, operate and replace OWTS according to new regulations - more stringent than 75A. | May 1, 1997 - DEP issued final Watershed Rules and Regulations for NYC's drinking water supply watershed. DEP programs include inspection of existing systems, upgrading or replacement of failing systems, and funding for a pump-out program and for various infrastructure improvements. |
| <i>Keuka Lake Watershed OWTS Permit Program</i> | Keuka Watershed Improvement Cooperative (KWIC) | Pathogens, Nutrients, Oxygen demand (BOD ₅), Metals, and Surfactants. | Regulatory; Keuka Lake Watershed Towns | All OWTS owners; To require inspection and permitting every two years and replace or repair failing or non-conforming systems. | 1993 - KWIC formed by intermunicipal agreement. |

| Program Name | Lead Agency (Others Involved) | Pollutant Categories | Type of Program; Geographic Coverage | Audience; Goal | Status |
|--|--|---|---|--|---|
| Local Plan Review and Construction Inspection | County Health Departments, DOH District Offices, SWCDs, NYC Department of Buildings. | Pathogens, Nutrients, Oxygen demand (BOD ₅), Metals, and Surfactants. | Outreach, Regulatory, Technical Assistance; County or multi-county region. | Residential homes, commercial and institutional systems, subdivisions of 5-49 lots; To fulfill MOAs with NYS DEC, and to assure the design, construction and maintenance of OWTS meet state standards through design approval and site inspections. | Program operates under same laws and regulations as the Residential Sanitation program (see below) and uses the same design references plus the following: -NYSDEC: Design Standards for Wastewater Treatment Works-1988-Intermediate Sized Sewerage Facilities -Individual County Sanitary Codes |
| <i>Nonpoint Source Implementation Grant Program</i> | NYS DEC's Division of Water - Bureau of Watershed Management | Pathogens, Nutrients, Oxygen demand (BOD ₅), Metals, and Surfactants. | Financial Incentive; Statewide | Municipalities; To reduce, abate, control, or prevent nonpoint source pollution from OWTS effluent through watershed-based assessments, education, and implementation of BMPs. | The Nonpoint Source Implementation Grants Program providing funding for a total of 7 onsite wastewater pollution control projects in 1994-95 and 1995-96. An additional 4 onsite wastewater pollution control projects were funded with the 1996-97 grants announced in May of 1997. |
| Residential Sanitation | NYS DOH, Bureau of Community Sanitation and Food Protection | Pathogens, Nutrients, Oxygen demand (BOD ₅), Metals, and Surfactants. | Regulatory, Implementation, Outreach, Technical Assistance; Statewide | Individual household OWTS and facilities permitted through DOH regulations up to 10,000 gpd; To assure design, construction and maintenance of OWTS meet state standards through design approval, site inspections, and educational presentations. | Ongoing. 10NYCRR Part 75: "Standards for Individual Water Supply and Individual Sewage Treatment Systems" December 1990: NYS DOH promulgated a revised Appendix 75-A: Wastewater Treatment Standards - Individual Household Systems . June 1996: DOH published companion guidance to regulations: Individual Residential Wastewater Treatment Systems Design Handbook . |
| <i>Sanitary Code Enforcement Program</i> | Cayuga County Department of Health, (SWCDs) | Pathogens, Nutrients, Oxygen demand (BOD ₅), Metals, and Surfactants | Regulatory, Technical Assistance; Countywide. | All septic system owners; To require inspection, permitting, pumping, repair, or replacement every five years. | 1994 - New county sanitary code enacted. More stringent than Part 75-A. |
| State Pollutant Discharge Elimination System (SPDES) | NYS DEC; Bureau of Water Permits | Pathogens, Nutrients, Oxygen demand (BOD ₅), Metals, and Surfactants. | Regulatory; Statewide | All commercial/ institutional OWTS, and residential OWTS with daily design flow >1,000 gallons/day; To issue permits to OWTS designed to state standards. | 1995. DEC began use of General SPDES permits for OWTS with design flows >1,000 - 10,000 gpd to groundwater. Certification of construction according to 1988 DEC standards is required. New OWTS requiring SPDES permits must be constructed under the supervision of the design professional of record. |
| Statewide OWTS Outreach | Cornell Cooperative Extension, Cornell University | Pathogens, Nutrients, Oxygen demand (BOD ₅), Metals, and Surfactants. | Outreach, Technical Assistance; Statewide | County CCE agents, general public, service and design professionals; To provide instruction and research results to assist in improving OWTS design, construction, maintenance and operation. | 1995 - 1 day OWTS Teleconference for Professionals. 1996 - On-Site Sewage Treatment System video. 1997 - Statewide OWTS education program using videos and materials developed by Cornell University for CCE county agents and interested publics. |

11. Resource Extraction/Exploration/ Development

a. Source Description

The category of resource extraction includes both mining and the production of oil, natural gas and solution-mined salt. Sand and gravel production accounts for 85% of the mining activity in New York State. Oil production occurs only in the southwestern portion of the state, whereas natural gas production and solution salt mining occur in both western and central New York.

Sand and gravel mining is the most extensive form of resource extraction performed across New York State. Operations conducted in and near streams have the greatest potential to affect water quality. The major pollutant associated with sand and gravel mining is escaping sediment. Mined Land Use Plans for mining and reclamation include extensive designs for erosion control and revegetation of the site. These are required by permit for the extraction of minerals from the ground and for the removal of sand and gravel from protected streams classified "C(T)" or higher (trout streams). At all permitted mining operations, erosion and sedimentation control options are implemented to ensure that excessive runoff does not occur. Recommended management practices (such as settling ponds and stabilizing active faces) should be implemented as soon as practical. Wherever possible, removal of sand and gravel from navigable waters is subject to the same constraints.

Removal of sand and gravel deposits from the bed and banks of a stream can cause significant problems if not done in accordance with an approved Mined Land Use Plan and stream disturbance permit. However, there are some exemptions to the stream permit program including Department of Transportation activities and actions by any local governments having a memorandum of understanding with DEC. These exemptions remain a problem area regarding the Department's authority over mining practices. The present system of MOUs between DEC and the local

agencies that remove the gravel needs to be strengthened.

The NYSDEC Priority Waterbodies List (PWL) includes only six waterbodies that cite sediment discharges related to gravel mining operations or instream sand and gravel removal as contributing to water use impairment. These segments list the fishery as being affected or threatened by excessive sediment in the stream. However, in each of these cases the gravel removal operations are listed as "possible" sources, indicating that further confirmation of the source of the impairment is necessary. Other stream disturbances and natural streambank erosion are also cited as possible sources of excessive sediment.

Only one segment on the PWL lists metals mining as a source. Mine drainage from a local zinc mine was identified as the source of zinc in Turnpike Creek. Water quality studies, although a decade old, found high levels of zinc in the water, sediment and macroinvertebrate tissue and some ambient toxicity. However, recent fish surveys show the fishery to be nonimpacted. As a result of the conflicting assessments, the creek is listed as a "threatened" waterbody and additional monitoring is recommended.

When impairments from oil and gas production or solution mining occur they are usually the result of operational problems such as leaking fluid flow lines, wellhead connections, or tanks. Other operational problems that can be minor sources of nonpoint source pollution include accidental seepage loss of drilling and completion fluids and spillage of oil or brine. Management practices to prevent water quality degradation are required by regulations and permit conditions. These management practices include siting restrictions, casing and cementing of wells, lining of drill pits, diking of production tanks, timely site reclamation and drilling pit closure, and timely plugging of wells. Compliance with regulations and permit conditions pertaining to resource extraction wells is enforced at new and existing sites where responsible owners are known to the DEC and held accountable

for monitoring and maintaining the condition of wells and other equipment on-site and for final plugging and reclamation. Furthermore, since 1974, most well owners have been required by statute to maintain financial security against the cost of plugging their wells. Unfortunately, over 4,000 pre-1974 grandfathered, marginally protected wells remain which have not been plugged and for which no financial security is held. In addition, the statutory financial security amounts established in 1984 through negotiations between the legislature and the regulated community are often insufficient to cover actual well plugging liabilities because of the maximum dollar limitations.

Old abandoned and improperly plugged wells are also a potential source of pollution, particularly in the century-old oilfields of southwestern New York. The Division of Mineral Resources estimates that as many as 40,000 wells drilled since the mid-1800's were either never plugged or were plugged using methods that would not be considered adequate by today's standards. No management practices are in use at these old, abandoned wells. Leaks from long-abandoned, unmonitored wells could impair local water supplies. Investigating and plugging wells found to be leaking is the only effective management practice for preventing fluid migration and protecting groundwater at these wells where the integrity of pipe and cement below ground is no longer being monitored or maintained. State funds are insufficient to implement a comprehensive program to routinely locate and plug old, abandoned wells; therefore, only a small number of "emergency" wells have been plugged, and no wells have been plugged since 1994.

The Division of Mineral Resources has focused on preventing additional well abandonments through implementation of programs to enhance operators' compliance with requirements to report well status annually, to maintain financial security against well plugging costs, and to demonstrate good cause for maintaining unplugged wells in shut-in (or inactive) status. Vigilance in enforcing these requirements is becoming increasingly important as over 1500 gas

wells drilled between 1975 and 1980 are expected to reach their economic limit within the next 10 years. When the wells are no longer economically viable to produce, they must all be properly plugged to avoid potential surface or subsurface fluid leakage. Ownership of these wells is distributed among many small operators, and the state does not hold sufficient security to cover well plugging costs even for those operators in compliance with the financial security statute.

Three stream segments are on the 1996 PWL because of problems related to oil and gas well fields in the Allegheny and Genesee River Basins. Fishing, fish survival and water supply are the impaired, stressed or threatened uses.

b. Existing Programs

(See Table V-11 below.)

Existing programs which address this source operate at the state level. Federal and state laws regulate these sources. Most of the programs identified in Table V-11 are operated by DEC.

c. Implementation Steps

Existing programs appear to have adequate authority to control this source from an operational standpoint. However, the effectiveness of existing programs is dependent upon allocation of adequate resources to aggressively enforce statutory and regulatory requirements. Furthermore, the existing statute for oil, gas and solution mining does not allow the Division of Mineral Resources to require financial security for higher risk pre-1974 wells. For post-1974 wells, financial security is required but in amounts that may not be commensurate with actual well plugging costs. Changes are recommended to ensure continued effectiveness based on projected future needs.

1. The Division of Mineral Resources should work with industry and local governments to develop and implement a comprehensive program that ensures timely plugging by the responsible owner of every well that is no longer economically viable or is creating an environmental hazard.

2. The Stream Protection Permit Program should include provisions requiring local governments to obtain permits for the mining of sand and gravel from stream beds and banks of streams classified C or higher through modification of Article 15, Title 5, of the Environmental Conservation Law.

3. The statutory requirement for well owners to maintain financial security should be updated to reflect actual plugging costs, and to gradually un-grandfather pre-1974 wells.

Table V-11

**Programs/Activities to Implement Nonpoint Source Management for Resource Extraction
(Programs with Names in Italics Are New since 1990)**

| Program Name | Lead Agency (Others Involved) | Pollutant Categories | Type of Program; Geographic Coverage | Audience; Goal | Status |
|--|---|---------------------------------|---|--|---|
| <i>Clean Water State Revolving Fund</i> | EFC/DEC | All | Financial Incentives; Statewide | Municipalities; To provide financial assistance for planning, design and construction of publicly-owned projects that prevent, reduce or remediate NPS pollution. | Ongoing; funds are available for subsidized low-interest loans for 100 percent of project cost. |
| <i>Drinking Water State Revolving Fund</i> | DOH/EFC | All | Financial Incentives; Statewide | Community water systems, both publicly and privately owned, and non-profit, non-community water systems. To provide financial assistance for planning, design and construction of eligible water system projects. Includes funding of land purchase or conservation easements for source water protection for wellheads or watersheds. | Ongoing; funds are available for subsidized low-interest loans for up to 100 percent of project costs. Grants may be available for qualified applicants with demonstrated financial hardship. |
| <i>Brine Tank Inspection Program</i> | NYS DEC's Division of Mineral Resources | Salt (brine) | Regulatory (inspection); DEC Region 9 | Owners of brine tanks at oil and gas well sites Remediation of tanks to prevent potential leaks and spills. | As of June 1998, over 900 tanks inspected and problems identified at 16%. Owners notified and remediation in progress. |
| Mined Land Reclamation Planning Assistance | USDA - NRCS, Soil & Water Conservation Districts | Sediment | Technical Assistance; Statewide | Municipalities and farmers with gravel pits; To provide assistance in preparing plans for reclaiming former sand and gravel operation sites. | Five SWCDs provided assistance in 1997. |
| Mined Land Reclamation Regulatory Program | NYS DEC's Division of Mineral Resources | Sediment | Regulatory (permits); Statewide | Any operator mining more than 1000 tons of materials during 12 consecutive months; Reclamation of affected lands and return to productive use via mined land use plans: erosion control, revegetation, settling ponds and stabilization of active faces. | Over 45,000 acres affected by mining at 2,470 active mines as of June 15, 1998. |

| Program Name | Lead Agency (Others Involved) | Pollutant Categories | Type of Program; Geographic Coverage | Audience; Goal | Status |
|--|---|---------------------------------|---|--|--|
| Oil and Gas Account | NYS DEC's Division of Mineral Resources | Hydrocarbons and Salt (brine) | Implementation (direct government action); Statewide | Abandoned, leaking wells with no identifiable responsible owner; To prevent surface fluid leakage and subsurface fluid migration into groundwater aquifers. | \$141,000 in Account as of May 1998. No wells plugged since 1994. |
| Oil, Gas & Solution Mining Regulatory Program | NYS DEC's Division of Mineral Resources | Hydrocarbons and Salt (brine) | Regulatory (permits); Statewide | Any operator who owns or drills wells of any depth for oil, gas, gas storage or solution salt mining, or wells deeper than 500 feet for brine disposal, production of geothermal resources, or stratigraphic evaluation; To prevent waste, provide for greater ultimate recovery, protect the environment and correlative rights. | Over 11,500 unplugged wells reported in 1997. |
| State Pollutant Discharge Elimination System (SPDES) | NYS DEC's Division of Water, Bureau of Water Permits | Hydrocarbons and Salt (brine) | Regulatory (permits); Statewide | Surface dischargers; To minimize discharge of pollutants based on assimilative capacity of the receiving waterbody. Groundwater discharges; Groundwater effluent limits/standards must be met; only brine discharges to deep wells permitted. | One central office permit for a gas storage facility. Several regional permits for brine discharges to surface waters. As of mid-1998, groundwater discharge permits issued or under review for six of seven EPA-permitted facilities. One expired. |
| <i>Stream Protection Permit Program</i> | NYSDEC's Division of Fish, Wildlife, & Marine Resources, Adirondack Park Agency | Sediment | Regulatory (permits); Statewide | Any person modifying or disturbing the channel or bed of a stream (classified C(T) or higher) through the removal of sand and gravel (except DOT and local governments with MOUs with DEC); To preserve fish habitat within the stream. | Regulations revised in 1994; reviewed and issued 5112 permits in 1996 (DEC). |
| US EPA Underground Injection Control (UIC) Program | US EPA Region II | Hydrocarbons and Salt (brine) | Regulatory (permits); National | All operators of injection wells used for brine disposal, waterflooding and solution mining; To protect Underground Sources of drinking water. | Seven brine disposal well permits, 554 waterflood injection wells, and five solution mining facilities with 135 active and stand-by wells reported in 1997. |

12. Roadway and Right-of-Way (ROW) Maintenance

a. Source Description

Maintenance of highways, local roads, bridges, roadsides, and rights-of-way contributes pollutants to the waters of the State throughout all seasons. The most commonly contributing sources of NPS pollution from roadway and ROW maintenance activities are identified in PWL as storage and application of deicing materials (sand and salt) and sediment from roadbank erosion. A working group representing different agencies, formed for developing the Roadway and ROW Maintenance Management Practices Catalogue, identified other sources of problems associated with roadways and rights-of-way such as ditch maintenance, bridge painting and washing, control of vegetative growth, dust and debris.

Unvegetated roadsides, roadbanks and stripped or reshaped ditches along state, county and local roads can contribute significant sediment during spring runoff. This problem is frequently not identified in inventories such as the PWL due to the intermittent nature of this source. Ditch maintenance is very important in the drainage of roads. All road ditches should provide adequate drainage of runoff, but to protect water quality, practices should be employed to assure minimal erosion. Establishing vegetative cover immediately after clearing and reshaping of road ditches in the fall can reduce erosion during spring runoff.

Road salt if improperly stored can cause contamination of groundwater. The primary effect of improper salt storage is to make groundwater unsuitable for drinking. While the chloride which enters wells is not considered a major public health risk, it can result in an objectionable taste in the

water. High levels of sodium, however, can pose health risks. Shallow individual wells are more frequently affected by salt contamination than deeper municipal wells. Application of salt is regarded as a potential problem in many areas.

The threat to groundwater quality from the use of deicing compounds is considered far less significant than the threat from improper salt storage. However, the use of deicing agents as well as sand spreading on highways during the winter can cause water quality problems in surface waters. Storage or application of deicing agents are listed in 1998 PWL as primary source of impairment on over 50 segments and as secondary source of problems on about 70 more. Road sanding has caused sediment deposition along a number of streams in the Adirondack Mountains area as well as in other areas of the state. The sediment which enters streams as a result of this source adversely impacts fish propagation and survival.

For the management of the utility corridors, it is important to the utility companies to keep the growth of the vegetation under the high-voltage wires below a certain height. Herbicides are very often applied for control of vegetation in utility ROW. Excessive or improper use of herbicides can result in the transport of contaminants by runoff to the surface water. Where a right-of-way crosses the surface water, every attempt should be made to avoid contamination of the water or wetland by drifting herbicide.

During bridge maintenance, such as bridge washing or bridge painting, there is a risk of transport of toxic metals and other substances contained in the paint residuals to surface water and wetlands. Bridge painting includes surface preparation, grinding and sanding which create paint chips and dust. Bridge washing can also

generate loose paint and flakes. To minimize the delivery of residuals these operations need to be conducted under circumstances that all the residues are contained on the site.

Among other issues concerning NPS pollution loading from roadway and ROW are the application of dust suppressants and littering. Some of the material used for dust control on unpaved roads have adverse impact on water quality.

b. Existing Programs

(See Table V-12 below.)

c. Implementation Steps

1. Encourage research projects that explore the impacts of salt and sand application along highways.
2. Encourage the implementation of BMPs that reduce the erosion due to maintenance of roadbanks and road ditches.

3. Develop a technology transfer program to educate localities and highway superintendents on the maintenance of roadway/ROW (i.e. Statewide or regional seminars on roadway maintenance including discussion of roadway maintenance issues, BMPs, new techniques, and studies.)
4. Based on the November 18, 1997, final conditional approval of New York's Coastal Nonpoint Pollution Control Program by EPA and NOAA, DEC and DOS will have one year to develop a strategy to address nonpoint source issues for local roads, including a program to evaluate backup authorities.

Table V-12
Programs/Activities to Implement Nonpoint Source Management for Roadway and R-O-W Maintenance
(Programs with names in italics are new since 1990)

| Program Name | Lead Agency (Others Involved) | Pollutant Categories | Type of Program; Geographic Coverage | Audience; Goal | Status |
|---|--|---------------------------------|--|--|---|
| <i>Clean Water State Revolving Fund</i> | EFC/DEC | All | Financial Incentives; Statewide | Municipalities; To provide financial assistance for planning, design and construction of publicly-owned projects that prevent, reduce or remediate NPS pollution. | Ongoing; funds are available for subsidized low-interest loans for 100 percent of project cost. |
| Cornell Local Roads Program | Cornell University, NYS SWCC, SWCDs | Salt, Sediment, Nutrients | Outreach, Technical Assistance; Statewide | Local highway agencies, contractors; To educate local officials and contractors on roadway issues including impacts on water quality. | Training sessions held periodically. |
| Critical area protection | NYS DEC, SWCD, DPW, local municipalities | Sediment, Nutrients | Technical Assistance, Implementation; Selected sites | Town / County Highway Superintendents; To pursue & implement stabilization of critical areas. | As needs are identified. |
| DOT Adopt a Highway Program | NYS DOT | Any (primarily Floatables) | Outreach, Implementation; Statewide | All citizens of the state; To educate and encourage citizens to keep the roads clean of debris. | Ongoing |
| <i>Drinking Water State Revolving Fund</i> | DOH/EFC | All | Financial Incentives; Statewide | Community water systems, both publicly and privately owned, and non-profit, non-community water systems. To provide financial assistance for planning, design and construction of eligible water system projects. Includes funding of land purchase or conservation easements for source water protection for wellheads or watersheds. | Ongoing; funds are available for subsidized low-interest loans for up to 100 percent of project costs. Grants may be available for qualified applicants with demonstrated financial hardship. |
| <i>Nonpoint Source Implementation Grant Program</i> | NYS DEC's Division of Water - Bureau of Watershed Management (SWCDs) | Salt, Sediment | Financial Incentive, (Technical Assistance by SWCDs); Statewide | Municipalities; To reduce, abate, control, or prevent nonpoint source pollution from roadway and R-O-W maintenance activities through watershed-based assessments, education, and implementation of BMPs. | Provided funding for a total of 8 projects in this category in 1994-95 and 1995-96. An additional 22 projects (including 19 salt storage projects) were funded with the 1996-97 grants. |

| Program Name | Lead Agency (Others Involved) | Pollutant Categories | Type of Program; Geographic Coverage | Audience; Goal | Status |
|--|--|---------------------------------|--|---|--|
| <i>Snow Disposal and Storage and Use of Winter Highway Maintenance Materials</i> | NYCDEP | Chloride Compounds | Regulatory, Financial Incentive; Within the NYC Water Supply Watersheds (2,000 sq. miles) | Watershed residents; state, county and municipal governments; and commercial, industrial and institutional entities; To protect water supply by meeting filtration avoidance criteria. | January 21, 1997: Watershed Memorandum of Agreement signed. May 1997: Revised NYC Watershed Regulations became effective. |
| Systemwide Management Plans | Public Service Commission | Toxics (Pesticide), Sediment | Regulatory; Statewide | Franchised electric utilities; To control activities in environmentally sensitive areas. | Ongoing, 7 plans (an annual update is required). |
| Various Seminars | SWCD, Cornell Co. Ext., WQCC | Salt, Sediment, Nutrients | Outreach; Region, County, State | Local highway agencies, contractors; To educate local officials and contractors on NPS issues. | As needs are identified. |

13. Silviculture

a. Source Description

Forests cover 18.6 million acres of New York State, roughly 62 percent of the entire land area, and are the dominant land use. Of the state's 18.6 million acres of forestland, the US Forest Service categorizes 15.4 million acres as "timberland". Timberland is defined as "forest land producing crops of industrial wood (more than 20 cubic feet per acre per year) and not withdrawn from timber utilization". Most of the difference lies in the Adirondack and Catskill Forest Preserves where timber harvesting is prohibited by the State Constitution.

New York's forests are diverse, but predominantly hardwood with northern hardwoods (sugar maple, red maple, black cherry, white ash, yellow birch and beech) along with oaks the major species and forest types. Some softwood plantations (spruce, pine, larch) are found especially in Central New York with natural stands of spruce-fir and white pine in the north.

These forests are primarily second-growth. They arose following decades of land clearing for agriculture and extensive harvesting for pulp, charcoal, wood chemicals and lumber production which left New York only 25% forested at the turn of the century. Since then, the forests have regenerated and reinhabited abandoned farmlands, showing steady increases in acreage and volume. Forest management practices throughout this century have generally favored uneven-aged management regimes using selective harvesting of trees to maintain continuous forest cover while removing mature trees and creating small openings to initiate or release regeneration. Northern hardwood ecology, and New York's climate and soils favor natural regeneration, which is usually abundant.

Silviculture is the application of scientific principles and knowledge to the management and manipulation of forest stands for the purposes of harvesting crops, regenerating the forest, improving forest health and quality and maintaining desired species of trees in stands of suitable structure. Timber harvesting is the primary silvicultural practice which can lead to site disturbance and the potential risk of water quality impacts. It is estimated that commercial timber harvesting occurs on approximately 1% of the timberland in New York each year primarily for pulpwood, sawtimber, veneer and firewood. Harvesting surveys in New York have indicated that approximately half of all harvested sites have streams, ponds or lakes on site. Other silvicultural activities such as prescribed burning, timber stand improvement and the application of fertilizers, herbicides or pesticides are minor and are not considered to be water quality threats in New York.

Sediment is the principal potential water quality pollutant associated with harvesting and is caused most frequently by erosion from improperly designed or located log roads, skid trails or landings. Surveys have indicated that skid trails, roads and landings on conventional timber harvesting sites generally cover about 10-15% of the total logged area. Sediment can move to water bodies where it can reduce the penetration of sunlight and may settle to adversely affect fish spawning areas. Sediment can shorten the life of water impoundments and add to drinking water treatment costs. (Soil erosion is also a potential site productivity concern as it affects the ability to support future stands of trees or other vegetation.) In addition, removal of significant numbers of trees along streams (the riparian zone) can raise ambient stream water temperatures adversely affecting some species of fish and other aquatic life. Finally, poorly designed or installed stream crossings may increase streambank erosion and occasionally disrupt stream ecology.

Timber harvesting is an infrequent and dispersed activity on most forest ownerships. Even extensively managed lands are only harvested once every 10-15 years, frequently using existing, well stabilized roads for access. More typically, sites are harvested on longer rotations of once every 15-20 years to allow for greater volume growth. Active harvesting and movement of cut trees out of a timber sale may last as little as a week or two to many months or more, depending on the size of the tract and the volume of timber being removed. In any event, the disturbances caused by skidding logs are relatively temporary and minor with roads, trails and landings frequently naturally re-colonized by native vegetation quite quickly. This natural regeneration helps stabilize site and prevent continuing erosion and sedimentation problems.

The 1998 PWL of over 1400 assessed segments contains five segments where silviculture is the primary source of impact on a classified water use. There are about 40 segments where silviculture is a secondary source.

In July of 1995, the NY State Departments of State and Environmental Conservation jointly submitted a Coastal Nonpoint Pollution Control Program to EPA and NOAA, pursuant to the Coastal Zone Act Reauthorization Amendments of 1990. EPA and NOAA granted an exclusion for forestry activities based on demonstration of no significant impact of forestry on coastal water quality due to existing programs and nature and extent of forestry activities.

b. Existing Programs

(See Table V-13 below.)

c. Implementation Steps

The existing efforts to control this source, which use technology transfer, education and promotion as the primary control options, appear to be adequate. Additional funding to allow for expansion of these programs to reach additional landowners and harvesters is a primary need.

1. A research project is being initiated over the coming years to evaluate silvicultural BMP application and effectiveness in various regions of NY. Additional funding is needed to expand this study statewide and provide current data concerning program effectiveness and identify any areas for potential improvement.
2. Cost-sharing for installation of certain BMP's has proven an effective means to ensure their use but funding for these programs waned. Additional funds targeted to sensitive sites and costly practices, such as bridges, would encourage greater application of silvicultural BMP's.
3. A field guide version of the DEC Nonpoint Source Catalogue on Silviculture is being done by DEC's Division of Lands and Forests in cooperation with partner agencies in New York and in several other States.

Table V-13

Programs/Activities to Implement Nonpoint Source Management for Silviculture
(Programs with Names in Italics Are New since 1990)

| Program Name | Lead Agency (Others Involved) | Pollutant Categories | Type of Program; Geographic Coverage | Audience; Goal | Status |
|---|---|--|--|---|--|
| Conservation Planning | Soil & Water Conservation Districts, USDA NRCS, State Soil & Water Conservation Committee | Sediment, Toxics (herbicides/pesticides) Nutrients (fertilizers) Oil (petroleum) | Technical Assistance, Outreach, Financial Incentives; Statewide | Farmers; Increase use of BMP's to protect water quality during silvicultural operations on farms | MOU between DEC and State S&WC Committee and adopted by all SWCD's calls for District to recommend use of professional forestry assistance and BMP's to farmers involved in timber harvesting |
| Continuing Education Programs | various including SUNY-CESF, Cornell CE, PSC, NYSAF | Sediment, Toxics (herbicides/pesticides) Nutrients (fertilizers) Oil (petroleum) | Technical Training, Outreach; Statewide | Professional foresters, timber harvesters, forest industries (secondary: forest landowners, local governments); Reduce water quality impacts from timber harvesting, use of professional forest management expertise, encourage sustainable forest management | Regular training sessions provided |
| Cooperating Consulting Forester Program | NYS DEC's Division of Lands and Forests (NY Institute of Consulting Foresters is a cooperator) | Sediment, Toxics (herbicides/pesticides) Nutrients (fertilizers) Oil (petroleum) | Technical Assistance, Outreach; Statewide | Consulting foresters (secondary: all forest landowners, timber harvesters, forest industries); Reduce water quality impacts from timber harvesting, use of professional forest management expertise, encourage sustainable forest management | Over 90 consulting firms participate Regular training sessions and meetings held between DEC and cooperators Cooperators promoted to landowners and directory of cooperators maintained and distributed |
| Cooperating Timber Harvester Program | NYS DEC's Division of Lands and Forests (NYS Timber Producers Association is co-sponsor) | Sediment, Toxics (herbicides/pesticides) Nutrients (fertilizers) Oil (petroleum) | Technical Assistance, Technical Training, Outreach; Statewide | Timber harvesters (secondary: forest landowners, local governments, foresters, forest industries) Reduce water quality impacts from timber harvesting by increasing use of BMP's | Over 300 harvesting firms are enrolled in Program Cooperators are randomly inspected for compliance with program guidelines Annual training meetings held in each Region for CTH cooperators Cooperators promoted and directory of Cooperators maintained and distributed to landowners |

| Program Name | Lead Agency (Others Involved) | Pollutant Categories | Type of Program; Geographic Coverage | Audience; Goal | Status |
|---|--|--|---|---|--|
| DEC Forest Products Utilization & Marketing (FPU&M) Program | NYS DEC's Division of Lands and Forests | Sediment, Toxics (herbicides/pesticides) Nutrients (fertilizers) Oil (petroleum) | Technical Assistance, Technical Training, Outreach; Statewide | Timber harvesters (secondary: forest landowners, foresters, forest industries); Protect forest and water quality during forest management operations, increase use of timber harvesting Best Management Practices | DEC FPU&M serves as ex-officio on NY Logger Training Board of Directors, providing technical resources, administrative assistance and program development input DEC FPU&M provides direct, technical assistance and information to timber harvesters regarding harvesting practices, stream crossings, water quality protection etc. DEC FPU&M cooperates with Empire State Forest Products Association to identify forest industry training and resource needs regarding improved timber harvesting practices |
| DEC Private Forestry Assistance Program | NYS DEC's Division of Lands and Forests | Sediment, Toxics (herbicides/pesticides) Nutrients (fertilizers) Oil (petroleum) | Technical Assistance, Technical Training, Outreach; Statewide | Forest Landowners (secondary: timber harvesters, local governments, foresters, forest industries); Promote forest stewardship and use of professional foresters in management of private forestlands; protect forest quality, health and productivity; increase use of timber harvesting Best Management Practices; promote forestland retention | 35 work years directed to Private Forestry Assistance this year. 75,000 acres of new private forest land management plans targeted. Information and education about timber harvesting BMP's distributed to thousands of customers. |
| <i>NYC Watershed Forestry Program</i> | Watershed Ag Council, Inc., (NYCDEP, NYSDEC, NRCS, SWCDs, ESFPA, CFA, CCE) | Sediment, Toxics (herbicides/pesticides) Nutrients (fertilizers) Oil (petroleum) | Technical Assistance, Outreach, Research, Financial Incentive; NYC Water Supply Watersheds | All forest landowners; To reduce impacts from timber harvesting, promote retention of forest cover and sustainable forest management | Forestry Ad Hoc Task Force developed recommendation (1994-6) Watershed Agreement signed (1997) Forestry Program Manager hired (1997) Forestry Program and project funding of \$500,000 allocated in Watershed Agreement |

| Program Name | Lead Agency (Others Involved) | Pollutant Categories | Type of Program; Geographic Coverage | Audience; Goal | Status |
|---|---|--|--|---|---|
| NY Logger Training - Certified Logger Program | NY Logger Training, Inc. (NYSTPA, NYSDEC, CCE, NELA, NYLTF, NYSFI, SUNY-CESF) | Sediment, Toxics (herbicides/pesticides) Nutrients (fertilizers) Oil (petroleum) | Technical Training, Outreach; Statewide | Timber harvesters (secondary: forest landowners, foresters, forest industries); Protect forest and water quality during forest management operations, increase use of timber harvesting Best Management Practices | NY Logger Training Inc. formed Board of Directors selected (comprised primarily of active timber harvesters) Core curriculum and training certification program developed Courses presented across the State with total participation approaching 2,000 Over 200 individuals have received Trained Logger Certification to date Curriculum review and modifications underway Continuing ed courses and expanded BMP workshops being developed |
| NY Sustainable Forestry Initiative | Empire State Forest Products Association (AF&PA is National sponsor) | Sediment, Toxics (herbicides/pesticides) Nutrients (fertilizers) Oil (petroleum) | Outreach, Technical Training; Statewide | NY forest products industries (secondary: forest landowners, state & local governments, general public); Promote sustainable forestry, sustain all forest values, promote production of forest products, protect forest and water quality through promotion and use of silvicultural best management practices | NYSFI Implementation Committee formed Regional forums held to provide non-AF&PA member companies with information on SFI Baseline industry performance data gathered via industry survey SFI support directed to NY Logger Training program |
| Protection of Waters Program; Article 15, Title 5, ECL, 6NYCRR Part 608 | NYSDEC's Division of Environmental Permits | Sediment, Toxics (herbicides/pesticides) Nutrients (fertilizers) Oil (petroleum) | Regulatory; Statewide | Landowners and industries; Protect water quality and prevent undesirable activities on water bodies | Permit and project review program in place Streams and water bodies classified for regulatory purposes Enforcement pursued by law enforcement and judiciary |

14. Urban Runoff

a. Source Description

Storm water runoff from urban and suburban areas poses a serious threat to the water resources of New York State. In fact, there is evidence to indicate that developed-area runoff may be as harmful to water quality as municipal or industrial waste discharges in certain cases. The developed-area runoff problem is not entirely limited to water quality. Urbanization also has a profound influence upon the hydrologic characteristics of watersheds which may lead to problems ranging from flooding to reduction in stream base flow during periods of dry weather.

Urban runoff is a combination of point sources and nonpoint sources. (A comparison of point and nonpoint sources is given in Chapter I.A.) The point sources such as storm sewers or combined sewer overflows (CSOs discussed below) can be addressed through end-of-pipe controls. Nonpoint sources are those from which storm runoff flows directly into a waterbody. Point sources are often regulated by permits, whereas nonpoint sources are usually controlled through the application of best management practices (BMPs). BMPs for urban runoff are classified in two groups: those that address pervious surfaces and those that address impervious surfaces. The general types of practices in each group are shown in Table I-2. Appendix B lists all management practices for urban and storm water runoff.

In practice, it is not feasible to entirely distinguish point from nonpoint sources of urban runoff. Even when stormwater runoff eventually reaches a collection system, and so could be considered a point source, the best treatment method will frequently be the application of BMPs which abate the runoff and the pollutants it contains before it reaches a collection system.

Based on the 1998 Priority Waterbodies List (PWL), New York's estuaries and coastal bays, and to a lesser degree, rivers, streams, and lakes, are all affected by pollutants from urban runoff. Pollutants vary in size, solubility and toxicity. Among the significant pollutants found in urban settings are sediment from construction activities, combustion products (such as oxides of nitrogen and sulfur), nutrients from fertilizer, pesticides, de-icing compounds, heavy metals, pathogens, roadway construction asphalts and vehicular hydrocarbons and hydraulic fluids. These pollutants accumulate rapidly on impervious surfaces and are easily washed off during runoff events. Atmospheric deposition is a major source of pollutants in urban areas. The Long Island Sound Study research found that atmospheric pollution may contribute as much as 14.3% of the nonpoint nitrogen enrichment to Long Island Sound (nitrogen enrichment is the cause of severe summertime hypoxia problems in the Sound).

While no single factor is responsible for the progressive degradation of urban stream ecosystems, increasing impervious area is the largest factor. Degradation results from the cumulative effect of this and other factors such as sedimentation, scouring, increased flooding, lower summer flows, higher water temperatures, rechannelization and point source pollution.

Urbanization often will increase the peak flows in streams and reduce the time it takes for the peak to occur. This will tend to increase flooding and result in scouring and sedimentation. Urban runoff can also alter the natural stream temperature regime. Factors which contribute to this increase in temperature include runoff passing over the heated urban landscape, fewer trees present to shade streams, and runoff stored in shallow ponds being heated between storms then released in a rapid pulse. The large percentage of impervious area associated with urbanization

reduces infiltration, which can affect groundwater recharge and base flows. When sewers replace septic systems, the wastewater that previously recharged the groundwater and maintained base flows of local streams is redirected to the wastewater treatment plant.

Storm water runoff from urban areas can adversely impact the fisheries, aesthetics and recreational use of lakes, streams and estuaries. Lakes and reservoirs that serve as a water supply for municipal and domestic consumption can also be affected by urban storm water runoff resulting in increased treatment costs. Of particular concern are nutrients, toxic materials and organic substances such as pesticides, heavy metals, pathogenic organisms, oxygen demanding substances and sediment which are picked up in urban storm water. Marine waters are affected by toxic pollutants and pathogenic organisms, resulting in the closure of both shellfish harvest areas and beaches.

While the majority of the segments impaired by urban runoff identified in the 1989 assessment were in the Atlantic-Long Island Sound Basin, the three Nationwide Urban Runoff Program (NURP) studies done in New York State (1983) suggest that urban runoff problems are more widespread than the 1988 Priority Water Problems (PWP) List indicated, and would occur in most of the heavily developed areas of the state. This was confirmed by the number of problems presented at the county meetings held prior to the 1990 Nonpoint Source Management Program development, and the increased number of segments on the 1993 PWP List and 1998 PWL. The NURP studies demonstrated that storm water runoff from urban areas is responsible for significant pollutant loading from developing (and developed) areas in the state. Vast expanses of impervious surfaces in urbanizing areas have resulted in increased runoff, increased water temperatures and lower base flows. These factors have combined to degrade fisheries habitat in many of the state's urban waterbodies.

The 1998 Priority Waterbodies List (PWL) identifies about 200 segments in the state impacted *primarily* by urban storm water runoff. Another 200 list urban runoff as a secondary source. Of the 200 segments identified on the PWL as being *primarily* impaired by urban runoff, half are in the Atlantic Ocean-Long Island Sound Basin. Many of the segments are bays in the heavily developed L.I. Sound watershed. Runoff carrying coliform bacteria is reported as the primary cause for closures of numerous shellfish beds in Suffolk County.

In addition to urban runoff, 36 segments list CSOs as their primary source of impairment and 24 list storm sewers. CSOs are a secondary source of impairment for 48 segments, and 69 segments list storm sewers as a secondary source. CSOs and storm sewers are point sources, but convey the same pollutants from some of the same sources, and cause the same water quality problems, as nonpoint urban runoff.

Combined Sewer Overflows

Most of the larger cities in New York and some of the smaller cities have combined sewer systems that collect sanitary sewage and storm water in the same system of pipes. The treatment facilities and pumping stations that are part of these systems are usually designed to accommodate a certain maximum flow, which is normally two to three times the average dry weather flow. Therefore, during rainstorms and snow melts when that flow is exceeded in the system, there will be untreated discharges (overflows) of a mixture of sanitary sewage and storm water. This combined sewage which is not treated, contains bacteria, suspended solids, etc., and may also contain some untreated or pretreated industrial wastes. These discharges can and do have a severe impact on water quality, particularly near large urbanized areas such as New York City.

CSOs are permitted through the State Pollutant Discharge Elimination System (SPDES) in

conjunction with municipal permits. As of early 1997, there are 90 SPDES permits with CSO discharges in New York. Of these, 75 are publicly owned treatment works. The total number of CSO discharge points is about 1300. From a national perspective, New York has ten percent of the total CSO problems and needs. At the state level, there are permitted CSOs statewide except on Long Island. The abatement needs are dominated by NYC (nearly \$6 billion) by a factor of 10,000 over Buffalo and the Niagara Frontier (\$581 thousand). The Syracuse and Rochester areas follow with needs in the hundreds of thousands; and there are lesser needs in the other areas of the state.

Control of Stormwater Discharges

NPDES (SPDES) Permit Program

The 1972 amendments to the Federal Water Pollution Control Act (referred to as the Clean Water Act), prohibit the discharge of any pollutant to navigable waters from a point source unless the discharge is authorized by a National Pollutant Discharge Elimination System (NPDES) permit. NYSDEC administers the NPDES program within New York State. Efforts to improve water quality under the NPDES program have traditionally focused on reducing pollutants in discharges of industrial process wastewater and municipal sewage.

Since enactment of the 1972 amendments to the Clean Water Act, significant progress has been made in cleaning up industrial process wastewater and municipal sewage. Continuing improvements are expected for these discharges as the NPDES program continues to shift to toxic and water quality-based pollution control. With the vast improvements in pollution control of point source discharges it became evident that more diffuse sources (occurring over a wide area) of water pollution, such as urban runoff, were also a major cause of water quality problems.

In 1973, EPA promulgated its first stormwater regulations which exempted urban runoff if it was not contaminated by industrial or commercial activity. Because of the intermittent, variable and unpredictable nature of stormwater discharges, EPA reasoned that the problems caused by storm water discharges were better managed at the local level through nonpoint source controls such as the imposition of specific management practices to prevent the pollutants from entering the runoff.

As a result of legal challenges and comments from various municipalities around the country, the NPDES regulations evolved until the EPA promulgated the final Phase I storm water regulations on November 16, 1990. This regulation established requirements for the storm water permit application process. In 1993, NYSDEC adopted two General Permits for the control of Stormwater Discharges. As of April 1998, 1348 applications or Notices of Intent have been filed under the Construction Permit, and 1674 under the Industrial General Permit.

On January 9, 1998, the US EPA proposed new regulations for storm water permits which will increase the scope of the permitting program. Facility coverage under the proposal includes construction sites greater than one acre. The proposed regulations also would include expanded conditions for protecting endangered species and historic properties, and requirements for public notification and pollution prevention plan performance objectives.

While the proposed requirements will not impose a performance standard, EPA said it believes required storm water management measures will remove at least 80 percent of total suspended solids from construction site runoff. The agency said that by controlling total suspended solids the measures, or practices, will also control other pollutants, including heavy metals, oxygen demanding pollutants, and nutrients commonly found in stormwater discharges.

Like the existing permits, the proposed permits call for sediment and erosion controls, storm water management measures, and construction site housekeeping best management plans. In addition, EPA said permittees must develop and implement four classes of controls in the pollution prevention plan. The first three include:

- * Erosion and Sediment Controls
- * Stabilization Practices
- * Structural Practices

to divert flows from exposed soils, store flows, or otherwise limit runoff and the discharge of pollutants from exposed areas of the site. Sites with more than 10 acres disturbed at one time and served by a common drainage location will require a temporary or permanent sediment basin.

EPA said it will require all permit applicants to follow procedures to ensure protection of listed species and critical habitat. That requirement will extend to off-site area located in the path through which contaminated point source stormwater flows to the point of discharge into the receiving water. EPA is soliciting comment on whether the scope of protection should be broadened to encompass listed species found on the entire construction site and not just those species found "in proximity" as currently defined.

There are basically three groups of activities that will be affected by the proposal:

- (1) Phase I activities;
- (2) Construction activities disturbing between 1 and 5 acres; and
- (3) Small municipalities.

These are discussed in greater detail below.

The scope of activities covered by the NPDES regulations under *Phase I* will be unchanged.

There are, however, several impacts that the proposal will have on these existing eleven groups of activities.

The permit exemption for industrial-type activities that are operated by small municipalities will expire. For example, storm water runoff from POTWs and construction activities for small municipalities will need to obtain permit authorization by August 7, 2001.

"Light industry" facility owners that previously didn't have to do anything if materials weren't exposed to storm water will have to provide certifications of "non-exposure" to NYS under the proposal. Non-exposure certifications will need to be submitted for each permit term.

The proposal establishes a new section which deals with *construction activities* disturbing more than 1 but less than 5 acres. Storm water runoff from these activities will need a permit by May 31, 2002 unless waived by the permitting authority (i.e. DEC).

There are potential waivers based upon certifications to DEC where: (1) the "R" factor (soil erosivity factor) is less than 2; or (2) the soil loss will be less than 2 tons per year; or (3) where storm water controls are not needed based upon TMDLs and watershed plans. EPA estimates that there are 110,000 of these construction activities nationwide.

Small municipalities include roughly 225 incorporated municipalities located within "urbanized areas" in NYS which are identified in the proposal as "automatically" having to obtain permits by May 31, 2002. In addition, all of the unlisted communities within the urbanized area must be brought under a minimum program (described below). EPA also lists another 25 municipalities (cities and villages) which, although located outside of an urbanized area, are potentially subject to permitting under the

stormwater program by being designated by New York State because of their size (> 10,000) and population density (> 1,000/square mile).

New York State will have to develop and implement criteria and a process for designating additional municipalities for inclusion into the stormwater program. Candidates for designation include municipalities described in the previous paragraph, DOT, the NYS Thruway, correctional facilities, universities and military bases. NYS will also need to consider inter-connected systems as well as the possibility of public petitions for designating additional municipal candidates. The deadline for designation is May 31, 2002 or May 31, 2004 where comprehensive watershed plans exist. Permits applications would be required 180 days afterwards.

Some waivers would be possible provided that the small municipality is <1,000 people and there are watershed plans where TMDLs address the pollutants of concern.

Permits for small municipalities would need to be issued by NYS by March 1, 2002 and would require programs which focus on six (6) minimum areas:

- public education and outreach
- public involvement/participation in stormwater program development
- illicit discharge detection and elimination
- construction site runoff control
- post-construction stormwater management control including redevelopment
- pollution prevention for municipal operations

The resulting local programs would be comprehensive and address a wide range of activities under the control of the municipality such as industrial-type activities, construction, post-

construction needs, flood control, salt storage and snow removal, fleet maintenance, parks and golf course management and sewer system maintenance to name just a few.

New York State will need to establish a list of acceptable BMPs and small municipalities would have to report annually to DEC on their implementation. Notices of Intent (NOIs) would be submitted by May 31, 2002.

Currently, there is some stormwater work being done at the municipal level. The New York City Department of Environmental Protection's Watershed Protection and Partnership Programs include regulatory and funding components such as sand/salt storage facility improvements, total maximum daily load (TMDL) assessments, nonpoint source controls, a phosphorus offset pilot project, and stormwater mitigation all prescribed in regulations and the Watershed Agreement with watershed towns.

Towns in Monroe County, including Pittsford and Greece, are requiring that stormwater quantity and quality be controlled. Also in Monroe County, the Irondequoit Watershed Collaborative (a coalition of municipalities) is working to develop common stormwater management design standards for use in the towns of the Irondequoit Creek watershed.

Municipalities within the Lake George drainage basin have made significant progress with stormwater management. During the past 3-4 years, a coalition of local governments, State agencies and special interest groups have used donated time and in-kind services to implement several stormwater management projects that otherwise would not be affordable.

b. Existing Programs

(See Table V-14 below.)

c. Implementation Steps

1. EPA should promulgate Phase II Storm Water regulations. (Achieved: EPA published final regulations in the December 8, 1999 Federal Register.)
2. Control of urban runoff in the State is largely a local prerogative at the present time. There are only a few counties in the State with programs that are effective in addressing this pollution source. These county programs primarily deal with new development. Plans are reviewed to insure that adequate controls are incorporated into designs to address flooding and water pollution concerns. Also, many municipalities in the state have adopted subdivision and site plan regulations that have provisions which require the review of drainage plans. However, there is a lack of consistency among municipalities in these efforts. Some require flooding concerns to be addressed but do little or nothing toward water quality concerns. In light of these inadequacies and EPA's Phase II requirements, New York needs to develop a clearly defined statewide stormwater management program to provide for the consistent review of development plans. This program should include a review of subdivision and site plans to insure that adequate stormwater runoff controls are to be installed.
3. The Phase II requirements should be incorporated and integrated into present programs administered by local governments which deal with land use issues. This would include the review of development projects and the inspection of stormwater control facilities both during and after construction. Also, before any required State permits are issued, an assessment of the long-term and

cumulative effects of urban runoff on the watershed resulting from the development project should be performed. Selection of appropriate BMPs to prevent downstream stormwater problems should be incorporated into the design.

4. EPA should pursue an amendment to the Clean Water Act to allow Section 319 to fund the implementation of the Phase II Storm Water Regulations.
5. Another problem is that most existing programs consider only the effects of new development. There are presently few initiatives which address problems caused by runoff from existing development. Again, Phase II requirements will require that existing stormwater facilities be examined periodically for illicit connections. DEC will develop a general permit requiring inspections of existing storm water facilities by each permitted municipality. Correction, through the use of appropriate BMPs, of any problems that are discovered should help reduce pollution from existing sources.
6. Educational efforts are needed to make local officials and the public aware of problems associated with stormwater runoff and the need for its control. Phase II requires that communities which have storm sewers adopt an educational program to make the public aware of the storm sewers and drains in their area and the importance of the need to protect the collection system from pollutants from oils, pesticides and other sources. Communities should be encouraged to adopt zoning control which reduce the amount of impervious area. The SEQRA process should be used to examine the impacts of development on receiving waters.
7. Research and demonstration projects to study treatment techniques, such as the use

of artificial wetlands to remove pollutants from urban runoff, should be encouraged and funded.

8. Technical training efforts are needed to make local officials aware of the importance of maintaining storm water control facilities. Actions such as cleaning catch basins and periodic removal of sediment from recharge basins could be included in a stormwater management manual written to help them keep facilities functioning properly.
9. DEC will research and propose technologies for CSO abatement. Public support for cost-effective measures to control CSOs is necessary for their implementation. New York City has a Citizens Advisory Committee and holds public meetings specifically on CSOs.
10. DEC will research and determine the need for management practices for NPS pollution from large-scale recreational facilities such as golf courses and ski resorts.

11. Based on the November 18, 1997, final conditional approval of New York's Coastal Nonpoint Pollution Control Program by EPA and NOAA, DEC and DOS will have:

- a) two years to develop a strategy to assure watershed based management to reduce generation of nonpoint source pollutants and mitigate impacts of urban runoff throughout the entire 6217 management area.
- b) two years to develop a strategy to assure reduction of surface water runoff pollutant loadings from all urban areas and existing development areas.
- c) three years to revise State Uniform Fire Prevention and Building Code to incorporate pollution management in new construction and recon-struction.

Table V-14
Programs/Activities to Implement Nonpoint Source Management for Urban and Stormwater Runoff
(Programs with Names in Italics Are New since 1990)

| Program Name | Lead Agencies (Others Involved) | Pollutant Categories | Type of Program; Geographic Coverage | Audience; Goal | Status |
|---|---|---|---|--|---|
| <i>Clean Water State Revolving Fund</i> | EFC/DEC | All | Financial Incentives; Statewide | Municipalities; To provide financial assistance for planning, design and construction of publicly-owned projects that prevent, reduce or remediate NPS pollution. | Ongoing; funds are available for subsidized low-interest loans for 100 percent of project cost. |
| County and/or Local Level Subdivision and Development Plan Review | County and Local Planning Boards | All, primarily water level or flow changes. | Technical Assistance; Various Counties | Municipal officials and residents; To incorporate stormwater management objectives into existing and new regulations which are consistent with Federal and State statutes and local laws. | Reviews being done in about half of NYS counties. |
| DOT's Routine Maintenance Program | NYS Department of Transportation | All, primarily sediment. | Implementation; Statewide | NYS residents; To conduct street sweeping and catch basin cleaning to reduce available pollutants. | Ongoing. |
| <i>Drinking Water State Revolving Fund</i> | DOH/EFC | All | Financial Incentives; Statewide | Community water systems, both publicly and privately owned, and non-profit, non-community water systems. To provide financial assistance for planning, design and construction of eligible water system projects. Includes funding of land purchase or conservation easements for source water protection for wellheads or watersheds. | Ongoing; funds are available for subsidized low-interest loans for up to 100 percent of project costs. Grants may be available for qualified applicants with demonstrated financial hardship. |
| Flood Plain Management Permits Program | Local Communities (except where acceptable regulations not adopted) | All, primarily water level or flow changes. | Regulatory; Statewide | Builders, developers, landowners and local municipal officials; To minimize flood losses by regulating construction in flood prone areas. | 1997: 1456 communities (cities, towns and villages) in the state which regulate floodplain development via local laws which are compliant with FEMA regulations. DOW monitors and assists those communities. |
| Lake George Stormwater Management Program | Lake George Park Commission | All, primarily water level or flow changes. | Regulatory, Research and Demonstration; Lake George Watershed | Watershed residents; To limit runoff from new development to pre-development quantity and control quantity and quality of runoff from existing development. | 1986: received authority to implement program; rules and regulations adopted; BMP cost-effectiveness study completed. 1998: LGPC is assisting local governments with the adoption of revised Stormwater Rules and Regulations. |
| <i>Nonpoint Source Implementation Grant Program</i> | NYS DEC's Division of Water - Bureau of Watershed Management | All | Financial Incentive; Statewide | Municipalities; To reduce, abate, control, or prevent nonpoint source pollution from urban runoff through watershed-based assessments, education, and implementation of BMPs. | Program provided funding for a total of 22 urban runoff pollution control projects in 1994-95 and 1995-96. An additional 12 urban runoff pollution control projects will be funded with the 1996-97 grants announced in May of 1997. |
| <i>NYC Water Supply Watershed Stormwater Control Program</i> | NYC Department of Environmental Protection | All | Regulatory, Financial Incentive; NYC's Water Supply Watersheds | Watershed residents; state, county and municipal governments; and commercial, industrial and institutional entities; To protect water supply by meeting filtration avoidance criteria. | May 1997: NYC Watershed Regulations became effective. March 11, 1999: MOU on stormwater policies and practices with DOT signed. Spring, 1999: Construction of stormwater BMPs placed at Kensico Reservoir begun. |

CHAPTER VI

WATERSHED PLANNING FOR THE CONTROL OF NONPOINT SOURCE POLLUTION

A. INTRODUCTION

There has been a gradual trend among county water quality coordinating committees involved with BMP implementation towards prioritizing watersheds for BMP implementation and then assessing problems, needs and BMP implementation priorities within the selected, priority watershed. Although there has been a tendency in this direction, much remains to be done before it can be concluded that adequate watershed planning for nonpoint source programming and BMP implementation are the norm for the State.

The purpose of this chapter is to lay the groundwork for ensuring that watershed assessment and planning is done in advance of BMP implementation, i.e., the nonpoint source program is working toward a goal of funding only those implementation projects that have been identified as part of a watershed planning process. Furthermore, this chapter provides the context for establishing planning teams for river basin planning, prioritizing watersheds for planning, and prioritizing nonpoint source implementation needs within a priority watershed. Finally, this chapter identifies groundwater planning and protection needs within the context of watershed planning and assessment.

B. THE PREFERRED APPROACH: WATERSHED PRIORITIZATION AND PLANNING BEFORE BMP IMPLEMENTATION

Until recently, an approach that has commonly been adopted in terms of BMP implementation in numerous parts of the country is to simply identify

nonpoint source problems and obtain funds to correct the problems by installing or implementing BMPs. Frequently, this approach to BMP implementation has been undertaken with little regard to the watershed as a whole, to priorities among point source and other nonpoint source problems within the watershed, and with little regard to priorities among watersheds. Under this approach, BMP implementation is usually done on a random basis. This is likely to result in few measurable water quality improvements.

The preferred approach is to first prioritize and select a watershed for nonpoint source planning and programming, then identify water quality problems, identify pollutant sources (i.e., point and nonpoint), establish water quality management goals and objectives, evaluate alternative water quality management strategies, and establish point and nonpoint source implementation priorities within the watershed. After these steps have been taken, BMP implementation and evaluation of effectiveness can be undertaken. The preferred approach requires that a watershed planning process be initiated prior to BMP implementation.

C. WHAT IS A WATERSHED?

A watershed is all the land area that contributes water to a specific lake, river, ground water supply or coastal estuary. For surface water, the highest ground around a watershed forms its boundaries that divide it from adjacent watersheds. Water falling within the watershed as precipitation flows along the surface of the ground, through the soil as subsurface drainage or as groundwater flow, and gathers at the lowest elevation in the watershed to form a stream, lake or wetland.

Groundwater is all the water that has reached the zone of saturation below the ground's surface. Because it is not readily visible, the movement of groundwater is difficult to understand. Although it typically flows in the direction of surface water in a watershed, groundwater can move in directions opposite to the flow in the watershed receiving precipitation, into or under adjacent watersheds.

Pollution of surface or ground water within a watershed either comes from a discrete 'point source' such as a pipe, or a nonpoint source. A nonpoint source is an areawide source or many sources distributed diffusely which cumulatively contribute to water quality degradation.

D. RIVER BASIN PLANNING

A river basin is a large watershed usually named for the river that drains it; for example, the Hudson River Basin or the Susquehanna River Basin. There are seventeen major river basins in New York State (see Table VI-1).

The DOW has historically implemented its water quality programs at the river basin scale and broader. Examples of this include: the Great Lakes as a group, which is the subject of the federal/state Great Lakes Initiative; the Lake Champlain Basin Program which is a federal/state initiative; the downstate Harbor/Estuary System, including New York - New Jersey Harbor, Long Island Sound, Peconic Estuary, South Shore Estuary, Hudson River Estuary, and the New York Bight, which are the subject of the Comprehensive Conservation and Management Plans adopted under the National Estuary Program; and the aquifer systems on Long Island and upstate which are the subject of DEC's adopted Groundwater Management Plans.

The river basin approach to water quality management notwithstanding, the DOW has recently reorganized its program orientation and structure to more effectively provide for the delivery of its services which include both water quality and quantity management services, on a

watershed basis. This watershed planning and management orientation and focus has placed the Division in a well-grounded position to more effectively integrate and facilitate coordination among its programs to protect and enhance surface and groundwater resources throughout the seventeen river basins. It is within a river basin planning and management framework, that the Division's water quality programs should be orchestrated to:

- C Identify surface and ground water quality problems in river basins (Bureau of Watershed Assessment and Research).
- C Determine existing and potential pollutants in the river basins (Bureau of Watershed Assessment and Research, Bureau of Watershed Management).
- C Assess contributing sources within river basins (Bureau of Watershed Assessment and Research, Bureau of Watershed Management, Bureau of Flood Protection-GIS).
- C Establish water quality management goals and objectives for river basins (Bureau of Watershed Research and Assessment, Bureau of Watershed Management).
- C Determine needed pollutant reductions and prioritize critical delivery areas for treatment in river basins (Bureau of Watershed Assessment and Research, Bureau of Watershed Management).
- C Identify and select appropriate management strategies to achieve needed pollutant reductions (Bureau of Watershed Compliance Programs, Bureau of Watershed Management, Bureau of Water Permits)

C Prepare and implement, with available technical and financial assistance, integrated river basin/groundwater quality management plans and monitor the results (All bureaus have a role.).

Where the planning and management framework includes an area of multiple basins (i.e., Great Lakes, NYC Watershed) or of special interest (L.I. Groundwater, NY Harbor Estuary), these seven components of the watershed planning process should still be followed and integrated into the broader management plan.

E. RISK-BASED PLANNING

The Pollution Prevention Office has undertaken a Comparative Risk Program for the Department to assist in strategic planning for its multi-media pollution prevention program. This project combines scientific and technical input with public values to identify stressors and evaluate and characterize the risks posed by them to human health, ecosystems, and quality of life. Some examples of the stressor categories that have been selected include pesticides, VOCs, particulates, settleable solids, nutrients and metals. Although the original focus of the project was industrial and other point sources, many of the identified stressors are released to the environment from nonpoint sources. The project will seek to prioritize the risks and evaluate their sources in order to develop strategies for risk reduction through pollution prevention. The opportunity exists to develop NPS Pollution Prevention strategies that would be recommended for implementation by NYSDEC.

F. THE PLANNING TEAM

It is within the river basin planning and management framework described above that the Division will initiate an ongoing planning process to protect and enhance surface and groundwater quality for each river basin in the State. For such a planning process to be effective, there must be close coordination and integration of applicable

federal, state and local programs. Accordingly, the DOW will initiate the river basin planning process by establishing a planning team initially consisting of central office and regional staff. Planning teams will undertake river basin planning by coordinating among various program units within the central and regional offices, and with other federal, state and local agencies, and with the public. Planning teams will be responsible for preparing river basin plans and facilitating plan implementation within the river basin planning framework. The primary focus of river basin planning will be an ongoing, long-term commitment to prevent pollution through multi-media pollution prevention programs, and to remediate existing pollution problems in river basins by implementing the wide variety of BMPs and other treatment practices that are available to control both point and nonpoint sources of pollution.

River basin planning teams will address the full array of point and nonpoint source problems affecting surface and ground water resources in each river basin. Furthermore, the planning process will be undertaken in a manner which ensures that implementation of various management measures and BMPs throughout a river basin considers the impacts to air, soil, water, plant and animal resources according to procedures developed by the Natural Resources Conservation Service as outlined in the *National Planning Procedures Handbook*. This requires that the planning process be undertaken in a manner which ensures close coordination between all water quality planning programs and other State and local planning initiatives such as air quality planning, fish and wildlife management and planning, transportation planning, open space planning, agricultural planning, land-use planning, etc. (Insofar as this document is specifically intended to result in an update of the New York's Nonpoint Source Management Program, the remainder of this chapter shall be devoted to a discussion of watershed planning for the control of nonpoint sources. There is a need for the point source aspects of river basin planning to be detailed in a companion document).

G. PRIORITIZING WATERSHEDS FOR CONTROL OF NONPOINT SOURCE POLLUTION

Regardless of the river basin, there is widespread recognition at the State level that the most effective way of improving and enhancing water quality with respect to certain nonpoint source contaminants, such as nutrients and sediment, is to facilitate watershed planning and plan implementation in sub-watersheds within river basins. Examples of where this is occurring include the Little Ausable Watershed Project which is part of the Lake Champlain Basin Program; the Otsego Lake Project which is within the Susquehanna River Basin; several Clean Lakes Projects which are in various river basins in the State; and the NYCDEP Watershed Planning Program.

The net effect of protecting and improving water quality in sub-watersheds within a specific river

basin will be a positive cumulative impact on water quality in the entire river basin.

Major river basins are too large to show measurable effects after implementing controls, but are useful in setting priorities beyond those locally acknowledged by County Water Quality Coordinating Committees. Accordingly, in order to ensure that public funds are used most efficiently and effectively, the DOW needs to develop or adopt screening methods for prioritizing watersheds and sub-watersheds in river basins for nonpoint source planning and plan implementation.

The Unified Watershed Assessments approach as outlined under the federal Clean Water Action Plan will provide the first order of assessing and screening water quality problems within river basins, identifying pollutant sources, establishing restoration priorities, and developing restoration strategies. The USGS 8-digit hydrologic cataloging unit will serve as the common scale for reporting the results of unified watershed assessments to help target resources.

Within the Unified Watershed Assessments framework a second level of prioritization and planning is needed. This will be at the sub-watershed level. The scale at which sub-watershed prioritization is most likely to result in manageable and effective watershed plans is the USDA Hydrologic Watershed Unit level (11-digit hydrologic unit code, hereinafter referred to as watershed) and at the Sub-watershed Unit level (14-digit hydrologic unit code).

As part of the planning process, the DOW will work with County Water Quality Coordinating Committees to facilitate prioritization of watersheds and sub-watersheds on a county-by-county basis. Prioritization of watersheds and sub-watersheds at the county level is intended to identify local needs and interests.

As a next step, the DOW will undertake a watershed computer modeling initiative for a statewide assessment of nonpoint source pollutant loading. The result of this initiative will be used to evaluate the priority watersheds based on loading in comparison to existing county priorities. The results of this initiative will be utilized for evaluating watersheds for nonpoint source program implementation at the river basin and county levels. Priority should be placed on allocating funds for watershed and sub-watershed planning and plan implementation in those watersheds ranked as high priority by both the DOW and County Water Quality Coordinating Committees.

The Priority Waterbodies List

The 1996 Priority Waterbodies List (PWL) is the DOW's official list of surface water bodies which have a designated use affected to some degree within the river basins of the State. The 1996 PWL list has identified 1,426 segments with water quality problems ranging from a precluded

designated use to water bodies which exhibit no impairments, but which are nevertheless threatened. The PWL pertains to surface water bodies. However, modifications to future updates of the PWL will attempt to incorporate data and information regarding groundwater resources as well.

**Table VI-1.
Major River Basins in New York State**

1. Lake Erie-Niagara River Basin
2. Allegheny River Basin
3. Lake Ontario & Minor Tribs
4. Genesee River Basin
5. Chemung River Basin
6. Susquehanna River Basin
7. Seneca-Oneida-Oswego River Basin
8. Black River Basin
9. St. Lawrence River Basin
10. Lake Champlain
11. Upper Hudson River Basin
12. Mohawk River Basin
13. Lower Hudson Basin
14. Delaware River Basin
15. Passaic-Newark River Basin
16. Housatonic River Basin
17. Atlantic Ocean-Long Island

The PWL is the underlying document from which to initially identify candidate water bodies and watersheds for selection. Surface water bodies and their respective watersheds not on the PWL are not eligible for federal or State planning and/or implementation funds. The PWL is a key component of the Section 305(b) Water Quality Report to Congress. This report is discussed briefly in Chapter 3.

The Obstacle Analysis

While there are no set criteria for establishing watershed priorities and both the DOW and County Water Quality Coordinating Committees should have a great deal of flexibility in adopting their own criteria, consideration should be given to using and tailoring the approach and criteria afforded by the "Obstacle Analysis" in the prioritization process.

The Obstacle Analysis is a system developed by the DOW for identifying various obstacles to controlling nonpoint sources on impaired segments. This system was developed to provide decision-makers with a framework within which to weigh selected factors that should be considered in establishing nonpoint source planning and plan implementation priorities. Those watersheds having fewest obstacles to protection or enhancement, in general, would receive higher priority for planning than those for which more or greater obstacles are anticipated. Does this mean that once the Obstacle Analysis is used the results, i.e., priorities, are cast in concrete? The answer is no. The Obstacle Analysis simply serves as a guide to the prioritization process. Clearly, local needs, wishes and desires will have an important influence in the prioritization process. Table VI-2 lists the factors in the Obstacle Analysis that may be used to weigh and evaluate the potential for successful nonpoint source program in a watershed. The Obstacle Analysis can be used as a prioritization tool for both surface and groundwater resources.

An additional factor to consider that is not in the Obstacle Analysis is that a priority may emerge in instances where a federal/state order or mandate has been issued which prescribes a specific level of reduction for certain contaminants in a watershed, for example, to protect a drinking water supply.

H. WATERSHED PLANNING

The DOW will seek to ensure that watershed assessment and planning are undertaken prior to BMP implementation. This is intended to ensure that implementation funds are utilized most efficiently and effectively. In this regard, the DOW will facilitate watershed and sub-watershed planning among local agencies for nonpoint source control at the 11 digit and/or 14 digit hydrologic unit level. The *Watershed Planning Handbook for the Control of Nonpoint Source Pollution*

will serve as the basic reference document for plan preparation. Occasionally, the DOW may assume the lead role in a watershed planning initiative.

The *Watershed Planning Handbook for the Control of Nonpoint Source Pollution*, prepared in 1994, is the principal guidance document in the State for watershed planning for nonpoint source pollution control. The handbook provides a step-by-step approach for establishing water quality goals and objectives, for determining pollutant reduction needs, for evaluating alternative nonpoint source control strategies, and for preparing and implementing a watershed management plan for controlling nonpoint sources. While the primary focus of the manual is on the control of nonpoint source pollution to surface water bodies, it provides limited but useful guidance on steps that can be taken to evaluate the relative importance of point source discharges in relation to nonpoint sources.

Table VI-3, which has been excerpted from the *Watershed Planning Handbook*, identifies the basic components of a watershed plan for the control of nonpoint source pollution. These basic elements can be completed by following the steps outlined in the handbook. The TMDL process, which was briefly discussed in Chapter III, is a USEPA planning and management tool which planning teams can utilize, not only for waste load allocations for point sources, but for strategy development relative to controlling nonpoint source pollutants as well river basin and watershed planning.

The *Watershed Planning Handbook* provides guidance for protecting and enhancing surface water resources. Local officials may find guidance for protecting ground water resources in such documents as:

Table VI-2.
Factors in the Obstacle Analysis

- C There is (adequate/little) understanding of nonpoint source cause and effect relationships;
- C The technology and methods for controlling nonpoint sources is (available/unavailable);
- C Implementing nonpoint source control practices (will be cost-effective/will not be cost-effective);
- C (Numerous/few) water resource benefits will be derived from implementing nonpoint source control practices;
- C There is widespread public (support/opposition) to implementing nonpoint source control practices;
- C The availability of programs to directly or indirectly assist in implementing nonpoint source controls are (adequate/limited);
- C There are (no/major) institutional constraints to implementing nonpoint source control practices; and
- C Solving the nonpoint source problem (will not be complex/will be complex).

* Wellhead Protection -- Tips for Communities in New York, Division of Water. October 1996.

* New York State Wellhead Protection Program, Division of Water, submitted to USEPA September 1990.

* Wellhead Protection -- Technical Considerations for Delineation of Wellhead Protection Areas, Division of Water. October 1996.

* Upstate New York Groundwater Management Program. Division of Water. May 1987.

* A Guide To Wellhead Protection, American Planning Association. 1995.

* Local Groundwater Protection. American Planning Association. 1987.

* Seminar Publication, Wellhead Protection: A Guide for Small Communities. USEPA. February 1993.

* Long Island Groundwater Management Program. Division of Water. June 1986.

- * Seminar Publication, Protection of Public Water Supplies from Groundwater Contamination. USEPA. September 1985.
- * Groundwater Supply Source Protection; A Guide For Localities in Upstate New York. Schenectady County Planning Department. 1985.

Many similar publications are available from a variety of sources that can be used to provide guidance for wellhead protection efforts (including the identification and assessment of ground water problems) and in the selection and implementation of best management practices.

In preparing a watershed plan for the control of nonpoint source pollution, the planning process should be no more complex than it has to be. For example, there will be watersheds for which problems are well known and solutions can be developed by professional resource managers at single a meeting. Such might be the case where all that is needed to solve a watershed problem is to fence livestock out of a stream followed by planting of riparian vegetation. On the other hand, for more complex situations, water quality sampling and watershed modeling might be required to more fully understand watershed dynamics.

To reiterate, emphasis should be placed on keeping the planning process as simple and as inexpensive as possible. It makes little sense to embark upon a program of watershed modeling when all that may be required to understand and resolve a water quality problem is sound professional judgement or the use of field indicators.

I. FUNDING WATERSHED PLANNING INITIATIVES

It is the goal of the DOW to ensure that BMP implementation is preceded by sound watershed

planning. The Nonpoint Source Implementation Grants Program provided funding for one planning project in 1994-95. An additional four planning projects were funded with the 1996-97 grants announced in May 1997. Fifteen projects are being funded in 1998-99. The DOW intends to gradually expand its commitment of technical resources and funding to watershed projects for controlling nonpoint source pollution.

Periodically, the DOW will send out an RFP for funding watershed planning on priority watersheds. Watershed planning grants will be followed by RFP's for nonpoint source implementation proposals.

J. IMPLEMENTATION STEPS

C The DOW will integrate and facilitate coordination among its programs within the river basin planning and management framework outlined in pages VI-2 and VI-3 of this chapter to protect and enhance surface and groundwater resources throughout the seventeen river basins within the State.

C The DOW will establish Planning Teams consisting of central office and regional staff for each river basin in the State. It will be the planning team's responsibility to prepare and facilitate implementation of river basin plans within the river basin planning framework.

C Within the river basin context, planning for the remediation and prevention of pollutants from nonpoint sources will be undertaken in priority watersheds at the USDA watershed or sub-watershed unit level.

C The DOW will develop or adopt a screening tool or model for prioritizing watersheds in river basins for nonpoint source planning and plan implementation.

- The DOW will facilitate an ongoing process at the State and local level to periodically review and update priorities at the watershed and/or sub-watershed scale by providing copies of the Obstacle Analysis to all County Water Quality Coordinating Committees in the State.
- The DOW will rely on the *Watershed Planning Handbook for the Control of Nonpoint Source Pollution* as its basic reference document for plan preparation at both the river basin and 11 and/or 14 digit Hydrologic Unit scale. At the same time, the DOW recognizes that water quality planning and management at the river basin and watershed or sub-watershed scale must consider the impacts to air, soil, plant and animal resources of plan implementation; it will, therefore, ensure that procedures recommended by NRCS for considering and minimizing impacts to these natural resources are adopted.
- C The DOW intends to adopt a goal which seeks to ensure that BMP implementation is preceded by sound watershed planning. The DOW will gradually increase technical resource and funding assistance to facilitate watershed planning.
- County WQCCs should be encouraged, educated and funded to initiate or continue watershed planning including prioritizing watersheds within their counties, or in multi-county regions, and implementing management practices.
- The DOW will ensure that nonpoint source information on environmental releases of the identified stressors is provided to the Comparative Risk Project, and the Pollution Prevention Unit will review risk characterizations and pollution prevention strategies, and include nonpoint source considerations.

**TABLE VI-3
ELEMENTS OF A WATERSHED-WIDE WATER QUALITY MANAGEMENT PLAN**

- ! Introduction**
- Purpose of plan
- Problem(s) statement
- Water quality goals and objectives
- ! Watershed Information**
- Description of physical, biological characteristics and existing land use trends/patterns in watershed
- Map(s) delineating the planning area (watershed/groundwater recharge area)
- Map(s) showing water bodies, land use, or other relevant features
- ! Water Quality Status**
- Water body classification
- Level of impairment and verification (of impairment)
- Identification of pollutants impacting the waterbody, fisheries habitats, etc.
- Discussion of pollutants and their effects
- ! Sources of Pollution**
- Description and location of point sources (provide map of point sources)
- Description and location of nonpoint sources (provide map of nonpoint source critical delivery areas)
- Point and nonpoint source loading estimates
- Relative importance of point and nonpoint sources of pollution in watershed
- ! Needed Pollutant Reductions**
- Point source reduction needs (relative to objectives)
- Nonpoint source reduction needs (relative to objectives)
- ! Management Strategies for Achieving Water Quality Goals and Objectives**
- Management practices evaluated for addressing point source discharges and nonpoint sources by category and critical delivery areas
- Recommended practices
- ! Recommendations for Amending or Adopting Land Use Plan/Zoning Provisions**
- Recommendations for coordinating land use and development plans with water quality management goals and objectives
- Recommendations for amending or adopting local laws, including site plan review provisions and zoning provisions, to achieve water quality goals and objectives.
- ! Funding Sources and Implementing Agencies**
- Cost estimates of plan implementation
- Funding sources by point and nonpoint source category
- Agency and interagency arrangements for plan implementation
- ! Implementing Strategy**
- Description of institutional/administrative arrangements required for plan implementation
- ! Plan Implementation Schedule**
- Plan implementation schedule for point source controls
- Plan implementation schedule by nonpoint source category
- Plan implementation schedule for critical delivery areas
- ! Plan Implementation, Monitoring and Follow-Up**
- Monitoring and follow-up strategy

CHAPTER VII

IMPLEMENTATION SCHEDULE FOR NONPOINT SOURCE MANAGEMENT PROGRAM

A. Introduction

The following implementation schedule is a compilation of the Implementation Step sections of Chapters II through VI. The full text of the longer implementation steps was used as often as possible. Where the full text was not used, some easily identified excerpt was used instead.

B. Five-year Implementation Schedule

| Chapter | Action | Agency(ies) | 1998 | 1999 | 2000 | 2001 | 2002 |
|-----------|---|--|------|------|------|------|------|
| II | Partnerships | | | | | | |
| | 1. Continue the operation of the New York Nonpoint Source Coordinating Committee. | DEC's DOW, NPSCC member agencies | X | X | X | X | X |
| | 2. Where appropriate, develop Memoranda of Understanding between DEC and other agencies to coordinate water quality improvement efforts. The MOUs will help address cost-sharing funds, technical assistance, technical training and outreach efforts to solve documented water quality problems. | DEC's DOW, NPSCC member agencies | X | X | X | X | X |
| | 3. Continue to support the county water quality coordinating committees to encourage their operation in every county. | DEC's DOW, SSWCC and other NPSCC member agencies | X | X | X | X | X |
| | 4. Encourage watershed partnerships; provide support to help watershed groups prepare watershed plans. | DEC's DOW, NPSCC member agencies | X | X | X | X | X |

| Chapter | Action | Agency(ies) | 1998 | 1999 | 2000 | 2001 | 2002 |
|---------|---|--|------|------|------|------|------|
| II | 5. Use Management Plans developed for particular waterbodies of concern to guide implementation efforts in those watersheds; provide financial support for implementing those plans. | DEC's DOW, SSWCC, and other NPSCC member agencies | X | X | X | X | X |
| | 6. Initiate actions to bring more environmental and producer groups into the process of determining methods to address nonpoint source pollution. | DEC's DOW, Dept. of A&M, and other NPSCC member agencies | | X | X | X | X |
| III | Surface Water and PWL | | | | | | |
| | 1. Finalize the PWL Review and Update Process and Procedures. With appropriate Division of Water staff (regional and central office) and WQCC representatives, develop specific process for the routine review and updating of the PWL. | DEC's DOW - Bureau of Watershed Assessment and Research (BWAR) | X | | | | |
| | 2. Establish a procedure for measuring progress by tracking movement along spectrum of identification of problems, causes and sources. | DEC's DOW - Bureau of Watershed Assessment and Research (BWAR) | X | | | | |
| | 3. Consider expanding the PWL to include "Special Protection Waters." | DEC's DOW - BWAR | X | | | | |
| | 4. Expand PWL to include documentation of good Water Quality Waterbodies. | DEC's DOW - BWAR | X | | | | |
| | 5. Establish Volunteer Monitoring Network: Establish a citizen/volunteer monitoring component to the RIBS ambient monitoring effort, develop volunteer monitoring handbook to provide appropriate guidance. | DEC's DOW - Bureau of Watershed Assessment and Research | X | | | | |
| | 6. Create and improve GIS coverages for DOW programs including RIBS, SPDES, TMDL, stream classification, PWS, dams, and stream gages. | DEC's DOW - BWAR | | X | | | |
| | 7. Conduct review and update of PWL information for 2 or 3 major drainage basins each year, with the entire state to be updated every five years. | DEC's DOW - BWAR | X | X | X | X | X |
| | 8. Issuing of Comprehensive RIBS Basin Study Reports | DEC's DOW - BWAR | X | X | X | X | X |

| Chapter | Action | Agency(ies) | 1998 | 1999 | 2000 | 2001 | 2002 |
|---------|---|--|------|------|------|------|------|
| III | 9. Review and Compilation of TMDL (303d) List | DEC's DOW - Bureau of Watershed Management | | X | | X | |
| III | Groundwater Management and Protection | | | | | | |
| | 1. Improve the information base currently available by requiring that programs which obtain permit and other information incorporate location data (latitude/longitude). | DEC's DOW - Bureau of Watershed Assessment and Research | X | X | X | X | X |
| | 2. Seek funding to reestablish a cooperative mapping effort with the USGS. In the past, this effort led to high quality mapping of groundwater aquifers. | DEC's DOW - BWAR | X | | | | |
| | 3. Monitor the state's groundwater through the assessment activities undertaken as part of 305(b) program. | DEC's DOW - BWAR | X | X | X | X | X |
| | 4. Improvements in integration of the various information systems among DEC programs must be carried out, location data must be collected and/or verified, and information systems for unregulated or locally regulated facilities must be enhanced. All of this information must be made readily available via computer link to staff and the public. | DEC's DOW - Bureau of Watershed Assessment and Research, other DEC Divisions | X | X | X | | |
| | 5a. Propose legislation to enhance the water withdrawal regulatory program to include industrial, commercial, and agricultural water supply uses, as is already done for Long Island, in order to develop an adequate information base and to allow for assessments of impacts on other water supplies and on the total water resources, both surface and groundwater. | DEC's DOW, DOH | X | X | X | X | X |
| | 5b. Continue efforts to secure passage of proposed legislation which would create a statewide well-driller registration program. The purpose of this program would be to collect information detailing subsurface geology and well construction at new groundwater well sites. This will provide for better management and protection of groundwater resources in New York State. | DEC's DOW | X | X | X | X | X |

| Chapter | Action | Agency(ies) | 1998 | 1999 | 2000 | 2001 | 2002 |
|-----------|--|---|------|------|------|------|------|
| III | 6a. Create list of 'priority aquifers' (PAL) based on existing primary and principal aquifers, aquifers identified by USGS and DEC-DOW as likely principal aquifers, and other aquifers nominated through the PAL process. The list will be prioritized for potential detail mapping efforts. | DEC's DOW - BWAR, DOH | X | X | X | X | X |
| III | 6b. Groundwater problems to be addressed by the DOW will also be listed on the PAL. [Note: Contaminated groundwater sites which are the responsibility of other DEC programs (e.g., spill sites, hazardous wastes sites, solid waste sites) will not be included. Information regarding contaminated groundwater sites which are being managed under other DEC programs are available through those programs.] | DEC's DOW - BWAR, NDSCC, DOH | X | X | X | X | X |
| | 7. The Department of Health will maintain a list of public supply wells that have been closed due to contamination. | DOH | X | X | X | X | X |
| | 8a. Department of Health SWAP work is to be completed November, 2001. | DOH | X | X | X | X | |
| | 8b. Encourage communities to develop local management and protection programs as a followup to the Source Water Assessments. | DEC's DOW - BWAR, DOH | X | X | X | X | X |
| | 8c. Provide technical assistance to communities for delineation of areas for protection program implementation. | DEC's DOW - BWAR, DOH | | X | | | |
| IV | Outreach | | | | | | |
| | 1. Reconvene the Information / Education Subcommittee of the Nonpoint Source Coordinating Committee. | DEC's DOW, CCE, and other NPSCC member agencies | X | X | | | |
| | 2. Increase targeted regional and watershed outreach activities. Coordinate with ongoing regional and watershed partnership activities (e.g., basin teams, regional workshops, watershed management committees) to: promote CWQCC participation in regional partnerships; track regional and watershed activities concerning nonpoint source pollution and assess the need for targeted outreach. | DEC's DOW, SWCC, CCE | X | X | X | X | X |

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|---------|--|---|------|------|------|------|------|
| IV | <p>3. Provide better outreach training and support to CWQCCs</p> <p> C Develop a training course or video for new CWQCC members.</p> <p> C Develop orientation/training packet for new CWQCC members that could be customized locally.</p> <p> C Offer training to CWQCCs in:</p> <p> a. Planning, implementing and evaluating outreach and education programs</p> <p> b. Resources and materials available at the state level</p> <p> c. Working with consultants to implement outreach and education programs</p> <p> d. Integrating outreach and education into NPS source-specific programs</p> <p> e. Working effectively with the media.</p> | DEC's DOW - Bureau of Watershed Management, SWCC, CCE, NYS District Employees Association | X | X | X | X | X |
| | <p>4. Assist with administrative support of outreach activities by CWQCCs:</p> <p> C Update CWQCC mailing lists annually</p> <p> C Investigate ways to provide State staff to support local outreach efforts both for specific source areas and overall NPS program. This could include cultivating and coordinating local volunteers to work in partnership with the CWQCC.</p> | DEC's DOW - Bureau of Watershed Management, SWCC, CCE, NYS District Employees Association | X | X | X | X | X |
| | <p>5. Improve usability of existing resources (from all NPS partner agencies and groups) so they can be easily used by local-level organizations, especially CWQCCs. Develop a distribution plan to ensure materials reach their intended audiences.</p> <p> C Update existing publication "Where to Get Information about NPS Pollution" or design and produce easy-to-use catalogues of NPS audiovisual resources, publication, etc.</p> <p> C Update and redesign the outreach Strategy to make it more usable.</p> | NPSCC's I&E Subcommittee | X | X | X | X | X |

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|---------|---|---------------------------------|------|------|------|------|------|
| IV | <p>6. Assist CWQCCs to develop an outreach program to increase awareness of NPS pollution and create partnerships with specific audiences. Assess the need for, and, if appropriate, develop:</p> <p>C new nonpoint source general information materials for targeted audiences at the State and local levels; a video and accompanying brochure would be the preferred outreach tool.</p> <p>C a targeted education initiative aimed at local officials to make them aware of the role of local government in protecting and preserving water resources and the control options available to them; and a manual that outlines the control options and explains how they can be incorporated in local planning efforts.</p> | NPSCC's I&E Subcommittee | X | X | X | X | X |
| | 7. Provide guidance and assistance for general nonpoint source information and education activities such as: Project WET (Water Education for Teachers) in New York State, Water Week, DEC Earth Day Environmental Fair. | NPSCC's I&E Subcommittee | X | X | X | X | X |
| | 8. Investigate the need for and feasibility of creating a nonpoint source information clearinghouse and/or web site. | NPSCC's I&E Subcommittee | X | X | X | X | X |
| | 9. Survey County WQCCs to assess training needs so that appropriate training sessions can be developed for the biennial Water Quality Symposium.. | NPSCC's I&E Subcommittee | X | | X | | X |
| | 10. Assist the NPSCC in implementing the priorities identified by the Source Category Working Groups so that the appropriate agencies and institutions can work together to target common audiences, produce materials and deliver them efficiently, without duplicative effort. | NPSCC's I&E Subcommittee | | X | X | | |
| V | Programs to Control Nonpoint Source Pollution | | | | | | |
| V.D.1 | General | | | | | | |
| | 1. Develop pollution prevention guidance materials specific to NPS activities. | DEC's Pollution Prevention Unit | X | X | | | |

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|---------|---|--|------|------|------|------|------|
| V.D.1 | 2. Continue to develop the concept of critical area protection using several tools, both regulatory and non-regulatory, at the state, county and local levels. | DEC's DOW, DOH, DOS, counties, municipalities | X | X | X | X | X |
| V.D.2 | Agriculture | | | | | | |
| | 1. Formalize the Agricultural Environmental Management (AEM) Initiative by completing the AEM Guide and gaining multi-agency adoption of the AEM Guide. | Department of Agriculture and Markets | X | X | | | |
| | 2. Provide direction to the Agricultural Environmental Management (AEM) Initiative by developing a long-range plan for AEM, and annual work plans including an outreach plan. | AEM Steering Committee, NYS SWCC | X | X | X | X | X |
| | 3. Evaluate current staffing capability and train staff to implement Agricultural Environmental Management (AEM) Statewide. | AEM Steering Committee and involved agencies (CCE, FSA, NRCS and SWCC) | X | X | | | |
| | 4. Develop and provide outreach and technical materials necessary for a comprehensive Agricultural Environmental Management (AEM) Initiative. | AEM Outreach Subcommittee, AEM Steering Committee | X | X | | | |
| | 5. Maintain an updated prioritized listing of watersheds and wellhead areas for Agricultural Environmental Management (AEM) Implementation. | AEM Steering Committee | X | X | X | X | X |
| | 6. a. Incorporate Agricultural Environmental Management (AEM) initiative into watershed and wellhead protection efforts, such as: | AEM Steering Committee with: | | | | | |
| | - Wellhead Protection/Source Water Protection (SDWA) | DOH | X | | | | |
| | - Nonpoint Source Watershed Protection (CWA, CZMA) | DEC's DOW and DOS | X | | | | |
| | - Natural Resource Protection (Farm Bill); and | USDA FSA | X | | | | |
| | - Agricultural Nonpoint Source Abatement and Control Program | NYS SWCC | X | | | | |

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|---------|--|---|----------------------|------|------|------|------|
| V.D.2 | 6. b. Incorporate completion of AEM Tiers I-III as requirement for funding implementation based on program policy decisions in: <ul style="list-style-type: none"> - Agricultural Nonpoint Source Abatement and Control Projects - Environmental Quality Incentive Program (EQIP) projects - Other USDA Farm Bill Incentive Program projects - Wellhead Protection/Source Water Protection projects | NYS SWCC USDA NRCS and USDA FSA NYSDOH | X X X X | | | | |
| | 7. Implement Agricultural Environmental Management (AEM) Tiered Plans using Best Management Practices (BMPs). | County Project Teams | X | X | X | X | X |
| | 8. Implement Agricultural Environmental Management (AEM) tiered planning approach on large animal livestock operations (Concentrated Animal Feeding Operations). | County Project Teams | X | X | X | X | X |
| | 9. Enhance State and Local Capability to Implement Agricultural Environmental Management (AEM). | AEM Steering Committee | X | X | X | X | X |
| | 10. Involve private sector as key participant in Agricultural Environmental Management (AEM) initiative. | AEM Steering Committee | X | X | X | X | X |
| | 11. Evaluate level of participation and environmental effectiveness in Agricultural Environmental Management (AEM) Initiative. | NYS Soil and Water Conservation Committee, AEM Steering Committee | X | X | X | X | X |
| | 12. Develop mechanisms to formally recognize both farmers' and local staff successes in implementing practices. | AEM Steering Committee | X | X | | | |
| | 13. The coordinated statewide programs delivered at local levels could benefit from more efficient communication mechanisms (such as greater use of the Internet), resource materials in more depth, and mechanisms for priority setting for State and Federal funding allocation. | NY NPS CC, AEM Steering Committee | X | X | X | X | X |

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|---------|---|---|------|------|------|------|------|
| V.D.3. | 3. a) A pilot integrated air-shed/watershed/water quality model should be developed to assess fate and impact of atmospheric nitrogen on a waterbody. b) Water quality impacts of implementation of the Clean Air Act should be further evaluated and incorporated into a phased TMDL for Long Island Sound. | DEC's DAR; DFW&MR; and DOW | X | X | | | |
| | 4. Track NO _x and SO ₂ emissions reductions due to Title IV implementation. | DEC's Division of Air Resources | X | X | X | X | X |
| | 5. Develop a comprehensive overview and interpretation of various Acid Rain monitoring efforts and expand data analysis to fill any voids. | DEC's DAR, in cooperation with DEC's DFW&MR and the ALSC. | X | | | | |
| | 6. Seek federal legislation to provide additional regulatory controls over precursors required to control out-of-state sources. | DEC's Division of Air Resources; USEPA | X | X | | | |
| | 7. Under CAA amendments, USEPA will develop emission standards, based on maximum achievable control technology, for all the source categories by the year 2000. | USEPA | X | X | X | | |
| | 8. USEPA will develop regulations for area or small sources of HAPs by the year 2000. | USEPA | X | X | X | | |
| | 9. Through implementation of the CAA requirements, USEPA projects an 85% reduction in atmospheric deposition of metals, nationwide, over the next 10-15 years. This reduction will contribute to the attainment of ambient water quality standards for mercury in the NY/NJ Harbor/Bight. | USEPA; NYSDEC; other States | X | X | X | X | X |
| V.D.4 | Construction | | | | | | |
| | 1. EPA is expected to promulgate Phase II Storm Water Regulations. | USEPA | X | X | | | |
| | 2. Investigate alternatives (amending ECL, revising permit, adding staff, promulgating regulations, etc.) to strengthen the implementation of the SPDES general permit for construction. | DEC's BWM, and Bureau of Water Permits (BWP) | X | X | | | |

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|---|---|--|------------|------|------|------|------|--|
| V.D.4 | 3. Take steps to involve local government in the enforcement and administration of the SPDES general permit for construction as part of Phase II stormwater controls. | DEC's BWM, and BWP | X | X | | | | |
| | 4. DEC and EPA should work together to encourage passage of local laws for stormwater and erosion and sediment control. | USEPA; DEC's DOW | X | X | X | X | X | |
| | 5. EPA should work with Congress to amend Clean Water Act to allow use of 319 funds for stormwater control implementation. | USEPA | X | X | X | | | |
| | 6. Expand programs to disseminate the information contained in the New York Urban Erosion and Sediment Control Guideline using Train the Trainer program (slides, overheads), and thru local ordinances. | DEC's BWM, SWCC, NPSCC, SWCDs | X | X | X | X | X | |
| | 7. Seek to continue funding the following courses for the next five years: - Train-the-trainer program to increase the number of trainers available - erosion and sediment control training for contractors - short courses on water quality. | DEC's BWM, SSWCC (State SWCC's Engineering Specialist) | X | X | X | X | X | |
| | 8. For New York's Coastal Nonpoint Pollution Control Program (6217): Three years to revise State Uniform Fire Prevention and Building Code to incorporate pollution management in new construction and reconstruction, or provide other means to do the same. | DEC and DOS | X | X | X | | | |
| | V.D.5 Contaminated Sediments | | | | | | | |
| | 1. Expand the current electronic database for NYS Great Lakes contaminated sediment information, and create a similar database for NY Harbor. | DEC's DOW - BWAR | X | X | | | | |
| 2. Evaluate, edit and format sediment data for parts of the state not covered under #1. | DEC's DOW - BWAR | | X | X | | | | |
| 3. Add biological effects data to Great Lakes basins site prioritization scheme. | DEC's DOW - BWAR | | April 1999 | | | | | |

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|--------------|--|--|------|------|------|------|------|
| V.D.6 | Hydrologic and Habitat Modification | | | | | | |
| | <p>1. To better provide integrated technical and financial assistance to local efforts at stream corridor management planning, an ongoing forum should be developed for coordination between federal, state and local agencies dealing with stream corridor management issues:</p> <p>a. Dissemination of principles in DEC's Stream Corridor Management manual across the state.</p> <p>b. Training sessions for SWCDs and RC&D Councils to encourage the application of these principles.</p> <p>c. Educational activities to increase public awareness of the benefits of stream corridor management, encourage creation of community stream protection programs to implement management practices.</p> | <p>DEC's DOW - BWM and BFP, NYC DEP's Stream Protection Unit, SWCC, DEC's DFW&MR</p> <p>CCE, Cornell University, other colleges, DOW-BWM</p> | X | X | X | X | X |
| | <p>2. The benefits of wetlands as nonpoint source filters should also be highlighted in outreach and educational programs. Development of local wetland protection regulations, and establishing new, or improving existing enforcement capabilities or incentives are needed.</p> | <p>DEC's DFW&MR and DOW-BWM, CCE</p> | X | X | X | X | X |
| | <p>3. Promotion of the existing cost-sharing programs (Conservation Reserve Program under FSA, Stream Corridor Protection and Stormwater Mitigation Programs under NYCDEP) for treatments such as vegetative buffer strips is needed.</p> | <p>USDA's NRCS and FSA, SWCC, and NYC DEP</p> | X | X | X | X | X |

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|---------|---|--|------|------|------|------|------|
| V.D.6 | 4a. The Memoranda of Understanding which are required for local governments under the provisions of the Stream Protection Permit program should include requirements for utilizing best management practices to minimize stream disturbance. Granting of MOUs should be conditioned on satisfactory completion by town highway department personnel of a certification program, to be developed by the DEC. | DEC's Division of Fish, Wildlife and Marine Resources (DFW&MR) and DOW-BWM, and NYC DEP's Stream Protection Unit | | | X | X | X |
| | 4b. DEC should develop a certification program consisting of workshops on the stream disturbance permitting process, how to effectively install BMPs to minimize disturbance, and basic principles of stream hydrology, including the relationship between channel form and sediment transport. (This recommendation also applies to the resource extraction category.) | DEC's DFW&MR, and BWM, and NYC DEP's Stream Protection Unit | | X | X | X | X |
| | 5. Regulatory programs which control runoff to prevent damage to streams should be developed in conjunction with the stormwater management program. There should be requirements for the attenuation of peak runoff from newly developed areas. Riparian restoration should be pursued to reduce sedimentation and erosion problems, and to control flooding problems in the upper, less impacted portions of the watershed, and so return to a more natural annual flow regime. | DEC's Division of Water and DFW&MR, and NYC DEP's Stream Protection Unit | | X | X | | |
| | 6. A program should be developed to assess and classify the morphology of NYS streams and rivers, prioritized by DEC's use classification (i.e., beginning with highest use streams). An essential element of this program should be to develop regional curves relating stream geometry and discharge to drainage area. This would then allow stream disturbance permits under Article 15 to include conditions specifying the cross-sectional dimension, plan and profile appropriate to a stream's morphology type and bankfull discharge. | NYC DEP's Stream Protection Unit; NYS DEC's DOW and DFW&MR. | | X | X | | |

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| V.D.6 | 7. New York's Coastal Nonpoint Pollution Control Program (6217): three years to: a) address problems (i.e., water quality and habitat) in existing channels, [where channel modification has altered or has the potential to alter instream and riparian habitat such that historically present fish and wildlife are adversely affected]. b) address problem of eroding streambanks or shorelines causing pollution where not reviewed under existing permit authorities. | DEC and DOS | | | X | | |
| | | | | | X | | |
| V.D.7 | Land Disposal | | | | | | |
| | 1. Develop workplan for priority toxics sampling for the Great Lakes including a project scope and schedule. | DEC's DOW - Great Lakes Section and Contaminated Sediments Section | X | X | | | |
| | 2. Clarify inter-divisional groundwater contamination site responsibility at DEC by making needed changes to current Memoranda of Understanding. | DEC's DOW - BWAR, and Division of Solid and Hazardous Materials | X | X | | | |
| V.D.8 | Leaks, Spills and Accidents | | | | | | |
| | 1. BSPR should continue working with other state and local agencies to inventory and map petroleum and hazardous materials storage facilities within important aquifer areas. This will help identify potential problem areas for local government. GIS also helps coordinate with other utility and transportation activities. | DEC's Division of Environmental Remediation -BSPR, DOH, Regional Planning Boards, and counties | X | X | X | X | X |
| | 2. Communities should be encouraged to hold cleanup/disposal days for pesticides and other hazardous chemicals. These cleanup days should be held in conjunction with an educational program to make homeowners aware of the damage which can be caused by improper disposal of hazardous chemicals. | DEC's DER-BSPR and Division of Solid and Hazardous Materials, and CCE | X | X | X | X | X |

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|---------|--|---|------|------|------|------|------|
| V.D.8 | 3. In setting DEC's bulk storage inspection and enforcement priorities, BSPR in conjunction with other DEC staff will recognize the importance of primary water supply aquifers. | DEC's DER-BSPR and DOW-BWAR, NYC DEP, and DOH | X | X | X | X | X |
| V.D.9 | Marinas and Recreational Boating | | | | | | |
| | 1. NYSDEC and partner agencies should use the Management Practice Catalogue for Marinas to encourage implementation or installation of recommended practices. | DEC; DOS; NY Sea Grant; other Ad Hoc Marina Committee Members | X | X | X | X | X |
| | 2. New York's Coastal Nonpoint Pollution Control Program (6217): two years to achieve stormwater runoff management at new and expanding marinas, and at existing marinas for at least the hull maintenance areas. | DEC and DOS | | X | | | |
| V.D.10 | Onsite Wastewater Treatment Systems | | | | | | |
| | 1. Model sanitary code requirements for individual OWTS should continue to be implemented on a local level. Counties whose codes do not meet or exceed the requirements of the provisions should be encouraged to adopt such. | DEC's DOW, DOH, CCE | X | X | X | X | X |
| | 2. Programs should be developed to provide for more frequent inspection of septic systems and septic tank pumping. Alternatives such as creation of waste-water management districts, local water-shed authorities and implementation of self-help programs should be considered. | DOH, EFC, DOS, NYC DEP | X | X | X | X | X |
| | 3. Existing enforcement authority should be used to require corrective actions by persons causing water quality problems due to inadequate on-site wastewater systems. Priorities should be established based on the Priority Waterbodies List (PWL), and appropriate inventories of groundwater problems. | DEC's DOW, DOH | X | X | X | X | X |

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| | 4. Propose legislation so financial incentive programs, such as the New York State Clean Water Revolving Fund (CWSRF), can be expanded to assist property owners in financing the construction of new or rehabilitated OWTS. | DEC, DOH, EFC | X | X | X | X | X |
| V.D.10 | 5. Foster interagency and financial institution efforts to identify potential methods for financing replacements of failing OWTS where such replacements would result in financial hardship to system owners. This information could then be made available to system owners. | DEC, DOH, DOS, EFC, NYC DEP | X | X | X | X | X |
| | 6. Demonstration projects should be used to illustrate new methods for solving the problems caused by failing on-site systems. Alternatives to conventional collection systems and treatment plants should be studied. Projects using methods such as cluster systems that collect sewage from small-lot residences and distribute it to nearby sites with suitable soil should be encouraged. | NYC DEP, DEC, DOH | X | X | X | X | X |
| | 7. Further develop educational programs to make the public aware of water quality impacts resulting from improperly functioning or maintained OWTS. | DOH, Cornell University, CCE, DEC's BWM | X | X | X | X | X |
| | 8. Re-examine the DEC/DOH MOU regarding OWTS regulatory responsibility in order to increase the role of local health departments for regulating commercial and institutional OWTS. | DEC's DOW - Bureau of Water Permits | X | | | | |
| | 9. Funding options for local health department administration of a commercial and institutional OWTS program should be developed. | DEC's DOW-Bureau of Water Permits, DOH | X | X | X | X | X |
| | 10. The 1988 DEC <u>Design Standards for Wastewater Treatment Works Intermediate Sized Sewerage Facilities</u> should be updated to include recent technology advances and to provide consistency with DOH standards. | DEC's DOW - Bureau of Water Permits | | X | | | |
| | 11. New York's Coastal Nonpoint Pollution Control Program (6217); three years to address: a) OSDS issues impacting nitrogen limited waters b) Inspection of operating systems | DEC, DOS and DOH | | | | X | X |

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|---------------|--|--|------|------|------|------|------|
| V.D.11 | Resource Extraction/Exploration/Development | | | | | | |
| | 1. Work with industry and local governments to develop and implement a comprehensive program that ensures timely plugging by the responsible owner of every well that is no longer economically viable or is creating an environmental hazard. | DEC's Division of Mineral Resources | X | X | X | X | X |
| | 2. The Stream Protection Permit Program should include provisions requiring local governments to obtain permits for the mining of sand and gravel from stream beds and banks of streams classified C or higher through modification of Article 15, Title 5, of the Environmental Conservation Law. | DEC's Division of Fish, Wildlife, and Marine Resources | X | X | | | |
| | 3. The statutory requirement for well owners to maintain financial security should be updated to reflect actual plugging costs. | DEC's Division of Mineral Resources | X | X | | | |
| V.D.12 | Roadway and Right-of-Way (ROW) Maintenance | | | | | | |
| | 1. Encourage research projects that explore the impacts of salt and sand application along highways. | Cornell University, DEC's DOW, DOT | X | X | X | X | X |
| | 2. Encourage the implementation of BMPs that reduce the erosion due to maintenance of roadbanks and road ditches. | DEC's DOW, Cornell, NRCS, DOT | X | X | X | X | X |
| | 3. Develop technology transfer to educate localities and highway superintendents on the maintenance of roadway/ROW (i.e. State-wide or regional seminars on roadway maintenance including discussion of roadway maintenance issues, BMPs, new techniques, studies.) | DEC's DOW, Cornell, NRCS, DOT | X | X | X | X | X |
| | 4. New York's Coastal Nonpoint Pollution Control Program (6217): one year to develop a strategy to address nonpoint source issues for local roads, including a program to evaluate backup authorities. | DEC and DOS | X | | | | |

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|---------------|--|--|------|------|------|------|------|
| V.D.13 | Silviculture | | | | | | |
| | 1. A research project is being initiated over the coming years to evaluate silvicultural BMP application and effectiveness in various regions of NY. Additional funding is needed to expand this study statewide and provide current data concerning program effectiveness and identify any areas for potential improvement. | DEC's Division of Water and Division of Lands and Forests, NRCS, NYC DEP | X | X | X | | |
| | 2. Cost-sharing for installation of certain BMP's has proven an effective means to ensure their use but funding for these programs waned. Additional funds targeted to sensitive sites and costly practices, such as bridges, would encourage greater application of silvicultural BMP's. | DEC's Division of Water and Division of Lands and Forests, NRCS, NYC DEP | X | X | X | X | X |
| | 3. Complete field guide version of the DEC Nonpoint Source Catalogue on Silviculture. | DEC's Division of Lands and Forests; partner agencies in New York and other States | | X | | | |
| V.D.14 | Urban Runoff | | | | | | |
| | 1. EPA should promulgate Phase II Storm Water regulations. | USEPA | X | X | | | |
| | 2. New York needs to develop a clearly defined statewide storm water management program. | DEC's DOW | X | X | | | |
| | 3. NY's permit review process under EPA's Phase II stormwater regulations should include an assessment of the long-term and cumulative effects on downstream runoff which will result from the proposed single development. | DEC's DOW and Division of Compliance Services | X | X | | | |
| | 4. Include EPA Phase II requirement to check for and eliminate illicit connections (thereby reducing runoff from existing urban areas) into NY's stormwater program. | DEC's DOW | X | X | | | |
| | 5. EPA should pursue an amendment to the Clean Water Act to allow Section 319 to fund the implementation of the Phase II Storm Water Regulations. | USEPA | X | X | X | | |

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|---------|--|--|------|------|------|------|------|
| V.D.14 | 6. Include EPA Phase II educational requirements into NY's stormwater program to make local officials (especially planning boards) aware of the opportunities which exist to control runoff from new development. (land use planning, local zoning, critical area protection, limiting the extent of impervious surfaces, and the SEQR process. | DEC's DOW and Division of Compliance Services. | X | X | | | |
| | 7. Research and demonstration projects to study treatment techniques, such as the use of created wetlands to remove pollutants from urban runoff, should be encouraged/ funded. | DEC's DOW, NRCS, SWCC | X | X | X | X | X |
| | 8. Technical training efforts are needed to make local officials aware of the importance of maintaining storm water control facilities. Actions such as cleaning catch basins and periodic removal of sediment from recharge basins could be included in a stormwater management manual written to help them keep facilities functioning properly. | DEC's DOW, DOT, SWCC | X | X | X | X | X |
| | 9. DEC will research and propose technologies for CSO abatement. Public support for cost-effective measures to control CSOs is necessary for their implementation. New York City has a Citizens Advisory Committee and holds public meetings specifically on CSOs. | DEC's DOW - BWP, and NYC DEP | X | X | X | X | X |
| | 10. DEC will research and determine the need for management practices to control nonpoint source pollution from large-scale recreational facilities such as golf courses and ski resorts. | DEC's DOW - BWM and Division of Operations | | X | X | | |
| | 11. New York's Coastal Nonpoint Pollution Control Program (6217) : | DEC and DOS | | X | | | |
| | a.) two years to develop a strategy to assure watershed based management to reduce generation of nonpoint source pollutants and mitigate impacts of urban runoff throughout the entire 6217 management area. | | | | | | |
| | b.) two years to develop a strategy to assure reduction of surface water runoff pollutant loadings from all urban areas and existing development areas. | DEC and DOS | | X | | | |
| | c.) three years to revise State Uniform Fire Prevention and Building Code to incorporate pollution management in new construction and reconstruction. | DEC and DOS | | | X | | |

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| VI | Watershed Planning for the Control of Nonpoint Source Pollution | | | | | | |
| | 1. Integrate and facilitate coordination among DEC-DOW programs within the river basin planning and management framework outlined on pages VI-2 and VI-3 to protect and enhance surface and groundwater resources throughout the seventeen river basins within the State. | DEC's DOW | X | X | X | X | X |
| | 2. Establish "Planning Teams" consisting of central office and regional staff for each river basin in the State. It will be the planning team's responsibility to prepare and facilitate implementation of river basin plans within the river basin planning framework. | DEC's DOW | X | X | X | X | X |
| | 3. Within the river basin context, planning for the remediation and prevention of pollutants from nonpoint sources will be undertaken in priority watersheds at the USDA Hydrologic Unit (watershed) level or smaller. | DEC's DOW | X | X | X | X | X |
| | 4. Develop or adopt a screening tool or model for prioritizing subwatersheds in river basins for nonpoint source planning and plan implementation. | DEC's DOW | | X | | | |
| | 5. Facilitate an ongoing process at the State and local level to periodically review and update watershed priorities at the watershed or subwatershed scale by providing copies of the Obstacle Analysis to all County Water Quality Coordinating Committees in the State. | DEC's DOW | X | X | X | X | X |
| | 6. Use the <i>Watershed Planning Handbook</i> for the Control of Nonpoint Source Pollution as its basic reference document for plan preparation at both the river basin and 11- or 14-digit Hydrologic Unit scale. Ensure that procedures recommended by NRCS for considering and minimizing impacts to soil, air, plants, animals and people are adopted. | DEC's DOW | X | X | X | X | X |
| | 7. Adopt a goal which seeks to ensure that BMP implementation is preceded by sound watershed planning. The DOW will gradually increase technical resource and funding assistance to facilitate watershed planning. | DEC's DOW | X | X | X | X | X |
| | 8. County WQCCs should be encouraged, educated and funded to initiate or continue with watershed planning including prioritizing watersheds within their counties, or in multi-county regions, and implementation of management practices. | NPSCC, DEC's DOW | X | X | X | X | X |

Chapter VIII

SOURCES OF FUNDING AVAILABLE TO IMPLEMENT NONPOINT SOURCE PROGRAMS

A. Introduction

There have been substantial changes in funding for abatement of nonpoint sources of pollution since the 1990 NPS Management Plan. A number of the funding programs previously listed no longer exist (for example, the CWA construction grants program). Other programs have been created by federal and New York State government. The purpose of this chapter is to identify potential sources of funding available to municipalities, Indian tribes, Soil and Water Conservation districts, farmers, property owners, specific types of businesses, nonprofit corporations, and public benefit corporations to implement nonpoint source control projects and management programs. It is not the intent of this chapter to cover funding to state agencies via federal and state appropriations for the purpose of implementing nonpoint source programs.

Numerous agencies (local, state, federal) and nonprofit organizations have programs and funds for the treatment, management or control of nonpoint sources. Some programs focus directly on nonpoint source control while others advance water quality as a side benefit. Some of these programs have funds that are available for distribution to municipalities, other government agencies, organizations and land users to plan and/or implement nonpoint source water pollution prevention measures.

In the preceding chapters some of the programs that provide funding for activities related to nonpoint source pollution control have been introduced. Some of these, like the 1996 Farm Bill, the 1996 Amendments to the Safe Drinking Water Act (SDWA), the New York State Environmental Quality Bond Act, Local Waterfront Revitalization Program Grants, the Environmental Protection Fund, the New York City Watershed Agreement, and the Clean Vessel Act Program

(CVAP) are new since the 1990 NPS Management Plan.

The following sections provide a description of the various funding programs available to finance nonpoint source projects and programs. Table VIII-1 further amplifies the data provided below. The funding sources described in Table VIII-1 are listed below:

1. Clean Water State Revolving Fund (CWSRF)
2. Drinking Water State Revolving Fund (DWSRF)
3. Clean Water/Clean Air Bond Act of 1996
4. Environmental Protection Fund (EPF) - Non-Ag Projects
5. Environmental Protection Fund (EPF) - Ag Projects
6. Environmental Protection Fund - Hudson River Estuary Program
7. Environmental Protection Fund (Title 5 - Solid Waste) - Landfill Closure State Assistance Program
8. Environmental Quality Bond Act of 1986 (Title 3 - Solid Waste) - Hazardous Waste Site Remediation
9. Environmental Protection Fund - Open Space
10. Environmental Protection Fund - Ag Open Space
11. Environmental Protection Fund (Title 11) - Local Waterfront Revitalization Program Grants
12. Environmental Quality Incentives Program (EQIP)
13. Conservation Reserve Program
14. New York City Watershed Agricultural Program
15. Catskill Watershed Corporation Programs

16. Skaneateles Lake Watershed Agricultural Program
17. Clean Vessel Assistance Program
18. Great Lakes Protection Fund
19. New York State Great Lakes Protection Fund
20. Transportation Enhancement Program
21. New York State Energy Research and Development Authority (NYSERDA) - Energy Effluent Public Water and Waste-water Technologies
22. New York State Energy Research and Development Authority (NYSERDA) - Agricultural Nonpoint Source Management

Table VIII-2 provides a comprehensive listing of funding available from private sources for nonpoint source and related activities. Approximately 60 funding sources are listed that provide specific grants ranging in size from a few thousand to multi-millions of dollars.

B. Funding for Capital Projects by Federal and State Agencies.

- 1. Clean Water State Revolving Fund (CWSRF) for Water Pollution Control (see also Table VIII-1, Item 1)**

General: New York's Clean Water State Revolving Fund has gained widespread recognition as a program that provides low-interest rate loans to municipalities to construct water quality protection projects. As the loans are repaid, money is available to be used again for new loans - a true revolving fund. The CWSRF program, in existence since 1990, has made over \$3.75 billion in loans. Over 250 municipalities have saved significant interest costs to date by receiving financial assistance for the planning, design, and construction of a variety of projects that protect water quality.

The New York State Environmental Facilities Corporation (EFC) is responsible for

administration of the CWSRF. The New York State Department of Environmental Conservation is the recipient of SRF federal capitalization grants and also has SRF program review responsibilities.

Eligible Projects: Point source and nonpoint source projects are eligible for CWSRF loans per the Clean Water Act (CWA) amendments of 1987. Proposed projects must be publicly-owned and the primary purpose of the project must be water quality protection to be eligible for CWSRF financing.

In addition, funding may be provided for the water quality protection portion of otherwise ineligible projects. For example, construction of a new wastewater treatment plant is fully eligible, whereas construction of a new solid waste landfill is only partly eligible. The eligible components of a new landfill are generally limited to the double-composite liner system and leachate collection, storage and treatment system, which have a water quality protection purpose. The types of nonpoint source projects eligible for CWSRF financing include 1) capping and closure of municipal solid waste landfills, landfill reclamation, and landfill leachate collection, storage, and treatment, 2) remediation of contamination from leaking petroleum/chemical storage tanks, underground injection wells and inactive municipal hazardous waste sites including landfills, 3) upgrade/rehabilitation or removal of existing petroleum/chemical storage tanks for pollution prevention, 4) highway deicing materials storage and efficient salt application equipment, 5) collection and treatment of runoff from municipal airports which has been contaminated by aircraft deicers or other pollutants, 6) stormwater management facilities, such as street sweepers and catch basin vacuum vehicles, sediment traps and basins, constructed wetlands and biofilters, 7) waterbody restoration including stream bank stabilization and drainage erosion and sediment control, 8) restoration of

riparian vegetation, wetlands and other water bodies, 9) land purchase or conservation easements for water quality protection such as for wellheads or watersheds, and 10) certain estuary restoration projects at USEPA designated estuaries.

Types of Loans: Interest-free short-term loans may be available for a term of up to three years to allow municipalities to design and initiate construction on their water quality projects or to prefinance costs that will be reimbursed from proceeds of grants and loans from other funding sources. EFC makes “leveraged” long-term loans to municipalities by issuing bonds on available State and federal capitalization dollars, thereby doubling or tripling the amount of money that it can lend under the CWSRF program. The leveraged loans are made to municipalities at one-half or two-thirds of the interest rate on EFC’s tax-exempt AAA-rated bonds. Over the life of the loan, municipalities save about \$225,000 to \$325,000 per million dollars borrowed by utilizing the CWSRF program.

Application Process: The first step in applying for financing is to submit a project listing form to get a project into the annual “Intended Use Plan” (IUP). The second step is to submit a complete application at an appropriate time in the funding process.

2. **Drinking Water State Revolving Fund (DWSRF) (see also Table VIII-1, Item 2)**

The New York Drinking Water State Revolving Fund (DWSRF), created by State and federal legislation in 1996, is administered jointly by the New York State Department of Health (DOH) and the New York State Environmental Facilities Corporation (EFC). Similar to the Clean Water State Revolving Fund, this

program provides subsidized low interest rate loans to municipalities for construction of eligible water system projects. This program contains provisions to finance a limited segment of nonpoint source pollution control projects such as land purchase or conservation easements for water quality protection for wellheads or watersheds. However, financing of wellhead or watershed land purchase/conservation easements is also eligible under the CWSRF program and the CWSRF will be used to finance these projects to conserve DWSRF resources for other high priority projects. The general way the DRSRF program operates, the types of loans available, and the application process are the same as described above for the CWSRF program.

3. **Clean Water/Clean Air Bond Act of 1996 (see also Table VIII-1, Item 3)**

In November, 1996, New York voters approved the expenditure of \$1.75 billion for the Clean Water/Clean Air Bond Act. The Bond Act provides \$790 million for clean water, \$230 million for air quality, \$175 million for solid waste and \$200 million for brownfields. A portion of these funds will be used to construct nonpoint source projects. Projects located within the geographical area and identified as a need in any of the following water quality management plans will receive a higher priority for funding: 1) Hudson River Estuary Plan, 2) Long Island Sound Comprehensive Conservation and Management Plan, 3) Lake Champlain Management Plan, 4) Onondaga Lake Plan, 5) NY/NJ Harbor Comprehensive Conservation and Management Plan, 6) Great Lakes Program, 7) Finger Lakes and their tributaries, 8) Peconic Estuary Management Plan, and 9) South Shore Estuary Reserve Plan. Table VIII-1 contains a list of state agencies to contact, definition of eligible grant recipients, list of eligible activities to be funded, initial funding level, and the grant application process.

4. Environmental Protection Fund (EPF) (see also Table VIII-1, Items 4, 5, 6, 7, 8, 9, 10, 11)

The Environmental Protection Fund is a dedicated environmental fund that can be used to finance nonpoint source water pollution abatement and control projects. Eight separate programs provide funding to eligible recipients from the Environmental Protection Fund. These programs are:

- 1) the Nonpoint Source Implementation Grants Program (Non-Ag) whose eligible recipients are municipalities or entities designated to act on their behalf,
- 2) the Agricultural Nonpoint Source Abatement and Control Grants Program whose eligible recipients are County Soil and Water Conservation Districts,
- 3) the Hudson River Estuary Program whose goal is to develop a management program for the Hudson River including the river's tidal wetlands and tributaries,
- 4) the Title 3 Solid Waste Program which funds the remediation of inactive municipal hazardous waste landfills,
- 5) the Title 5 Solid Waste Program whose goal is the funding of the proper closure of municipal owned solid waste landfills,
- 6) the Open Space Program for the purchase of sites and easements that are listed on the State Open Space Conservation Plan,
- 7) the Agriculture Open Space Program for projects that implement approved local agricultural protection plans, and

- 8) the Title 11 - Local Waterfront Revitalization Program Grants. This funding program is limited to the Great Lakes and Long Island coastal areas of the state plus designated inland waterways.

5. Environmental Quality Incentives Program (EQIP) (see also Table VIII-1, Item 12)

This program is derived from the 1996 Federal Farm Bill. It is designed to provide grants to farmers for eligible conservation practices. Substantial funding is provided as listed in Table VIII-1 for this program, whose primary purpose is water quality protection.

6. Conservation Reserve Program (see also Table VIII-1, Item 13)

This program is a carry-over from earlier Farm Bills but the latest version is derived from the 1996 Federal Farm Bill. It is designed to provide payments to farmers, land owners and producers for keeping land out of production. Additionally, 50% cost-sharing is available for establishing eligible conservation practices on the land removed from crop production. Funding is provided as listed in Table VIII-1 for this program, whose primary purpose is water quality protection and wildlife management.

7. New York City Watershed Program (see also Table VIII-1, Items 14)

This program is a limited duration funding program of the City of New York. The primary emphasis is to ensure the long-term protection of the water supply source of the nine million people served by this water system. The funding for the Agricultural Program constitutes a concept called "whole farm planning" and includes implementation of Best Management Practices (BMP) for nonpoint source pollution abatement.

8. Catskill Watershed Corporation Program (see also Table 8-1, item 15)

The Towns in the Catskill watershed and the City of New York created a non-profit corporation dedicated to addressing water quality issues in the watershed. The funding for this program includes on-site wastewater systems, roadway deicing storage facilities, streambank/fish habitat improvements, and stormwater projects. Approximately \$69 million of eligible projects are to be funded.

9. Skaneateles Lake Watershed Agricultural Program (see also Table VIII-1, Item 16)

This program was created by the City of Syracuse for the same reasons the New York City Watershed Agricultural Program was created. The program funds the development of whole farm plans utilizing a “tiered approach” and the implementation of “Best Management Practices” that address priority water quality concerns.

10. Clean Vessel Assistance Program (see also Table VIII-1, Item 17)

This funding program, due to end in 1999, funds sanitary pumpout and dump stations for portable toilets of recreational vessels at marinas. The funding is available to private or publicly owned facilities.

11. Transportation Enhancement Program (TEP) (see also Table VIII-1, Item 20)

New York State’s TEP is designed to implement the federal program established within the Intermodal Surface Transportation and Efficiency Act (ISTEA) and continued in the Transportation Equity Act for the 21st Century (TEA-21). The TEP provides

federal reimbursement for non-traditional projects that add value to the transportation system by relating to human and environmental aspects. Ten percent of federal Surface Transportation Program funds are set aside for these activities. TEA-21 provides significant resources for TEPs nationally: \$478 million in FFY98; \$554 million in FFY99; \$559 million in FFY 2000; \$570 million in FFY 2001; \$579.5 million in FFY 2002; \$590 million in FFY 2003.

Municipalities, state agencies (other than DOT), and Authorities (public and quasi-governmental agencies with the authority to enter into a binding contract with the State of New York, are eligible to apply for reimbursement of projects mitigating water pollution due to highway runoff, or other projects from a list of public access, aesthetic and environmental projects.

12. Energy-Efficient Public Water and Wastewater Technologies Program (see also Table VIII-1, Item 21)

This program is part of the statutory research, development, and demonstration activities of the New York State Energy Research and Development Authority (NYSERDA). The program offers to fund projects that study, develop, test, or demonstrate innovative and energy-efficient water, wastewater and non-point source technologies. Successful projects must show all of the following within their proposal:

Replicability - identify characteristics of other sites and their locations in New York State where the technology would be applicable;

Market Potential - provide the location, size, and value of the potential market for the product or process; describe the

competitive advantage of the product or process in the marketplace; etc.;

Economic Feasibility - provide the rationale used to determine the potential economic feasibility of the project compared to the status quo or well-established, commercially available alternatives; and

Energy, Environmental, and Economic Benefits - describe and estimate the potential net benefits of the proposed technology relative to the host community and the potential New York State market.

Multiple awards of up to \$250,000 per project are anticipated. Generally, \$1,000,000 is available on a yearly basis. A Program Opportunity Notice (PON 466-99) is available on the internet at <http://www.nyserdera.org>.

13. New York State Energy Research and Development Authority (NYSERDA) - Agricultural Environmental Innovation Program (see also Table VIII-1, Item 22)

NYSERDA offers cost-sharing for feasibility studies, research, development, or demonstration projects involving innovative and energy-efficient methods to improve farm profitability in such areas as:

- . Management/treatment of farm waste; wastewater and odor;
- . Energy conservation or productivity;
- . distributed energy generation;
- . Energy-efficient processing of improved composts and other value-added products; or

. Other innovative agricultural activities to enhance agriculture in New York State.

Projects are selected through competitive solicitations. Through NYSERDA's first solicitation multiple awards were made of up to \$250,000 for demonstration projects and up to \$50,000 each for feasibility studies. Opportunities for submitting proposals for currently open solicitations can be found on NYSERDA's website at: <http://www.nyserdera.org>.

C. Funding for Planning, Research, and Educational Programs

1. Environmental Protection Fund, Hudson River Estuary Program (see also Table VIII-1, Item 6)

The goal of the Hudson River Estuary Program is to develop a management program for the Hudson River including the river's tidal wetlands and tributaries.

2. Great Lakes Protection Fund (see also Table VIII-1, Items 18 and 19)

The regional Great Lakes Protection Fund is administered by a board of directors with members from each of the seven participating states. The New York State Great Lakes Protection Fund is administered by the New York State Department of Environmental Conservation. Non-profit organizations, environmental groups, universities and trade associations are eligible grant recipients. Eligible activities are those that promote regional action to enhance the health of the Great Lakes ecosystem. Table VIII-1 lists the contact phone number for this funding source.

D. Potential Future Funding Directions - Clean Water SRF

The New York Clean Water State Revolving Fund (CWSRF) is currently authorized to make loans only to municipalities. There is a need to broaden the eligibility of the CWSRF program to include financing for the following types of privately-owned facilities:

- ! residential on-site disposal systems (for replacement or rehabilitation of failing systems)
- ! removal of deteriorated underground oil tanks
- ! pollution prevention
- ! best management practices for farm owners (to fund nonpoint source water pollution projects such as manure disposal, animal feedlot runoff, etc.)
- ! stormwater facilities for new development
- ! small businesses (such as for underground tank removal or remediation for gas station owners, etc.)

To achieve this objective, the definition of an eligible borrower will need to be modified to include private borrowers for nonpoint source projects. Also, a stream-lined financing program would need to be developed to provide residential owners or small businesses with a quick and easy low-interest lending program, through local financial institutions to provide for water pollution projects.

E. Private Funding Sources

Charitable Foundations: Usually, private foundations fund only established institutions with federal nonprofit status. The major foundations or charitable trusts maintain web pages that list their interests, which may be by geographical area or topic, or both. Most have strictly observed funding cycles, with a board reviewing requests only once or twice a year. Smaller, local foundations could also help; increasingly, civic leaders citizens are establishing community funds to support activities of local civic benefit. Charitable foundations often favor projects that have significant social or educational value to the community.

A web search through The Foundation Center (www.fdncenter.org) should prove fruitful when you are seeking funding for projects that might be included in watershed restoration and protection. The larger foundations tend to fund big projects, with at least regional scope; national and international realms are more their focus. But you could try a local project that has widely applicable and replicable aspects. Check the foundations' web pages to see if your funding needs fit their donation plans before deluging them with applications.

Table VIII - 1

SOURCES OF FUNDING AVAILABLE TO PLAN AND/OR CONSTRUCT NONPOINT SOURCE PROJECTS

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| | |
|----------------------|---|
| Funding Source: | Clean Water State Revolving Fund (CWSRF) |
| Authorization: | Federal Clean Water Act (CWA), Sec. 603 |
| Agency & phone #: | New York State Environmental Facilities Corporation 1-800-882-9721 and New York State Department of Environmental Conservation, Division of Water, Director's Office 518-457-6674 |
| Eligible Recipients: | Municipalities defined as villages, towns, cities, counties, special improvement districts, Indian reservations and public benefit corporations or public authorities empowered to construct and operate a project. |
| Eligible Activities: | Funding of nonpoint source projects including landfill closures, landfill leachate treatment, site remediation, petroleum/chemical storage tank remediation, highway and aircraft deicing storage/treatment, stormwater management facilities, watershed restoration, watershed and wellhead protection, and estuary restoration. |
| Funding Level: | Federal fiscal year 1997, \$321.4 million available in resources for low-interest loans. Interest rates are generally one-half of the AAA rated bond market rate at time of loan (through 9/30/2000). Short term (up to 3 years) and long-term (up to 20 years) loans. |
| Application Process: | Two steps - first submit project listing form to get a project into the annual Intended Use Plan (IUP). Second, submit complete application at appropriate time in funding process. |

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| | |
|----------------------|---|
| Funding Source: | Drinking Water State Revolving Fund (DWSRF) |
| Authorization: | Safe Drinking Water Act (SDWA), 1996 Amendments |
| Agency & phone #: | New York State Department of Health, 1-800-458-1158 and New York State Environmental Facilities Corporation |
| Eligible Recipients: | Community Water Systems, both publicly and privately owned, and non-profit, non-community water systems. |
| Eligible Activities: | Funding of eligible water system projects. Includes funding of land purchase or conservation easements for source water protection for wellheads or watersheds. |

Funding Level: Federal fiscal year 1997, \$134,167,700 available in resources for low-interest long term (up to 20 years) and state assistance payments. Interest rates are two-thirds of the market rate at the time of the loan. Approximately \$88,469,600 available in federal fiscal year 1998.

Application Process: Two steps - first submit application to NYSDOH to get listed on annual Intended Use Plan (IUP). Second, submit complete application to NYSEFC at appropriate time in funding process.

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Funding Source: **Clean Water/Clean Air Bond Act of 1996**

Authorization: **New York State Legislature, Title 3, 56-0303 laws of 1996**

Agency & phone #: **For general information contact the following state agencies:**

- **Department of Environmental Conservation at 518-457-2390,**
- **Environmental Facilities Corporation at 1-800-882-9721,**
- **Department of Health at 1-800-458-1158,**
- **Office of Parks, Recreation and Historic Preservation at 518-486-2933,**
- **Department of Agriculture and Markets at 518-457-2771/9271**
- **Department of State 518-474-6000, and**
- **Energy Research and Development Authority at 518-862-1090.**

Eligible Recipients: Municipalities defined as a local public authority or public benefit corporation, a county, city, town, village, school district, supervisory district, district corporation, improvement district within a county, city, town or village, Indian nation or tribe recognized by the United States with a reservation wholly or partly within the boundaries of New York State, or any combination thereof. In the case of habitat restoration projects, the term municipality shall include the state.

Eligible Activities: Bond Act funds available for nonpoint source type projects include:

- 1) Water Quality Improvement Projects including wastewater treatment improvement projects, agricultural and nonagricultural nonpoint source abatement and control projects, aquatic habitat restoration projects, and pollution prevention projects,
- 2) Investigation or clean up of municipally owned contaminated properties, known as Brownfields,
- 3) funding to close certain solid waste landfills and develop municipal recycling projects,
- 4) Clean Air Projects,
- 5) Safe Drinking Water,

6) Open Space Prevention,

Funding Level: The total bond act authorization is \$1.75 billion. The grant percentage depends on the type of project.

Application Process: Submit cover letter, completed application form, and municipal resolution to appropriate state agency listed above.

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Funding Source: **Environmental Protection Fund (EPF) - Non-Ag**
Authorization: **Article 17-1401 of Environmental Conservation Law**
Agency & phone #: **New York State Department of Environmental Conservation,
Bureau of Watershed Management, (518) 457-0633.**

Eligible Recipients: Eligible grant applicants are villages, towns, cities, counties, or an entity designated to act on their behalf such as a Soil and Water Conservation District.

Eligible Activities: Funding of nonpoint source water pollution control and abatement projects and activities. ECL Sec. 17-1409.

Funding Level: Provides grants for up to 50 percent of eligible costs. Approximately \$0.2 million available in 1997.

Application Process: The next Request for Proposals will be announced through the Environmental Notice Bulletin, probably in 1998.

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Funding Source: **Environmental Protection Fund (EPF) -Ag Projects**
Authorization: **Agricultural Nonpoint Source Abatement and Control Grants Program of NYS created within the Soil & Water Conservation District Lae**
Agency & phone #: **New York State Department of Agriculture & Markets,
(518) 457-2771/9271**

Eligible Recipients: Eligible grant applicants are County Soil and Water Conservation Districts or a group of districts jointly.

Eligible Activities: Funding of initiatives that will reduce, abate, control, or prevent nonpoint source pollution from agricultural activities through watershed-based and individual farm level assessments and implementation of Best Management Practices (BMPs).

Funding Level: Provides grants for up to 75 percent of eligible costs (except up to 90 percent with landowner or operator contribution). Approximately \$3 million available in 1997.

Application Process: Request for Proposals for annual fiscal year funding will be announced through the Environmental Notice Bulletin and the State Register.

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Funding Source: Environmental Protection Fund - Hudson River Estuary Program

Authorization: **Section 11-0306 of the Environmental Conservation Law of New York**
Agency & phone #: **New York State Department of Environmental Conservation,
Region 3, (914) 256-3017**

Eligible Recipients: Consultants, educational, and research institutions.

Eligible Activities: Implementation of Hudson River Action Plan 20 Commitments as part of the management plan for the river.

Funding Level: Fiscal year 1997-1998 funding of \$6,000,000. Funding presently authorized through FY 1998-1999.

Application Process: Contracts selected through a competitive bid process.

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Funding Source: **1986 Environmental Quality Bond Act (Title 3) - Hazardous Waste Site Remediation**
Authorization: **Title 3 of Article 52 of Environmental Conservation Law**
Agency & phone #: **New York State Department of Environmental Conservation, Division of
Environmental Remediation (518) 457-5861**

Eligible Recipients: Municipalities defined as villages, towns, cities, counties, or any other public body created by or pursuant to State law, or an Indian tribe/tribal organization.

Eligible Activities: Funding of the proper closure of municipally-owned inactive hazardous waste landfills.

Funding Level: Project reimbursement is up to 75 % of eligible costs.

Application Process: Write a letter to Director, Division of Environmental Remediation, requesting a pre-application meeting.

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Funding Source: **Environmental Protection Fund (Title 5) - Solid Waste**
Authorization: **1986 Environmental Quality Bond Act & Title 5 of Article 54 of Environmental Conservation Law**
Agency & phone #: **New York State Department of Environmental Conservation, Division of Solid & Hazardous Materials (518) 457-7146**

Eligible Recipients: Municipalities defined as villages, towns, cities, counties, special improvement districts, Indian tribes, and public benefit corporations or public authorities, plus school districts.

Eligible Activities: Funding of the proper closure of municipally-owned solid waste landfills. Water quality protection provided by capping/closure of landfills, leachate collection and treatment, and landfill reclamation.

Funding Level: Project reimbursement is up to 90 % of eligible costs for communities under 3500 population and up to 50 % of eligible costs for communities 3500 population or greater. The maximum grant is \$2 million for costs incurred after April 1, 1993. Interest-free loans are available for the local cost share for communities under 3500 population. Annual authorization is approximately \$9,000,000 to \$13,500,000 in fiscal year 1997-1998. Additional funding is available from the Environmental Quality Bond Act of 1986 and Clean Water/Clean Air Bond Act of 1996.

Application Process: Contact Regional DEC office prior to requesting application packet.

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Funding Source: **Environmental Protection Fund - Open Space**
Authorization: **Article 54 of Environmental Conservation Law**
Agency & phone #: **New York State Department of Environmental Conservation, Division of Lands & Forests (Real Property) 518-457-7670 and New York State Office of Parks, Recreation and Historic Preservation (518) 474-0474**

Eligible Recipients: State of New York.

Eligible Activities: Preserve additions/scenic easements, water resources protection (aquifer recharge areas, watersheds), ecologically important areas, community tidal/freshwater wetlands or wildlife habitat, public lands access/buffer/consolidation, shoreline protection plus land acquisition and easements for Adirondack and Catskill Forest.

Funding Level: Approximately \$30,000,000 available in 1997.

Application Process: Sites are first listed on the State Open Space Conservation Plan. Then the site must be listed in the yearly EPF budget.

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Funding Source: **Environmental Protection Fund - Ag Open Space**

Authorization: **Article 25 - AAA of New York State Agriculture & Markets Law**

Agency & phone #: **New York State Department of Agriculture & Markets,
(518) 457-2715**

Eligible Recipients: County agricultural and farmland protection boards with approved plan or a village, town, or city which has in place a local farmland protection plan and has been endorsed for funding by the county Agricultural Farmland Protection Board.

Eligible Activities: Projects which implement approved local agricultural protection plans with preference given to protecting viable farmland, farmland under significant development pressure, and providing buffers for important public natural resources.

Funding Level: Approximately \$4 million available in each of .SFYs 1996-1999 for 50 % matching grants.

Application Process: Request for Proposals issued annually.

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Funding Source: **Environmental Protection Fund (Title 11) -
Local Waterfront Revitalization Program**

Authorization: **Article 54 of Environmental Conservation Law**

Agency & phone #: **New York State Department of State, (518) 474-6000**

Eligible Recipients: Municipalities defined as cities, towns and villages located along coastal areas of state and certain inland waterways.

Eligible Activities: Funding of planning and construction projects consisting of eligible waterfront revitalization, public access, natural resource protection including water quality improvement, and water dependent uses and activities.

Funding Level: Generally 50/50 match grant. For 1997, \$5,750,000 funding is available.

Application Process: Applications due end of calendar year.

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Funding Source: **Environmental Quality Incentives Program (EQIP)**

Authorization: **Federal Agricultural Improvement & Reform Act of 1996**

Agency & phone #: **Natural Resources Conservation Service (NRCS) of USDA
(315) 477-6536**

Eligible Recipients: Farmers

Eligible Activities: Certain conservation practices such as grassed waterways, filter strips, manure management facilities, etc.

Funding Level: \$10,000 per year up to \$50,000 over 5 years per farmer. Federal budget authorizes program funding of \$200 million per year through the year 2000.

Application Process: Requests for Proposals sent out annually. Up to 75% grants. Applicants develop and submit a conservation plan.

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Funding Source: **Conservation Reserve Program**

Authorization: **Federal Agricultural Improvement & Reform Act of 1996**

Agency & phone #: **Farm Service Agency office of USDA - Syracuse, NY (315) 477-6301**

Eligible Recipients: Farmers, land owners, and producers

Eligible Activities: Protection of highly erodible and environmentally sensitive lands (such as public wellhead protection areas) with filter strips, riparian buffers, windbreaks, grassed waterways, restoration of wetlands, enhancing wildlife habitat, etc.

Funding level: National funding exceeds \$15 million annually. No set funding limit per state.

Application Process: Active farmers, land owners, and producers should contact local Farm Service Agency office (47 offices in New York).

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Funding Source: **New York City Watershed Agricultural Program**

Authorization: **New York City Department of Environmental Protection (NYCDEP)**

Agency & phone #: **Administered through Watershed Agricultural Council (WAC)**
(914) 865-7790

Eligible Recipients: Farmers within New York City Watershed having gross income of \$10,000 or more.

Eligible Activities: Whole farm planning and implementation taking into account water quality protection and farming economic viability.

Funding Level: Approximately \$35 million through the year 2002 from NYCDEP. Other funding includes USDA as well as private foundation grants.

Application Process: Active farmers, land owners, and producers should contact the Watershed Agricultural Council.

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Funding Source: **Catskill Watershed Corporation Programs**

Authorization: **New York City Watershed Memorandum of Agreement**

Agency & phone #: **Catskill Watershed Corporation, (914) 586-1400**

Eligible Recipients: Residential property owners, businesses and municipalities in the New York City Watershed.

Eligible Activities: Funding of replacement and upgrades to failing on-site wastewater treatment systems, storage facilities for sand/salt/other roadway de-icing materials to protect water quality, streambank stabilization and fish habitat improvements, and design, permitting, construction, implementation and maintenance of stormwater facilities using Best Management Practices (BMPs).

Funding Level: Approximately \$69.175 million to be expended for the above eligible activities. In addition, the “Catskill Fund for the Future” provides low-interest loans and grants for economic development and water pollution controls, some of which are defined as nonpoint source water quality projects.

Application Process: Application process is being developed, contact Catskill Watershed Coporation.

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Funding Source: **Skaneateles Lake Watershed Agricultural Program**

Authorization: **City of Syracuse**

Agency & phone #: **Skaneateles Lake Watershed Agricultural Program
(315) 677-4630**

Eligible Recipients: Farmers in the Skaneateles Lake Watershed (portions of Cayuga, Cortland and Onondaga Counties).

Eligible Activities: Design and implementation of Whole Farm Plans

Funding Level: Approximately \$500,000 per year from City of Syracuse for operating expenses including development of whole farm plans plus additional funding (\$400,000 in 1997) from city, state and federal sources for implementation of whole farm plans.

Application Process: Farmer and staff develop plan designed to meet environmental and farm business objectives of each farm.

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Funding Source: **Clean Vessel Assistance Program**

Authorization: **Federal Clean Vessel Act of 1992**

Agency & phone #: **New York State Environmental Facilities Corporation
1-800-882-9721 and New York State Department of Environmental Conservation, Div.
of Fish & Wildlife (518) 457-5698**

Eligible Recipients: Private and public marinas.

Eligible Activities: Reimbursement of installation of sanitary pumpout and dump stations for portable toilets of recreational vessels.

Funding Level: Approximately \$525,000 remaining funds until depleted or through end of program on 9/30/99.

Application Process: Applications are continually received and processed

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Funding Source:**Great Lakes Protection Fund**

Authorization: **A regional fund created in 1989 by the Governors of the Great Lakes states.**

Agency & phone #: **Great Lakes Protection Fund, 35 East Wacker Drive,
Suite 1880, Chicago, IL 60601, phone (312) 201-0660**

Eligible Recipients: Non-profit organizations, environmental groups, universities, trade associations, individuals.

Eligible Activities: Eligible activities are those that identify, demonstrate, and/or promote regional action to enhance the health of the Great Lakes ecosystem health. The funds' primary goals are to prevent toxic pollution, to support effective cleanup approaches, to support natural resource stewardship, and to clarify health effects of toxic pollution on humans and wildlife.

Funding Level: \$97 million has been pledged by the Governors of the Great Lakes states to provide a permanent endowment. Earnings from the endowment are distributed in project grants.

Application Process: In response to annual call for proposals submit pre-proposal for review by staff and Board of Directors, and then if invited submit a full proposal.

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Funding Source:**New York State Great Lakes Protection Fund**

Authorization: **Chapter 148 of the Laws of 1990, Section 97EE of the State Finance Law.**

Agency & phone #: **New York State Department of Environmental Conservation, Division of Water, (518) 457-1158**

Eligible Recipients: Planning entities, educational institutions, consultants, industry, government, environmental groups.

Eligible Activities: Legislation states that the NYGLPF be used to support the following areas: researching the economic, environmental and human effects of contamination in the Great Lakes.

Funding Level: NYGLPF is funded by a portion of the interest earned on New York State's contribution to the Great Lakes Protection Fund. Grants are generally \$50,000 maximum per project.

Application Process: Respond to annual call for proposals. Submit pre-proposal for review by NYSDEC, then if invited, submit a full proposal.

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Funding Source: Transportation Enhancement Program (TEP)

Authorization: **Federal Transportation Equity Act for the 21st Century (TEA-21)**

Agency & phone #: **New York State Department of Transportation, (518) 457-2935**

Eligible Recipients: Municipalities, state agencies (other than DOT), Authorities (public and quasi-governmental agencies with the authority to enter into a binding contract with the State of New York).

Eligible Activities: The Federal Highway Administration's list of eligible categories includes: mitigation of water pollution due to highway runoff, provision of facilities for bicycle and pedestrian safety and education, scenic easements, historic sites or highways, landscaping, historic preservation, rehabilitation of historic transportation structures, establishment of transportation museums, preservation and conversion to trails of railway corridors, control and removal of outdoor advertising, archeological planning and research, environmental mitigation of vehicle-caused wildlife mortality and maintenance of habitat connectivity.

Funding Level: TEA-21 TEP projects are *reimbursed* up to 80%. This is not a grant program. A project team first demonstrates its ability to finance the project in a finance plan. Progress payments to the sponsor are allowed as per agreement. Administrative costs are not reimbursable. Certain research, planning and design costs are reimbursable. There is no maximum per project cost specified. Other federal and state rules and requirements also apply.

Application Process: A guidebook and applications are available on NYSDOT's Web Page: www.dot.state.ny.us.

Funding Source: **Energy-Efficient Public Water and Wastewater Technologies Program**

Authorization: **Statutory Research, Development, and Demonstration Funds**

Agency & phone #: **The New York State Energy Research and Development Authority
(NYSERDA)**

Questions about prospective projects should be directed to Larry Pakenas at (518) 862- 1090, ext. 3247, ljp@nyserda.org.

Eligible Recipients: Proposals may be submitted by New York State municipalities, including a county, city, town, village, district corporation, improvement district, public benefit corporation, public authority, or agency empowered to engage in such projects. Where appropriate, partnerships or teams are encouraged. All proposals must be cost-shared. Potential contractors must have the following attributes: financial resources to perform the proposed work; technical experience and facilities, or the ability to get them; good project management capability; and be qualified for an award under applicable laws and regulations.

Eligible Activities: Programs in water and wastewater have targeted specific areas or included a list of eligible categories, including projects that study, develop, test, or demonstrate innovative and energy-efficient technologies for municipal water and wastewater treatment or processing, water distribution or wastewater collection, sludge or biosolids management, watershed or reservoir management, air pollution control, and energy management. Wastewater processing includes alternative wastewater treatment systems for small communities or cluster developments. Highway runoff pollution control is also included as an eligible project category.

Generally, \$1,000,000 has been made available per year, with multiple awards of up to \$250,000 per project. Contracts may require sharing of project costs (minimum 25% for municipalities, 50% for all others) is required.

Application Process: Projects are selected through competitive solicitation. Opportunities for submitting proposals for currently open solicitations can be found on NYSERDA's website at: <http://www.nyserda.org>, or by contacting:

Jane Powers, PON No. 466-99
NYSERDA, 286 Washington Ave. Ext.
Albany, New York 12203-6399
(518) 862-1090, ext. 3342
Fax: (518) 862-1091
e-mail: jap@nyserda.org

Funding Source: Agricultural Environmental Innovation Program

Authorization: A public benefit corporation created in 1975 by the New York State Legislature

**Agency & phone #: The New York State Energy Research and Development Authority
(NYSERDA)**

Technical questions should be directed to (518) 862-1090: Tom Fiesinger, ext 3218, twf@nyserda.org. Contractual questions should be directed to Elsie Beagle, ext. 3261, emb@nyserda.org.

Eligible Recipients: Proposals may be submitted by any NYS agricultural facility.

Eligible Activities: All proposed projects must provide direct energy, environmental, or economic benefit to at least one NYS agricultural facility and enhance the commercialization or replication of the technology involved.

Funding Level: All projects must be cost-shared. Through its first solicitation, NYSERDA made multiple awards of up to \$250,000 each for demonstration projects and up to \$50,000 each for feasibility studies of innovative technologies or business plans for the development of innovative cooperative, collaborative, or partnership enterprises. Similar funding levels are anticipated for future solicitations.

Application Process: Projects are selected through competitive solicitations. The next solicitation is planned for the last quarter of 2000. Opportunities for submitting proposals for currently open solicitations can be found on NYSERDA's website at: <http://www.nyserda.org> or by contacting:

Jane Powers
NYSERDA, 286 Washington Avenue Extension
Albany, NY 12203-6399
(518) 862-1090, ext. 3342
Fax: (518) 862-1091
e-mail: jap@nyserda.org

APPENDIX A

APPENDIX A

BIBLIOGRAPHY

Note: This appendix lists, by chapter:

- C documents or references specifically quoted, cited or identified in the chapter; and
- C documents or references not specifically cited, but used to develop the content of the chapter.

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APPENDIX B

APPENDIX B

NONPOINT SOURCE MANAGEMENT PRACTICES

INTRODUCTION

The New York State Department of Environmental Conservation (DEC) maintains catalogues of effective management practices for addressing nonpoint source pollution problems. These 10 catalogues, each of which apply to a different source category, have been developed with considerable outside input and are revised regularly as new information becomes available. The catalogues are for the following source categories:

- ! Agriculture
- ! Urban/Stormwater Runoff
- ! Construction
- ! Resource Extraction
- ! Roadway and Right-Of-Way Maintenance
- ! Silviculture
- ! On-Site Wastewater Treatment Systems
- ! Hydrologic and Habitat Modification
- ! Leaks, Spills and Accidents
- ! Marina Operations (Interim Catalog)

This document explains how and why these catalogues were developed, describes their content, how to use them and the process for modifying them.

A. The Nonpoint Source Management Practice Task Force

Background

The federal Water Quality Act of 1987 placed increased attention on the development and implementation of nonpoint source (NPS) control programs. Section 319 of the Act required states to prepare an Assessment Report identifying waterbodies affected by nonpoint source pollution, determining categories of nonpoint sources that are significant problems in the state and listing state programs available for the control of nonpoint source pollution. States were also required to prepare a Management Program which explained how they planned

to deal with the source categories causing the major problems.

The DEC, by virtue of its statutory authority for the management of water resources and control of water pollution in the State, has assumed the lead responsibility in New York for control of nonpoint source pollution. One action taken by DEC to carry out its NPS responsibilities was the development of a Nonpoint Source Management Program in January, 1990. The Management Program outlined how DEC would identify, describe and evaluate management practices to be used to reduce nonpoint sources of pollution and made recommendations for additional control options needed to address nonpoint sources.

Candidate Management Practices

The Clean Water Act recognizes the fundamental importance of the selection and use of best management practices (BMPs) to combat nonpoint sources of pollution. BMP's prevent or reduce the availability, release or transport of substances which adversely affect surface and groundwaters. They act generally to diminish the generation of pollutants from specific sources. This is in contrast to the control of point sources where the pollutants are generated, collected and then treated to prevent impairment of receiving waters.

The management practices provide an effective means of reducing or preventing the impact of nonpoint pollutants from a specific source category. Practices can be implemented through voluntary action, financial incentives or regulatory requirements. While a management practice can have standards associated with its installation, operation or maintenance, it does not impose effluent limitations for specific substances. Instead, it provides an effective means of reducing or preventing the impact of nonpoint pollutants from a specific source category. Management practices can have broad generic application or be highly specific to certain geographic, climatologic, hydrologic and chemical factors. Depending on the life span of the management practice, they may be temporary or permanent in their ability to control pollutants. With some exceptions, the practices

listed in the Management Practice Catalogues are to some degree in use in New York. In New York, a list of candidate management practices was developed in 1989 by the Nonpoint Source Working Group, a task force under DEC leadership, composed of federal and state agencies and groups representing a broad range of interests. The Working Group recognized that there are numerous practices available with potential to control nonpoint source pollution. However, the management practices were not systematically inventoried or evaluated for effectiveness in preventing or remediating nonpoint water quality problems. In addition, they were not catalogued in a form that facilitated their widespread use.

A Nonpoint Source Management Practice Task Force was created in early 1990. The Task Force, composed of a broad range of interests, first met in February of that year. At that meeting, there was a discussion of the process to be followed for establishing the list of management practices and each agency was given an opportunity to identify source category subcommittees on which they wanted to participate.

B. The Management Practices Sub-committees

For 7 of the 10 source categories, subcommittees were formed under DEC leadership to review the effectiveness of the candidate management practices and to consider additional management practices. Subcommittees were not formed for the Leaks, Spills and Accidents and Resource Extraction Catalogues due to the existence in those areas of well defined State regulatory programs. A subcommittee was also not formed for the Marina Operations Catalogue, however the Catalogue was developed with extensive input from the Ad Hoc Marina Advisory Committee.

Members of the subcommittees represented all interests at the university, research, federal, state and private sector levels. All members served as reviewers of the management practice summary sheets, which were prepared by DEC staff. A few Subcommittee members, with recognized, statewide technical leadership for a management practice, were asked to author some of the management practice summary sheets.

The individual management practice evaluations, known as Management Practices Summary Sheets, collectively form the basis of the Management Practices Catalogues. The Catalogues contain the list of management practices eligible for financial assistance under Section 319 program implementation funds. The list is also used to establish

eligibility for the State Environmental Protection Fund dollars for nonpoint source pollution control.

The Marina Operations Catalogue, while summarizing management practices, does not contain individual summary sheets. This is because it was originally developed as a guidance/educational document and was not originally intended to be a Management Practice Catalogue. The Leaks, Spills and Accidents Catalogue also does not contain individual management practices summary sheets. Instead, it summarizes existing publications and regulatory requirements.

C. Nonpoint Source (NPS) Pollution in New York State

The NPS Assessment

In early 1989, a process was established to update DEC's list of segments having water quality problems. Among the goals of this process was to use additional data sources to identify possible nonpoint source impacts, to provide an opportunity to everyone with a knowledge of water quality problems to present this information and to expand the list to include segments that are threatened by nonpoint source pollution.

DEC, working in conjunction with the New York State Soil and Water Conservation Committee, initiated a two-phased approach to identify problem waterbodies. The first phase had each county Soil and Water Conservation District conduct a survey of nonpoint source pollution in their county. The second phase consisted of meetings of representatives from the key agencies within each county to discuss the results of the NPS survey.

Recognition of a water quality problem was the starting point for discussion. The existence of a land use which may be associated with nonpoint source pollution was not sufficient to be considered a problem. A classified use of a surface waterbody had to be precluded, impaired, stressed or threatened to be regarded as a problem.

The Priority Waterbodies List

The Bureau of Water Quality Management (now the Bureau of Watershed Management) merged the information collected during the above update process with the segment information contained in the Division of Water's 1988 Priority Water Problem (PWP) list and compiled it in a series of databases. In December of 1991,

the Division of Water's Bureau of Monitoring and Assessment (now the Bureau of Watershed Assessment and Research), in conjunction with the Bureau of Water Quality Management, published the PWP list. In December of 1993, the PWP database was again revised based on a year-long collection of segment updates and a local verification process. The Department also issued a 1996 Priority Waterbodies List (PWL) that updates the information contained in the 1993 PWP.

According to the 1996 PWL, 1,426 waterbody segments are being impacted in some way by pollution. A total of 513 segments are classified as "precluded" meaning that water quality and/or habitat degradation precludes, eliminates or otherwise does not support a classified use. A total of 268 segments are classified as "impaired" meaning that water quality and/or habitat characteristics frequently impair a classified use. A total of 402 segments are classified as "stressed" meaning that reduced water quality is occasionally evident and designated uses are occasionally restricted. Finally, 243 segments are classified as "threatened" meaning that water quality presently supports the designated use but that land use patterns may result in future problems.

Nonpoint sources of pollution are the primary source of water body impairment for 1,328 of the 1,426 segments. Acid rain was the primary source affecting the most segments (397) followed by agriculture (197), urban runoff (188) and on-site systems (145). All are nonpoint sources. It should be noted that, with respect to acid rain, while the number of segments is large in number, most of them are relatively small ponds and represent a relatively small total waterbody size.

When arrayed by total waterbody size affected, unknown sources, agriculture, urban runoff and on-site systems are the most significant primary sources of pollution. All are nonpoint sources. When both primary and secondary sources of pollution are considered, agriculture, urban runoff and failing on-site septic systems are the most significant sources of pollution of waterbody segments on the PWL. Again, all are nonpoint sources.

D. Management Practice Summary Sheets

The following defines the terms used in the Management Practice Summary Sheets:

- i. **Title:** is the management practice name found in the block at the top of the summary sheet.

- ii. **Definition:** is a brief statement that defines the management practice to be summarized.
- iii. **Water Quality Purpose:** states why the practice is used for NPS pollution control.
- iv. **Source Category:** describes the source of the problem that would be addressed by the management practice.
- v. **Pollutants Controlled:** identifies the NPS pollutants controlled by the management practice.
- vi. **Where Used:** identifies the land uses or situations where the management practice can be applied.
- vii. **Practice Description:** describes the management practice in terms of its vegetative, structural and/or operational components.
- viii. **Practice Effectiveness:** summarizes the documented practice effectiveness for controlling the NPS pollutants identified. This information is based on written national water quality research findings, university and agency research, water quality monitoring and water quality modeling. Practice effectiveness can be quite variable, due to watershed location, specific site conditions (soils, drainage, slope, vegetative cover, rainfall, runoff, etc.), presence or absence of land use management techniques and the contribution of additional management practices used in a best management system. This section presents practice effectiveness as a range of quantitative values, or where that information is not available, in qualitative terms. The information provided should be used as guidance when estimating the potential effectiveness of the management practice within a specific watershed planning situation.
- ix. **Impact on Surface Water:** defines what impacts, if any, the practice will have on surface water quality. Impacts are defined as None (neutral), Beneficial (positive), Slight (negative), Moderate (negative), and Severe (negative).
- x. **Impact on Groundwater:** defines what impacts, if any, the practice will have on groundwater quality. Impacts are defined as None (neutral), Beneficial (positive), Slight (negative), Moderate (negative), and Severe (negative).

- xi. **Advantages:** are selling points for the management practice; they address cost-effectiveness, additional practice benefits and other tangible and intangible benefits.
- xii. **Disadvantages:** are projected un-favorable conditions associated with the installation of the management practice; they address economics, operations and maintenance, and expected problems associated with the management practice.
- xiii. **Practice Lifespan:** described in quantitative or qualitative terms.
- xiv. **Cost:** described in unit costs, system costs, or in qualitative terms. These are estimated average statewide costs.
- xv. **Operation and Maint.:** the successful control of NPS pollutants depends upon conducting the required O&M practices. In each case, where a management practice requires a specific course of O&M, it is detailed, or referenced in the management practice summary sheet.
- xvi. **Miscellaneous Comments:** this section deals with a variety of topics, including regulatory requirements (of NYSDEC, U.S. Army Corps of Engineers, and other agencies) affecting installation of the management practice; additional management practices that are needed; availability of technical assistance, or equipment, from agencies that specialize in the installation of the management practice; and other pertinent miscellaneous information.
- xvii. **References:** those references used in the evaluation of the management practice are cited in this section. Many publications are nationally recognized sources of management practice evaluations and information. Every effort was made to utilize existing information from university research and agency information from New York State. When that information was not available, and other states had appropriate information, it was cited. The management practice that was evaluated in the summary sheet is cited using a bold footnote entitled: **Management Practice Design Standard and Specification**. In some cases, several agency or organizational standards and specifications were cited in this section.

E. How To Use Management Practice Catalogues

The list of management practices for each of the ten source categories is located at the end of this appendix. Management Practice Catalogues should be used during the watershed planning process to help guide selection of appropriate BMP's for the control of nonpoint source pollutants. A management practice or series of practices is considered "best" only in the context of solving a particular nonpoint source problem in a specific watershed. For example, infiltration basins and pits might be the best management practice in one watershed while an extended detention basin may be a more appropriate treatment in another watershed.

These Catalogues are not design manuals and should not be used to replace practice standards and specifications. The Catalogues are one of the technical tools professional watershed planners should use to evaluate management practices needed in a specific watershed planning effort. Using professional judgement and the Catalogues, watershed planners can select the BMP or system of management practices for the specific watershed situation at hand.

Where appropriate, management practices have been categorized as operational, vegetative or structural, depending upon their purpose, function and design.

Operational practices: are practices that involve changes in management, usually resulting in a change in day-to-day decision-making. For example, *Composting: Yard and Home Wastes, Proper Use and Disposal of Household Hazardous Substances, Street and Pavement Sweeping and Pet Waste Management and Control* are examples of operational management practices.

Vegetative practices: increase the amount of herbaceous and/or woody vegetation in a critically eroding area. For example, *Permanent Vegetative Cover, Urban Forestry, Streambank and Shoreline Protection and Filter Strips* are examples of vegetative management practices.

Structural practices: are usually practices that require engineering design and often control runoff, the primary transporter of most nonpoint source pollutants. *Infiltration Basins and Pits, Water Quality Inlets (Oil/Grit Separators), Roof Runoff Systems and Extended Detention Basins* are examples of structural management practices.

The following is a suggested procedure for using the Catalogues.

1. As a starting point, refer to the list at the end of this Appendix or in each Catalogue for a quick review of the management practices.
2. Turn to the individual management practice summary sheets in each Catalogue for the practices that control the pollutants you have identified.
 - a. Determine if the practice is appropriate for the location by checking the “*Where Used*” section of each summary sheet.
 - b. Refer to the “*Practice Description*” section to determine if this treatment is appropriate to the identified nonpoint source problem.
 - c. Read the “*Practice Effectiveness*” section to determine if this management practice will provide satisfactory expectations of pollutant prevention or reduction of pollutant availability, release or transport.

F. Updating the Management Practices Catalogues

New York Nonpoint Source Coordinating Committee (NYNPSCC)

The New York Nonpoint Source Coordinating Committee (NYNPSCC) is responsible for updating the Management Practice Catalogues. NYNPSCC meets quarterly and at one meeting each year considers updates to Management Practices Catalogues.

NYNPSCC, which is composed of member organizations and agencies, including DEC as lead agency, is responsible for:

- * Reviewing proposed additions, deletions, and revisions to the Management Practices Catalogue.
- * Identifying additional categories of nonpoint source pollution that have not been adequately addressed in the list of management practices.

- * Suggesting research or demonstration projects on unproven or new management practices that appear to have potential for protecting water quality.
- * Periodically reviewing the State list of management practices to verify the status of each practice. This review should be based on recently published literature and new or previously unknown research or demonstration projects.

Conditions For Updating The Catalogue

Any agency, organization or group may propose an addition, deletion or revision to the Catalogue. The NYNPSCC will recognize four conditions for updating the Catalogue:

- * Creation of a new management practice by an agency, university or recognized group.
- * Modification of an existing management practice, either in its design requirements or operation and maintenance, requiring a modification of the practice definition, water quality purpose, practice description, practice effectiveness, impacts on surface or groundwater, advantages/disadvantages, practice lifespan or cost.
- * Emerging research data which indicates a change in management practice effectiveness and/or pollutants controlled, requiring modifications of water quality purpose, practice description, practice effectiveness, practice impacts on surface or groundwater, advantages/disadvantages, practice lifespan or cost.
- * Revisions in state or national water quality policy that necessitate a higher level of waterbody protection, resulting in higher management practice performance standards. Policy revisions would result in additions or deletions of management practices, modifications of practice description, design requirements, operation and maintenance requirements, practice effectiveness, impacts on surface and groundwater, cost and miscellaneous comments.

How To Propose An Update Of The Catalogue

1. By December 31 of each year, proposed updates should be submitted to the attention of the New York Nonpoint Source Coordinating Committee, NYSDEC, Bureau of Watershed Management, 50 Wolf Road, Room 398, Albany, New York 12233-3508.
2. The Coordinating Committee will review the proposed updates at their next regularly scheduled meeting. A sub-committee of the Coordinating Committee may be formed to study the update and request input from groups not represented on the Coordinating Committee.
3. The subcommittee of the Coordinating Committee will review the proposed updates and determine if they meet the conditions for updating the Catalogue. In consultation with other interested groups, it will make a recommendation to the members of the New York Nonpoint Source Coordinating Committee by May 1 of the following year.
4. When the proposed update is approved, staff of the NYNPSCC will make the appropriate changes and distribute copies of the addition to all Coordinating Committee members and holders of the Management Practices Catalogue Binder.

G. Catalogue and Management Practices List

Below is a list of the ten Management Practices Catalogues along with the date of its last revision and a list of the practices included in each of the Catalogues.

Catalogue and Management Practices List

1. Agriculture

- Access Road Improvement
- Alternative Water Supply
- Barnyard Runoff Management System
- Conservation Tillage:
 - Minimum-Till
 - No-Till
- Constructed Wetlands
- Contour Farming
- Cover and Green Manure Crop
- Critical Area Protection:
 - Permanent Vegetative Cover

- Streambank and Shoreline Protection
- Crop Rotation
- Diversions
- Fencing
- Filter Strips
- Grassed Waterway
- Integrated Pest Management (IPM):
 - Biological Controls
 - Cultural Practices
 - Resistant Crop Varieties
 - Scouting
 - Trap Crops
- Irrigation Water Management:
 - Scheduling
 - Trickle Irrigation
- Nutrient Management:
 - Anaerobic Digestion
 - Composting
 - Fertilizer Management
 - Land Application of Manure
 - Manure Nutrient Analysis
 - Manure Storage System
 - Soil Testing
- Nutrient/Sediment Control System
- Pathogen Management
- Pasture Management:
 - Short-Duration Grazing Systems
- Pesticide Management:
 - Computerized Precision Application
 - Evaluation of Site- Specific Leaching and Surface Loss Potential
 - Pesticide Applicator Education and Training
 - Pesticide Handling Facility
 - Proper Equipment Calibration
 - Proper Timing of Pesticide Application
 - Read and Follow the Label Directions
- Petroleum Product Storage Spill Prevention and Containment
- Riparian Forest Buffer
- Silage Leachate Control
- Stripcropping
- Terraces

2. Urban/Stormwater Runoff

Catch Basins

Collection and Treatment of Stormwater

Concrete Grid and Modular Pavement

Constructed Wetlands

Critical Area Protection:

 Mulching

 Permanent Vegetative Cover

 Streambank and Shoreline Protection

Diversions

Dry Detention Basin

Extended Detention Basin

Filter Strips

Fluidic Flow Regulators

Grassed Swales

Grassed Waterways

Implementation of Land Use Planning

Infiltration Basins and Pits

Infiltration Trench

Integrated Pest Management (IPM)

Irrigation Water Management:

 Scheduling

Nutrient Management:

 Composting Yard and Home Wastes

 Fertilizer Management

 Soil Testing

Pathogen and Nutrient Control:

 Nuisance Bird Waste Mgmt. and Control

 Pet Waste Management. and Control

 Waterfowl Waste Mgmt. and Control

Peat/Sand Filter System

Pesticide Management:

 Proper Equipment Calibration

 Proper Timing of Pesticides Application

 Read and Follow the Label Directions

Porous Pavement

Proper Use and Disposal of Household Hazardous
Substances

Public Education

Reduction of Traffic-Generated Pollutants

Retention Pond (Wet Pond)

Riparian Forest Buffer

Roof Runoff System

Stormwater Conveyance Systems Storage

Stream Corridor Protection Program

 (Greenbelting)

Street and Pavement Sweeping

Urban Forestry (Trees and Shrubs)

Water Quality Inlet (Oil/Grit Separators)

3. Construction

Administrative Control Mechanisms

Check Dam

Construction Road Stabilization

Construction Waste Management

Critical Area Protection:

 Mulching

 Temporary Vegetative Cover

 Permanent Vegetative Cover

 Structural Slope Protection

 Streambank & Shoreline Protection

Diversion

Dust Control

Filter Strip

Grade Stabilization Structure

Grassed Waterway

Hazardous Material Management

Level Spreader

Lined Waterway or Outlet

Paved Flume

Pipe Slope Drain

Planned Land Grading

Silt Fence

Stabilized Construction Entrance

Staged Clearing and Grading

Storm Drain Inlet Protection

Straw Bale Dike

Subsurface Drain

Sump Pit

Temporary Dike/Swale

Temporary Sediment Basin
Temporary Sediment Trap
Temporary Storm Drain Diversion
Temporary Watercourse Crossing
Topsoiling
Turbidity Curtain
Waterbar

4. Resource Extraction

Casing and Cementing of Wells
Dikes Around Production Tanks
Drilling Pit Closure
Lined Drilling Pits
Orientation and Beveling of Drilling Pits
Pressure Limitations on Injection Wells
Recycling of Process Waters
Use of Blowout Preventers
Use of Injection Wells for Produced Brine Disposal
Well Plugging
Wellsite Siting Restrictions

5. Roadway and Right-Of-Way Maintenance

Abrasive and Deicing Material
Application and Clean-up
Deicing Material Mixing and Handling
Salt Storage System: Drainage
Salt Storage System: Foundation/Floor
Salt Storage System: Shelter/Cover
Salt Storage System: Site Location Selection
Herbicide Management
 Read and Follow Label Directions
 Proper Equipment Calibration
 Proper Timing of Herbicide Application
 Selective Aerial Application
 Selective Herbicide Application in Sensitive Areas
Proper Mechanical Control of Vegetation
Proper Road Ditch Maintenance
Catch Basin Cleaning
Control of Bridge Paint Residuals

Dust Control
Street Sweeping/Road Clean-up
Restoration of Disturbed Areas Within the
 R-O-W
Maintenance of Vegetative Cover
Filter Strip
Proper Species Selection for Vegetative Cover

6. Silviculture

Planned Harvest Operations
Riparian Buffer Protection
Planned Watercourse Crossings
Planned Access Routes
Road Water Management
Sediment Barriers
Vegetation Establishment
Hazardous Material Management

7. On-Site Wastewater Treatment Systems (OWTS)

Soil and Site Analysis
Percolation Tests
Deep Test Holes
Septic Tanks and Standard Absorption Fields
Aerobic Systems and Standard Absorption Fields
Septage Disposal Management
Graveless Absorption Systems
Deep Absorption Trenches
Shallow Absorption Trenches
Cut and Fill Systems
Absorption Bed Systems
Seepage Pits
Raised Systems
Elevated Sand Mounds
Intermittent Sand Filters
Operation and Maintenance for Septic Tanks
 and Standard Absorption Systems
Inspection and Pumping
Administrative Control Measures
High Efficiency Plumbing Fixtures

Graywater Separation
(also for Nitrate Removal)
Advocating Proper System
Design and Construction
Proper Use and Disposal of Household Hazardous
Substances
Anaerobic Upflow Filters (AUF)
RUCK System
Recirculating Sand Filters
Non-Waterborne Systems
Constructed Wetlands
Holding Tanks for All Wastewater
from Existing Systems
Rotating Biological Contactors (RBCs)
Trickling Filter-type Systems

8. Hydrologic and Habitat Modification

Modifying, Operating and Maintaining Flood
Control Structures
Modifying, Operating and Maintaining Reservoirs
Proper Dam Breaching
Streambank and Shoreline Protection (General)
Biotechnical Methods
Coastal Shore Protection
Controlling Instream Sediment
Geotextiles
Selective Clearing and Snagging
Stream Grade Stabilization Structures
Structural Slope Protection
Constructed Wetlands
Improving Instream and Riparian Habitat
Restoring Freshwater Wetlands
Restoring Tidal Wetlands
Riparian Forest Buffer
Stream Corridor Protection Program
(Greenbelting)

9. Leaks, Spills and Accidents

Because of the existence of a well-defined State regulatory
program, a separate list of management practices for leaks,

spills and accidents was not developed. This Catalogue
instead summarizes existing publications and State and
Federal regulatory requirements.

10. Marina Operations

A previously published document titled "Marina
Operations for Existing Facilities" was distributed as an
interim management practices catalogue in April of 1997.
While this document does not contain summary sheets
like most of the other catalogues, there are descriptions of
how to properly address various aspects of marina
operations. The sections describing issues addressed are
listed below.

Stormwater Controls
Wash Water Controls
Hull Maintenance and Repairs
Fueling
Sewage
Solid Waste
Liquid Wastes
Fish Cleaning
Boat Operation
Shoreline Stabilization
Water Circulation
Hazardous Materials Handling
Public Education

APPENDIX C

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PUBLIC PARTICIPATION PROCESS

The following Public Involvement workplan documents the goals, audiences and messages that will guide public involvement in developing and reviewing the Nonpoint Source Management Program update. It also describes public involvement activities conducted before and during the development of the Update.

Program Goal: Produce a Nonpoint Source (NPS) Management Program document that describes program direction for 1997-2002 so that cooperating agencies and groups are informed about existing programs, understand their roles in implementing them, and take action to improve water quality.

Public Involvement Goal: Provide opportunities for informed input into the program update so that stakeholders can contribute information that will increase the usability and success of the program. Information will be sought throughout the development of the document.

Publics to be Consulted:

State, federal and regional agencies through the Nonpoint Source Coordinating Committee (NPSCC)

County Water Quality Coordinating Committees (CWQCCs)

Key Representatives of NPS categories (e.g. forestry, agriculture, home builders, etc.)

Information to be Exchanged

Messages to Audiences

To update and improve the **Management Program**, DEC and the NPSCC would like your ideas on:

- NPS program direction
- Existing or potential partnerships
- Need for additions, deletions or changes to proposed implementation steps for source categories.

Information from Audiences

Ideas on NPS program direction, who should be listed as partners, feedback implementation steps as described above.

Additional comments on the accuracy and completeness of the Management Program.

Public Involvement Activities that will Accomplish Public Involvement Goals and Objectives

July 1996 - Conduct breakout sessions at statewide meeting of **County Water Quality Coordinating Committees** in Syracuse to define future needs for each source category.

September 1996 - Present and discuss plan for Management Program Update at meeting of **DEC**

Regional and Central Office NPS staff in Albany.

October 1996 - Present proposed structure of Management Program Update to **NPSCC** and discuss necessary changes to strategies, management practices for six major source categories.

November 1996 - Present highlights of Management Program Update to **Water Management Advisory Committee**. Seek their input on the proposed structure of the Management Program Update, additional management practices to be included, and the relative significance of the various source categories as contributors to water quality problems.

January 1997 - Present proposed Table of Contents for Management Program Update to **NPSCC**. Seek input on completeness and structure; seek participants to write or review sections of the Update.

April 1997 - Present preliminary draft of the Management Program Update to **NPSCC**, seek input on usability, completeness. Seek names of key representatives (individuals or organizations) of source categories to serve as additional reviewers.

September 1997 - Present review draft of the Management Program Update to **NPSCC**, seek consensus on completeness.

October 1997 - Distribute draft Management Plan Update to all **NPSCC** and **WMAC** members, **DEC** Division and Bureau Directors, and Regional Water Engineers, **County Water Quality Coordinating Committees**, **SWCDs** and **CCE** (via **WQCC** contacts), three groups within **Cornell University**, and others by request, for review: about 350 copies in all.

November 1997 - Publish notice in *Environmental Notice Bulletin* with a review and comment period closing date of December 14, 1997.

January 1998 - Prepare *Comment Response Summary* document. Revise Urban Runoff Section to reflect New York's preparation to meet EPA's **Phase II Storm Water Regulations** released in draft form January 9, 1998.

February 1998 - Meet with EPA to discuss content of NPS Management Program Update in regard to meeting EPA's Nine Key Elements and attaining **Enhanced Benefits State** status.

April 1998 - Present status of NPS Management Program Update to the **NPSCC**. Present, and discuss with the **NPSCC**, plans to develop a Priority Aquifer List (PAL) to list groundwater resources and problems .

May-July 1998 - Revise Chapter III *Identifying and Evaluating Nonpoint Source Problems* to add a PAL development description and to incorporate environmental indicators (a part of EPA's Nine Key Element guidance) into both the Surface Water and Groundwater programs of DEC.

Update existing program tables with 1997-98 status information.

Finalize the *Summary for the NPS MP Update* and the *Foreword to EPA*.

August 1998 - Final editing by Nonpoint Source Section.

Review by DEC Bureau of Watershed Management and Division of Water Director.

April 1999 - Prepare a summary and appendices documenting how the Nonpoint Source Management Practice Update addresses USEPA's 9 key elements.

May 1999 - Submit to EPA Region II and EPA Headquarters for review and consideration for **Enhanced Benefits State** status.

November 1999 - EPA completes review of the management plan update and requests that New York enhance Key Element number 1 by providing more specific and measurable short-term and long-term goals.

April 2000 - More specific Short-Term and Long-Term goals to protect surface and ground water as part of the NPS Management Program Update were submitted to EPA. The goals were incorporated in the Nine-Key Elements document as Key Element number 1. The goals were developed by DEC-DOW and Natural Resources staff with help from the NPSCC work groups and staff from other agencies.

May 2000 - Discussed short-term and long-term goals and objectives with EPA Region II and EPA Headquarters. Partner Agency representatives helped refine goals and address EPA comments.

June 2000 - New York State submits revised goals.

August 11, 2000 - USEPA approves the updated Nonpoint Source Management Plan and recognizes New York's program as having "a proven track record of effective program implementation" which distinguishes it as an Enhanced Benefit State.

Implementation of the NPS MP Update

April 1999

- Form Working Groups for priority source categories to refine policy, strengthen partnerships and identify key action items as part of implementing the NPS MP Update.
- Reconvene Information and Education Subcommittee to mobilize NPSCC partners and prepare to coordinate Working Group I & E outputs.
- Continue development of a Community-Based Environmental Management (CEM) program, under the subcommittee of the same name, for non-agricultural NPS management in municipalities and watersheds.

Evaluation and Follow-Up

Some of the above activities included evaluation forms to assess their effectiveness at achieving public involvement objectives. Further evaluation of the effectiveness of public involvement in the development of the *NPS MP Update* may be determined by tracking responses to the *Update*

APPENDIX D

APPENDIX D

Strategies Submitted to EPA/NOAA for Full Approval of the New York Coastal Nonpoint Pollution Control Program

In July of 1995, NYS DOS and NYSDEC jointly submitted the New York Coastal Nonpoint Pollution Control Program to EPA and NOAA for their approval. On November 18, 1997, a decision for approval of the program was made by EPA and NOAA subject to several conditions to be met over the following three years. Administrative guidance of March, 1995, allowed up to five years after conditional approval to meet conditions, with an evaluation of progress after three years. The following four strategies were developed cooperatively by DEC and DOS for submission to NOAA and EPA.

Coastal Nonpoint Pollution Control Program (6217) Monitoring Strategy as contained within the New York State Water Quality Monitoring Strategy

BACKGROUND

Goal (from EPA/NOAA condition for full approval): Develop and implement a plan to assess the success, over time, of the Management Measures in reducing NPS loading and improving water quality. The Coastal Nonpoint Pollution Control Program (CNPCP) submitted in 1995 proposed a three part approach: monitoring to determine implementation of pollution control practices (i.e. Management Measures); baseline water quality monitoring; and special project water quality monitoring to address gaps in knowledge.

INTRODUCTION

New York's strategy for coastal nonpoint pollution control monitoring is to include it in our statewide Water Quality Monitoring Strategy. This statewide comprehensive monitoring program was published in October 1998 and submitted to EPA pursuant to Section 106 of the Federal Clean Water Act Amendments of 1977 (PL 95-217). New York will monitor coastal waters as it proceeds through 17 drainage basins on a five year rotating schedule. Nonpoint source monitoring is one of the component activities within the Comprehensive Assessment Strategy discussed below.

WATER QUALITY MONITORING GOALS

Because of a variety of new water quality initiatives (Index of Watershed Indicators, Unified Watershed Assessments, NPS Management Program Update, Coastal Nonpoint Pollution Control Program (CNPCP), etc.), high quality monitoring data are even more critical to the success of water resources management efforts. At the same time, however, states must find ways to stretch limited monitoring resources to provide both basic coverage of all waters, as well as appropriately intensify efforts in "priority" watersheds.

To address these needs, the NYSDEC Division of Water (DOW) has initiated a monitoring and management strategy for water resources and water quality that integrates numerous division activities into a coordinated and comprehensive program. The goals of this initiative are to provide:

- ! a complete and thorough evaluation of monitoring data,
- ! a comprehensive assessment of water quality throughout the state, and
- ! a coordinated approach to improving and protecting water resources.

This strategy requires each unit in the Division to look beyond individual program objectives and consider what contributions the program can make to the comprehensive monitoring and management efforts of the entire Division.

ESTABLISHING COMMON OBJECTIVES

Such a comprehensive plan requires a unifying framework or approach—a brief statement outlining how the various Division component programs fit together and contribute to the achievement of the DOW’s larger vision of protected and enhanced water resources. Such a framework, which represents how water quality problems and issues are addressed in the division, is represented by a cycle of water quality monitoring and management.

The Division uses this cycle of water quality monitoring and management in an iterative cycle where efforts are focused on the distinct stages common to most water quality issues or problems. Specifically, these stages include:

- 1) the **assessment of water quality** and impact on resources (i.e., *Is there a water quality problem/use impairment or threat to a water resource?*);
- 2) the **determination of causes/pollutants** (i.e., *Why is there a problem/use impairment or threat?*);
- 3) the **identification of sources** contributing to the problem (i.e., *What is causing the problem/use impairment or threat?*), or ;
- 4) the **development and implementation of strategies** to address the causes/sources and correct a verified problem using discharge permit limits or conditions; compliance orders and schedules; and technical or financial assistance (i.e., *How is the problem/use impairment to be fixed or threat to be avoided?*).
- 5) the **re-assessment of water quality** and impact on resources (i.e., *Was the strategy to address the problem/use impairment or threat effective?*)

Every core program in the Division can define its primary goals and objectives in terms of its contributions to the activities outlined in this cycle of water quality monitoring and management. By defining the goals of various monitoring and management efforts in terms of this common framework (rather than by individual program functions), relationships between the various separate component programs and the possible integration and coordination of these programs becomes clearer.

The three part approach of the CNPCP will be made a part of one or more stages of the cycle. Monitoring, or more accurately tracking, of the implementation of nonpoint source pollution control practices (i.e. Management Measures) is part of the strategy development and implementation in step 4; baseline water quality monitoring conducted under the Division's Rotating Intensive Basin Studies (RIBS) program is part of assessment and re-assessment in steps 1 and 5; and special project water quality monitoring may be part of a source track down project, or a more intensive, site-specific assessment of a nonpoint source implementation project to determine what is causing the problem or what pollutant loadings or loading reductions might be, steps 2 and 3.

NONPOINT SOURCE IMPLEMENTATION TRACKING

BOND ACT / ENVIRONMENTAL PROTECTION FUND TRACKING SYSTEM

A database was set up to track projects funded by the New York Clean Water / Clean Air Bond Act and Environmental Protection Fund (EPF). Projects can be reported by political subdivisions, zip codes, DEC region, and by the five project types established under the Bond Act legislation.

Project descriptions are also maintained. Nonpoint source projects funded previous to the Bond Act under Section 319 and 604(b) of the Clean Water Act were also tracked and can be located geographically by computer. Annual reports contain project descriptions for these projects funded or installed in 1994-1997.

COUNTY LEVEL TRACKING

A portion of New York's Section 319 money will be used to fund local implementation project summary reports. This will provide a tracking mechanism based on information from the statewide network of county Water Quality Coordinating Committees.

NATURAL RESOURCE CONSERVATION SERVICE TRACKING

The NRCS computer system is currently in a transition period that will last through the summer of 1999. Their Field Office Computing System (FOCS) is no longer being supported. The Unix-based system is being abandoned in favor of a Windows-NT desktop computer environment which will run the NRCS Performance Measurement System. It is currently being tested in New York and in other States. DEC will work with NRCS to track the installation or implementation of agricultural management practices once this new system is operational.

COMPREHENSIVE ASSESSMENT STRATEGY

USEPA has established, and NYSDEC has adopted, a long-term goal of comprehensive monitoring and characterization of surface and groundwaters. This effort relies on a variety of strategies of water quality monitoring and management programs or activities within NYS-DEC Division of Water and in other Divisions and Departments. This discussion describes how the *DOW Comprehensive Assessment Strategy* provides greater integration of these programs to produce a more complete and thorough evaluation of monitoring data, a more comprehensive assessment of water quality, and a more coordinated approach to addressing water quality issues and problems throughout New York State.

CORNERSTONES OF THE STRATEGY

The three (3) cornerstones of the *Comprehensive Assessment Strategy* are:

- ! Rotating Basin Schedules (Table 1)
- ! Enhanced Communication and Information Sharing
- ! The Priority Waterbodies List

ROTATING DRAINAGE BASIN SCHEDULES

New York State's strategy enables multiple programs to conduct coordinated efforts in two or three targeted basins each year, resulting in a comprehensive assessment of the entire state within a five-year cycle. The adoption of a common basin rotation schedule to drive most division programs further facilitates integration of component programs and moves the division toward a more coordinated and unified monitoring strategy. While such a scheduling of activities may not be appropriate for every program, the adopting of a common rotating basin schedule, where possible, enhances the *Comprehensive Assessment Strategy*. Under the new strategy the original RIBS framework is expanded to accommodate greater integration of other monitoring, assessment and management efforts, both within and outside the division and department. The five-year time frame will allow the effects of longer term nonpoint source control or abatement projects to manifest themselves.

Enhanced Communication and Information Sharing

There are two aspects of the *Comprehensive Assessment Strategy* where this enhanced communication is highlighted: the Annual Review of Sampling Activities and the Basin Planning Meeting.

At the beginning of each sampling year a group of division staff involved in various monitoring programs meet to review the goals and overall scope of work of all division programs planning to conduct monitoring work in the coming year. The purpose is to review each project in light of other efforts and point out where efficiencies may be gained through coordination and cooperation. Additionally, the review group produces for DOW staff an overview of planned division monitoring activities for the year.

At the beginning of a new comprehensive basin assessment effort, representatives of a variety of central office program staff meet with regional staff from both DOW and other divisions. The purpose of this kick-off meeting is to discuss what the regional staff considers to be the most important water quality issues in the basin and identify where upcoming monitoring activities should focus. Also considered during this meeting are areas where coordination of effort and the sharing of data would benefit everyone.

PRIORITY WATERBODIES LIST (PWL)

The *Comprehensive Assessment Strategy* also links all these monitoring activities with the Priority Waterbodies List (PWL), the division's inventory of waterbodies throughout the state having known or suspected water quality problems or issues. The PWL incorporates monitoring data and information from Division of Water programs, other NYSDEC divisions and other agencies.

The PWL also includes a significant public participation component, incorporating input from the public through the Water Management Advisory Committee (WMAC), the Statewide NPS Coordinating Committee (NPSCC), County Water Quality Coordinating Committees (WQCCs), citizen advisory committees (CAC) for Remedial Action Plans (RAPs) and Lake Management Plans (LaMPs), and other means. Regularly updated to reflect ongoing monitoring efforts, the PWL represents the division's most complete repository of water quality information. As such, it provides the basis for generating the state's periodic water quality assessment reports (including the 305(b) Report to USEPA, and New York State's 303 (d) list) identifying areas where additional monitoring is needed, and targeting remediation and pollution prevention efforts and resources.

COMPONENT PROGRAMS AND ACTIVITIES

Each year the Division of Water targets two or three major watersheds (about 20% of the state) on which to focus the *Comprehensive Assessment Strategy*. The associated monitoring and assessment activities in the target basins continue for three years. As a result, when fully implemented, some component of the *Comprehensive Assessment Strategy* effort will be underway in 60% of the state during any one year.

Below is a more specific outline of the *Comprehensive Assessment Strategy* and its component programs.

Planning and Issue Identification (year 1)

The first year of a *Comprehensive Assessment Strategy* three-year basin effort begins with a review of existing water quality information and the identification of priority water quality issues in the study area. This planning effort leads to more effective targeting of limited monitoring resources. Monitoring activities in the first year are generally limited to qualitative biological assessment of large numbers of waters in order to document good (or *fully supporting*) water quality, and other water quality screening and problem verification efforts (toxicity testing, fishery community and habitat assessment, etc).

Watershed Partners - The first task in the study area is the identification of other groups or individuals with an interest in water quality and the management of water resources in the target drainage basin. Watershed partners are drawn from three general areas:

Central Office program staff, primarily from DOW but also other divisions, who link RIBS with other statewide efforts and provide information about the activities of these programs in the target basin (this group includes other state and federal government agencies, primarily the statewide Water Management Advisory Committee and NPS Coordinating Committee);

Regional Office staff (including Regional Fisheries and watershed-specific programs) ; and

Other Agency/Public/Community Groups (particularly the statewide network of County Water Quality Coordinating Committees) that are also active in water quality issues in the basin.

Watershed Characterization - At this point, the watershed partners evaluate what is known about water quality in the basin, and what issues need further study and attention. Regional staff input and an improved Priority Waterbodies List (PWL), in which all partners assist in updating, are necessary for effective watershed characterization.

Ambient Water Quality Screening - The initial RIBS monitoring efforts focus on qualitative assessment of waters to determine and confirm where there are significant water quality issues and where water quality resources meet designated uses. This component of the program relies primarily on macroinvertebrate assessments but also incorporates fishery assessments (Regional Fisheries), lake monitoring information, etc.

Facility Screening - In an effort to more effectively target the division's limited facility compliance monitoring resources, relatively inexpensive bioassays can be conducted to determine the toxicity of facility effluents. In instances where significant toxicity is identified, more intensive chemical monitoring and analyses may be appropriate. Where possible, this sampling is conducted in conjunction with the ambient screening of the receiving water.

Volunteer (non-DEC) Monitoring Efforts - Volunteer monitoring data collected in the interval since the RIBS Program last studied the target basin may also provide useful information. Efforts to enhance the reliability of such data by establishing a "formal" volunteer monitoring network supported and coordinated by the division are being discussed.

Monitoring and Data Collection (year 2)

The results of the *Planning and Issue Identification* phase are used to develop more intensive basin monitoring plans for the target watersheds. The intensive monitoring component of the *Comprehensive Assessment Strategy* begins with the RIBS Sampling Program. Traditionally, the RIBS effort has included chemical analyses of contaminants in water, bottom sediment and whole organisms (macroinvertebrates) and fish flesh samples, as well as biological assessments and ambient toxicity evaluations. However, RIBS assessments have been expanded to accommodate other division and department monitoring elements. These may including lake assessment and classification, fishery habitat and community assessment, fish tissue contaminant sampling, toxicity screening and chemical sampling of facility effluents, groundwater quality evaluation, pollutant trackdown efforts, and nonpoint source monitoring.

Additional data for water quality assessments are also generated by monitoring programs conducted by many other governmental agencies and public interest groups outside the NYSDEC. These monitoring programs, which may focus on entire watersheds or individual waterbody segments, provide both chemical constituent data and/or aquatic resource information including macroinvertebrate, plant and fish community assessments. Efforts to cultivate and incorporate other agency (USGS, USF&W, USEPA, local health and planning agencies) as well as citizen volunteer (lake associations, county WQCCs, colleges and universities, etc.) monitoring activities into the intensive monitoring plan are also being developed by DEC with advice and ideas from both the statewide Water Management Advisory Committee and NPS Coordinating Committee, including the NPSCC Monitoring and Adaptive Management Subcommittee.

Intensive Chemical Monitoring - multimedia sampling (water column, bottom sediment, toxicity testing, biological tissue sampling) provided by a number of programs to build a comprehensive water quality assessment.

Lake Classification and Inventory - This effort to assess trophic status and investigate other pertinent lake uses will focus on regionally significant lakes or other waterbodies having information gaps within the PWL.

Point Source Monitoring and Compliance - coordinated monitoring of the more significant point sources. Both biological (toxicity) and chemical monitoring are recommended.

Nonpoint Source Activities - (special project water quality monitoring)

When nonpoint sources are considered significant contributors to water quality problems in a watershed, monitoring and modeling activities should be initiated to characterize the magnitude of loading from these sources. The current nonpoint source monitoring efforts of the division are related to five regional initiatives in the state: New York City Watershed program and related monitoring projects; management of phosphorus entering Lake Champlain; controlling stormwater runoff to Lake George; nonpoint source monitoring in the Long Island Sound Watershed; a stormwater demonstration project in the Rochester Embayment Watershed (Great Lakes basin). As our comprehensive monitoring strategy identifies other areas (watershed and subwatershed) with large nonpoint source impacts, similar programs will be undertaken.

New York City Water Supply Watersheds

The New York City Watershed work is the most data- and resource-intensive of the division's nonpoint source efforts. Two separate projects are being conducted in the watershed: 1) a study designed to quantify the pollution-reducing effects of extensive BMP implementation on a dairy farm; and, 2) a long-term assessment of nonpoint and point source loading from the West Branch of the Delaware River (WBDR) to the eutrophic NYC water supply, Cannonsville Reservoir. The farm study measures tributary loads of phosphorus, nitrogen, carbon and sediment from a 350-acre farm watershed before and after implementation of a Whole Farm plan and compares them to loads from a control, forested watershed monitored during the same time period. Automated equipment at both sites continually measure streamflow and collect water samples during runoff events. Samples are collected during every event and over the entire extent of the

hydrograph. Prior to implementation, levels of pollutants in farm runoff were magnitudes greater than those at the forested site. The study will determine how close to background levels the water quality from the farm will come after practice implementation.

Monitoring of the WBDR by the division occurred from 1980-1982, and from 1991 to the present. River flow is gauged by USGS and samples are collected manually during event and baseflow periods. Like the farm study, every event is sampled and concentration changes over the entire hydrograph are characterized. The long-term monitoring of the WBDR during the 1980 and 1990 periods has produced a data base for nonpoint source loading of nutrients and sediment that is unique in the state, if not the country. Agricultural nonpoint sources and small municipal point sources in the WBDR watershed have been determined to be the largest contributors of excess nutrients to Cannonsville Reservoir. These sources are being addressed through a watershed-wide pollution reduction program funded by NYC to protect the water quality of their drinking water supplies. The results of these management efforts on the water quality of the WBDR may be discernible over time through the results of this monitoring program.

Another nonpoint source monitoring project began in 1998 on Town Brook in the New York City watersheds. This tributary of the West Branch of the Delaware River drains a mixed agricultural/forest, meso-scale size watershed that has been selected for large-scale agricultural BMP implementation in the future. A number of agencies including New York City DEP, Cornell University, USGS, and NYSDEC will be involved in a collaborative effort to quantify and model the effects of these BMPs on water quality over the long-term. DEC began monitoring baseline water quality of Town Brook prior to implementation in October 1998.

Contact: Pat Longabucco, Watershed Management, Nonpoint Source Section

Lake Champlain Management Program

Lake Champlain management initiatives include nonpoint monitoring on 18 tributaries to the lake in order to determine loadings of various pollutants. Tributary loads of phosphorus, nitrogen, carbon, sediment and metals are estimated from utilization of the flow and concentration data with the load estimation software FLUX.

Regional water staff under Central Office direction perform event-based monitoring of the 12 major tributaries on the New York side, while Vermont water quality staff monitor the remaining 6 on its side of the lake. USGS gauging stations provide river flow for all of the New York trib. being monitored. A minimum of twelve events are captured each year, with the main focus being on the spring and fall runoff periods. Sampling is manual and attempts are made to collect samples at several points over the hydrograph.

Contact: Scott Quinn, Watershed Management, Lake Services Section

Lake George

Lake George nonpoint source monitoring activities focus on stormwater runoff into the lake at sites that were also monitored by the division during the Nationwide Urban Runoff Program (NURP) in the 1980s. Comparison of loads in the 1980s to current levels indicates that the amount of pollutants delivered to Lake George via the monitored streams has increased since that time due to increases in development in the watershed. Two of the sites are also being used to evaluate stormwater treatment practices through event-based monitoring. At one site the pollutant removal capacity of a manufactured stormwater treatment device (Vortech unit) is being tested. At the other site, the ability of a created wetlands to handle and treat stormwater from 500,000 ft² of impervious roadway area is being evaluated.

One atmospheric station that measures wetfall, dryfall, precipitation and temperature is operated in the watershed in addition to five stream or storm sewer monitoring sites. Samples are collected with automatic samples at the stream/storm sewer sites during selected storm events and baseflow periods. Analyses done on the samples include phosphorus, nitrogen, sediment, lead and chloride.

Contact: Jim Sutherland, Watershed Management, Lake Services Section

Long Island Sound Study

Water Quality Monitoring of Blind Brook and Mamaroneck River

The Department of Planning, on behalf of the Committee on Nonpoint Source Pollution in Long Island Sound, continued to sample the quality of Blind Brook and Mamaroneck River in 1998 through a \$300,000 federal grant administered by the state Department of Environmental Conservation (DEC). The Manhattan College Department of Environmental Engineering was hired by the Department of Planning in early 1997 to conduct a three-year monitoring program for the lower Long Island Sound watershed in Westchester County. The program's objective is to determine the nutrient and other nonpoint source pollutant loads delivered to Long Island Sound from the watersheds of the Sheldrake and Mamaroneck rivers and Blind Brook. The monitoring includes sampling for several forms of nitrogen and phosphorus, coliforms, turbidity, dissolved oxygen, water and temperatures, water depth, water velocity, pH, conductivity, and total suspended solids. Sampling began on April 1, 1997 and is expected to continue through to the spring of 2000. Through 1998, two sampling stations recorded data. One station is on the Mamaroneck River immediately south of its confluence with the Sheldrake River at Phillips Park in Mamaroneck Village. The other is on Blind Brook at the Rye Nature Center in Rye City.

The DEC is considering a 1998 proposal by HydroQual Inc. to input the data collected by Manhattan College to the Long Island Sound Model (LIS3.0), which is the basis for many of the recommendations in the Long Island Sound Study's Comprehensive Conservation and Management Plan (CCMP). Under the proposal, the 1997-2000 data from the Mamaroneck and Sheldrake rivers and Blind Brook on nitrate, nitrite, ammonia, total Kjeldahl nitrogen, total phosphorus and orthophosphate taken by Manhattan College would be compared to loadings assigned in LIS3.0 for 1988-89 conditions. The model would assist county and state agencies in determining the loading rates for certain nutrients and pollutants in Westchester County. This determination of nonpoint source pollutant loadings would assist any future regulatory decisions on nutrient and pollutant (effluent) trading between point and nonpoint sources of pollution.

Contact: Warren Ross, Chair of Committee on NPS Pollution in Long Island Sound

Contact: Philip M. DeGaetano, Associate Division Director, Division of Water

Great Lakes Basin

Water Quality Inlet Demonstration - Rochester Embayment

This \$100,000 cooperative project is a Section 319 funded stormwater control demonstration project. Led by Monroe County Soil and Water Conservation District staff, the State Soil and Water Conservation Committee State Engineer is providing consultation as match, the County Environmental Health Department staff is providing monitoring services, and a local contractor will do the installation. The goal is to determine the effectiveness of a commercial stormwater treatment device and a subsurface flow wetland (SFW), installed in series, by monitoring the influent and effluent of each unit during several runoff-producing storm events. A technology transfer presentation of the project's results will be conducted for local municipalities and consulting engineers. Unexpected project siting problems have delayed construction and installation of practices which is now expected to begin in the summer of 1999.

Contact: Pat Longabucco, Watershed Management, Nonpoint Source Section

Due to the greater amount of staff, equipment and analytical resources required for the storm-event monitoring associated with nonpoint sources, special and/or dedicated funding would likely be necessary to conduct such efforts. Nonpoint source monitoring would likely continue for two or more years in order to accurately determine inter-annual variability in loading to the watershed. Other local watershed partners may be able to assist with the nonpoint source monitoring component. A stand-alone Nonpoint Source Monitoring Strategy will be developed for use by Regional staff or partners by Central Office staff as personnel availability and resources allow.

Regional Ambient Sampling - Regional ambient monitoring efforts may be used to maintain a monitoring presence in a basin when statewide programs shift their attention to other basins. These activities can also complement statewide efforts by providing more frequent data or data at additional sites.

Source Water Assessments - The RIBS program and division groundwater resources staff should try to coordinate with the NYS Department of Health to incorporate available source water and groundwater monitoring data into the watershed assessments.

Evaluation and Assessment (year 3)

The third year of the *Comprehensive Assessment Strategy* focuses on the evaluation and assessment of results from the multi-faceted *Year Two* intensive monitoring effort, and a corresponding update of the PWL. The PWL Update process involves solicitation of input from a wide range of water quality professionals (from both within and outside the division/department) as well as a significant public participation component, which is coordinated through the county WQCCs. The update also incorporates anecdotal information of water quality conditions that need to be verified.

Water Quality Evaluation - After the completion of the intensive monitoring effort, the resulting data must be thoroughly evaluated to determine what additional information can be incorporated into our knowledge of the water resources in the basin. The data analysis should focus on whether waters

support designated uses, evaluation of water quality trends, and identification of areas where additional study is needed.

Modifications to Volunteer Programs - The knowledge gained from the intensive effort can be used to better focus ongoing volunteer efforts in the basin.

PWL Update - All watershed partners should be encouraged to participate in the updating of the PWL information for the basin.

TMDL Development - The intensive monitoring data and updated PWL information can be used to update the division's 303(d)/TMDL list of waters that do not meet water quality standards.

305(b) Reporting and Annual Electronic Update - The updated PWL information is used to generate the data files of water quality information for the annual 305(b) electronic submission. Periodic revision and update of the published 305(b) Report, which provides the public with a comprehensive assessment of water quality, will also reflect the most current data and information.

Corrective/Management Strategies (years 4 and 5)

At the conclusion of the three years of planning, intensive monitoring and assessment, DOW activities focus on water quality management, including point source facility permitting and nonpoint source control projects. A lower level of maintenance monitoring may be continued by regional staff or non-DEC volunteer groups.

WICSS - The division's Water Integrated Compliance Strategies System should incorporate the resulting monitoring information into the program.

Facility Permitting - pertains to point sources only. Facility permits could be re-issued in light of the coordinated intensive monitoring effort in the basin.

Nonpoint Source Controls (special project water quality monitoring) - Likewise, the implementation and management of nonpoint source controls may be enhanced in light of the additional information generated by the comprehensive monitoring activities. The priority of nonpoint source control projects and their level of funding will also be determined or influenced by data developed from the comprehensive monitoring activities.

Regional Activities - While the RIBS program focuses its attention on other drainage basins, the region may consider it useful to conduct additional monitoring or other activities to address specific water quality issues.

Volunteer (non-DEC) Monitoring Efforts - Again, monitoring data collected by various citizen monitoring groups may be useful in maintaining a monitoring presence while division efforts are focusing on other regions of the state.

PROBABILITY-BASED MONITORING

USEPA encourages states to move to a “probabilistic” monitoring design, which relies on randomly selected monitoring sites and statistical methods to determine overall quality in a watershed. But while this approach may provide better comprehensive assessments regarding the general water quality in a watershed, it does so at the expense of the site-specific monitoring needed to support other division programs. Recent modifications to the division’s Rotating Intensive Basin Studies (RIBS) ambient monitoring program attempts to address both needs. The RIBS approach includes greatly expanded biological screening to provide broader coverage of the entire basin study area; as well as an intensive, site-specific component to collect more complete data in those areas of greater interest where more thorough information is needed.

The division’s monitoring program has been working with USEPA staff to develop a probabilistic monitoring design for a pilot watershed in the state. This pilot study will be conducted and evaluated during the 1998 sampling season.

VOLUNTEER MONITORING

As has been discussed previously, the interest and enthusiasm of various groups (citizen, academic, private, public) in protecting water resources has led to a tremendous growth in volunteer monitoring activities throughout the state. The NYSDEC Division of Water has long supported a formalized volunteer monitoring program for lakes--The Citizen Statewide Lake Assessment Program (CSLAP). Although a similar program for rivers and other waters does not currently exist, the division has recently developed a general framework for such a program.

While the volunteer monitoring framework includes multiple tiers or levels of monitoring effort, the primary focus of the approach would be the use of biological (macroinvertebrate) sampling to screen a large number of waters for possible impairment. This information would be useful to the division in helping to identify:

- ! rivers and streams with good water quality, and
- ! waters where more intensive division monitoring programs, including event-based nonpoint source monitoring, might focus.

Due to limited staff and resources, a division volunteer monitoring program for rivers would be more limited than the CSLAP program in terms of training conducted by NYSDEC staff and providing analytic resources. These components will require other partnerships and commitments from the volunteer groups themselves. But the division can/could support this volunteer monitoring effort by providing a coordinator to arrange training sessions with a contractor, assist groups with getting their programs started, answer questions, develop communication tools, evaluate quality of data, and otherwise manage the implementation and coordination of the program.

CONCLUSION

Nonpoint source monitoring will be carried out on two levels. One, wholistic, as part of our comprehensive monitoring program, and the second as an intensive review of the effectiveness of individual implementation projects or best management practices. Knowledge of proper event sensitive monitoring will be transferred to our Regional Offices so that unique and innovative projects can be evaluated asa part of our normal workplan activities.

Table 1

| Schedule of <i>Comprehensive Assessment Strategy</i> Activities | | | | | | | | |
|--|--|--|--|--|--|--|--|--|
| Basin/Watershed | 1998 | 1999 | 2000 | 2001 | 2002 | 2003 | 2004 | 2005 |
| Lake Champlain Long Island | WQ Planning and Issue Identification | Monitoring and Data Collection | Evaluation and WQ Assessment | Corrective/Management Strategies | | | | |
| Genesee River Delaware River | | WQ Planning and Issue Identification | Monitoring and Data Collection | Evaluation and WQ Assessment | Corrective/Management Strategies | | | |
| Niagara River Mohawk River | | | WQ Planning and Issue Identification | Monitoring and Data Collection | Evaluation and WQ Assessment | Corrective/Management Strategies | | |
| Allegheny River Oswego-Sen-Oneida Upper Hudson | | | | WQ Planning and Issue Identification | Monitoring and Data Collection | Evaluation and WQ Assessment | Corrective/Management Strategies | |
| Chemung River Black River Lower Hudson | | | | | WQ Planning and Issue Identification | Monitoring and Data Collection | Evaluation and WQ Assessment | Corrective/ Management Strategies |
| Susquehanna R. Lake Champlain Long Island | | | | | | WQ Planning and Issue Identification | Monitoring and Data Collection | Evaluation and WQ Assessment |
| Genesee River St. Lawrence R. Delaware River | | | | | | | WQ Planning and Issue Identification | Monitoring and Data Collection |
| Niagara River Mohawk River | | | | | | | | WQ Planning and Issue Identification |

AGRICULTURE - Proposed Strategy for Full Approval of New York's Coastal Nonpoint Pollution Control Program

New York's approach to addressing pollution threats from agricultural activity has evolved markedly since its 1995 6217 Program Submission. Developments can be grouped in two separate categories: initiation of a SPDES program for CAFO operations and the Agricultural Environmental Management initiative.

NYSDEC is currently in the process of developing a general permit for agricultural operations of more than 300 animal units. The permit is currently undergoing public comment and will be implemented in 1999. All operations of more than 1000 animal units will be covered under this permit. Animal operations of 300 to 1000 animal units may be covered under the permit, based on whether there is the potential for pollution from a discrete conveyance in their operations. Once the general permit for agricultural operations is in place (anticipated by the end of 1999), all operations covered under it will by definition be exempted from the conditions of 6217.

The broader initiative, the voluntary Agricultural Environmental Management (AEM) program, has progressed markedly since the July 1995 submission document was prepared. The following provides a summary of the conceptual approach embodied in the AEM initiative, an outline of the process used thus far and anticipated in order to achieve full use of the program, and a summary of relevant backup authority.

CONCEPTUAL OUTLINE

Agriculture in New York is highly diverse. Just over half of New York's 3 billion dollar agricultural receipts derived from dairy products, making it the third most important dairying state, after California and Wisconsin. Many other products are important locally or regionally. For example, New York ranks in the top five states nationally in the production of each of the following: corn for silage (2), apples (2), tart cherries (3), pears (4), grapes (2), cabbage (1), cauliflower (3), sweet corn (4), green peas (5), and snap beans (4). Many other crops are important in certain portions of the state. (New York State Agricultural Statistics, 1996-1997)

The diversity of crops, soils, climatic conditions, and management strategies found in New York means that any program focused on addressing pollution potential must account for the varied conditions and practices found on the State's 36,000 farms. In response to this diversity, experiences gained in the New York City and Syracuse water supply watersheds (in response to the Filtration Avoidance Rule of the Safe Drinking Water Act Amendments), and other factors, the New York State Department of Agriculture and Markets began an Agricultural Environmental Management initiative. The goal of Agricultural Environmental Management is to provide a framework for the rational assessment of environmental risks from agricultural activities and to prioritize necessary remediation actions. Recognizing the economic pressures facing many agricultural operations in New York, AEM was designed to focus on high risk issues.

The process a farm operator follows in order to participate in AEM is straightforward. First, the operator completes a short "Tier 1" questionnaire, which is designed to provide a gross sorting of issues which might be of importance. The Tier 1 questionnaire essentially allows the determination of those aspects of an operation which have the potential to pose environmental risks. For example, a certified organic operation would be able to verify in the Tier 1 process that it need not complete any further information about pesticide use.

The results of the Tier 1 questionnaire determine the suite of activities which are more fully investigated in Tier 2. For each potential activity with pollution potential noted in Tier 1, one or more worksheets are available at the Tier 2 level to assess the actual risk. In essence, the Tier 1 questions focus on whether an activity occurs which might cause pollution. The Tier 2 worksheets function to determine how great a risk there is of pollution occurring.

In a typical case, the results of the Tier 2 worksheets indicate that some activities are in fact low risk for the operation, while others pose a greater risk. The focus is then on reducing the most significant risks on that operation. This process might involve a few minor changes, such as the addition of locks to a cabinet used for storing hazardous materials. In many cases, one or a few issues of high concern are identified, so that a BMP Implementation Plan is prepared (Tier 3A). In a few cases, several areas of significant concern are identified, such that a Whole Farm Plan is required (Tier 3B). In general, the distinction between 3A and 3B plans is that the latter require changes in many different aspects of the operation, while the former can usually be accomplished by changes in only one or a few aspects.

A farm which undergoes the AEM process is thus evaluated for a wide range of potential environmental impacts, including erosion, nutrient loadings from fertilization and use of manures, manure disposal issues, including pathogen control, and pesticides. The end result is a plan which weighs the various options and prescribes a suite of management practices to reduce risk to an acceptable level. The AEM process also documents management practices which are already in place, reducing pollution risk. Finally, by focusing on actual as opposed to theoretical risk, AEM avoids the need to implement management practices in unwarranted situations.

Additional information regarding AEM can be found in the Guide to Agricultural Environmental Management in New York State, published in July 1997 and periodically updated.

PROCESS INFORMATION

New York anticipates achieving the agriculture condition as stated in the November 1997 "Findings for the New York Coastal Nonpoint Program" through the AEM Program. Some operations which are currently subject to the provisions of 6217 will be exempted upon implementation of the general permit for animal feeding operations, which is anticipated in 1999.

Because the AEM program is voluntary, New York will fully achieve the relevant Condition based on the Final Administrative Changes in the Coastal Nonpoint Pollution Control Program Guidance for Section 6217

of the Coastal Zone Act Reauthorization Act Amendments of 1990 (CZARA), which sets forth three requirements:

1. A legal opinion from the attorney general or an attorney representing the agency with jurisdiction for enforcement that such authorities can be used to prevent nonpoint pollution and require management measure implementation, as necessary;
2. A description of the voluntary or incentive-based programs, including the methods for tracking and evaluating those programs, the states will use to encourage implementation of the management measures; and
3. A description of the mechanism or process that links the implementing agency with the enforcement agency and a commitment to use the existing enforcement authorities where necessary.

Article 17 of the Environmental Conservation Law grants authority to the Department of Environmental Conservation to "... abate and prevent the pollution of waters of the State..." (ECL 17-0303 (2)). The ECL also provides that "[I]t shall be unlawful for any person, directly or indirectly, to throw, drain, run, or otherwise discharge into such waters organic or inorganic matter that shall cause or contribute to a condition in contravention of the standards adopted by the department pursuant to section 17-0301" (ECL 17-0501). It has been established (*Matter of Gae Farms, Inc. v Diamond*, 40 A.D. 2d 909, 337 N.Y.S.2d 865) that both cease and desist orders and administratively assessed penalties may be used to enforce this provision. DEC thus clearly has the authority to stop activities which cause a contravention of water quality standards or significantly contribute to such a condition. The requirement that backup authorities can be used to prevent nonpoint pollution is thus demonstrated by case law, obviating the need for an attorney general's opinion regarding prospective authority. Similarly, ECL 17-0501 provides authority to require management measure implementation as necessary to protect water quality.

The "Guide to Agricultural Environmental Management in New York State" and "1998 Report on Agricultural Environmental Management in New York State" submitted to EPA and NOAA under the Coastal Nonpoint Program, provide detailed descriptions of the AEM program. At this time, the evaluation component of the AEM program is still under development. In addition to the AEM program and the many other extant programs which provide information and expertise to agricultural operators (see, for example, Cornell Cooperative Extension and Soil and Water Conservation District programs), New York State has committed significant resources to incentive programs aimed at encouraging management practice implementation. The Clean Water/Clean Air Bond Act is providing \$1.75 billion to address a variety of environmental problems, with over \$600 million focused on water quality. In the last three years of the Clean Water/Clean Air Bond Act, funds totaling \$4,857,902 have been allocated for implementation of practices to reduce agricultural pollution.

In addition to the Bond Act, New York State has the Environmental Protection Fund, a recurring budget item. In fiscal year 1998, the EPF totaled over \$100 million, with \$3,302,138 obligated for reduction of agricultural pollution. Both the Bond Act and EPF monies are administered through a competitive grant process which considers the extent to which proposed projects reflect AEM processes and priorities. In 1999, applications

for funds under both the EPF and Bond Act to address agricultural pollution threats must explicitly note the role of AEM-type evaluations in the determination of project priority. The combined effect of the various educational and voluntary programs such as AEM and the EPF and the Bond Act grant programs achieves the goal outlined in point 2, above.

Finally, DEC is represented on the AEM Steering Committee, which forms a linkage between the implementing and enforcement agencies, as required under point 3, above. DEC has in the past used its authority to regulate agricultural activities causing pollution, and retains that authority. As part of the continuing development of the AEM program, the Departments of Environmental Conservation and Agriculture and Markets will examine whether there is a need to further formalize their links through a mechanism such as a formal Memorandum of Agreement.

Development of the AEM initiative is currently being pursued under the aegis of the Department of Agriculture and Market's AEM Steering Committee, with a membership which includes the state agencies with responsibility for agricultural and environmental issues (including the Departments of Environmental Conservation and State, the 6217 agencies in New York), several federal agencies, research groups such as Cornell University, and interest groups such as Farm Bureau and environmental organizations. (The DOS/DEC Coastal Nonpoint Pollution Control Program (6217) submission contains the membership list).

On August 24, 2000 Governor George E. Pataki signed into law legislation creating the Agricultural Environmental Management Program (AEM). The Agricultural Environmental Management Act amends the Agriculture & Markets Law, the Environmental Conservation Law, the Executive Law, and the Soil & Water Conservation District Law. The primary goal of AEM is to protect and enhance the environment while maintaining the viability of agriculture in New York State.

STRATEGY SUMMARY

In cases of violations of water quality standards, DEC will continue its practice of first involving County Soil and Water Conservation Districts in a cooperative effort to alleviate problems, but will continue to use its regulatory powers as needed. New York will continue pursuing full implementation of the AEM program, supplemented by incentive programs funded by the Clean Water/Clean Air Bond Act and the Environmental Protection Fund. Refinement of evaluation efforts is ongoing, and information is currently being collected to aid in establishing the extent of AEM participation. The Departments of Agriculture and Markets, Environmental Conservation, State, and Health will by November, 1999 have determined whether legislation is necessary in order fully to implement the AEM program. If so, legislation will be drafted in consultation with the Executive Office.

Information regarding participation in AEM will be maintained as a mechanism to determine its effectiveness in achieving management practice implementation. Such participation information is expected to be part of the overall AEM evaluation strategy. For more information regarding the proposed evaluation strategy, see the accompanying "AEM Evaluation" and "AEM Evaluation Approach- Notes for Discussion." (Both are included in New York's Coastal Nonpoint Pollution Control Program submission).

LOCAL ROADS RUNOFF SYSTEMS - Proposed Strategy for Full Approval of New York's Coastal Nonpoint Pollution Control Program

The State of New York has a multi-faceted strategy for addressing federal conditions for runoff systems for local existing, resurfaced, restored and rehabilitated roads, highways and bridges articulated in the New York Coastal Nonpoint Program Findings.

CONCEPTUAL OUTLINE

New York's DEC has back up authority to prevent nonpoint pollution and require management measure implementation. Article 17 of Environmental Conservation Law grants authority to DEC to: "... abate and prevent the pollution of the waters of the State . . ." (ECL 17-0303 (2)). Additionally, Article 17 provides that "[I]t shall be unlawful for any person, directly or indirectly, to throw, drain, run, or otherwise discharge into such waters organic or inorganic matter that shall cause or contribute to a condition in contravention of the standards adopted by the department pursuant to section 17-0301 (ECL 17-0501)."

Thus, ECL Article 17 grants broad authority to DEC to enforce state water quality standards when runoff from existing, resurfaced, restored and rehabilitated roads, highways and bridges contribute to adverse effects in surface waters and, when a specific water quality problem has been shown, the agency authority to require the implementation of appropriate management practices to address such specific problems. The State's ability to enforce against violations of its water quality standards and to require permits for a variety of discharges has been vigorously used to protect water quality. The DEC has used this broad prohibition against pollution to assess civil penalties and impose abatement on discharges, whether direct or indirect, such as discharge of poultry wastes and sediment from a sand and gravel pit (*Gae Farms, Inc. v. Diamond*, 40 A.D. 2d 909 [1972], *Coella v. NYSDEC*, 196 A.D. 2d 162, 608 N.Y.S. 2d 361 [1994]).

DEC's role in both implementation and enforcement of violations of water quality standards and its intent to use its existing enforcement authority will be further clarified by a formal memorandum of understanding that will be sought between the agency's Division of Water and its Division of Environmental Enforcement. This clarification will assume a greater level of importance with the anticipated release and New York's implementation of EPA's Phase Two stormwater regulations that will apply to nearly all of the state's coastal zone, transferring urban stormwater runoff control from Section 6217 to New York's SPDES program, which is under the sole jurisdiction of NYSDEC. Thus the link between NYSDEC's implementing program and enforcing program will be formally defined and established.

In addition, many areas of the state will be affected by the development and implementation of Total Maximum Daily Loads (TMDLs), pursuant to section 303(d) of the Clean Water Act. For areas for which TMDLs will be developed, pollution from nonpoint sources, including runoff from local roads, will be included.

Incentive Programs and Voluntary Efforts

New York's State Revolving Loan Fund (SRLF), Environmental Protection Fund (EPF), 1996 Clean Water / Clean Air Bond Act and Transportation Enhancement Program are incentive programs that allocate state funds for municipal remediation efforts that target priority water quality issues identified on the local level by individual County Water Quality Coordinating Committees. Outreach and technical assistance by DEC, DOT and DOS staff at the onset of each funding cycle assure that municipalities submitting proposals request fiscal support for projects that address nonpoint source issues of local concern, and selection criteria for rating proposals lean heavily in favor of projects that address high priority water quality problems. Typical projects include stormwater wetlands, infiltration basins and trenches, vegetated swales, extended detention ponds, and other innovative structures that control and abate stormwater runoff. Significant funds available under the Clean Water/Clean Air Bond Act have already been allocated to reduce pollution from local roads.

A variety of community based environmental protection initiatives are also in place in New York to encourage implementation of relevant management measures for urban local roads. Chief among these will be the earmarking of additional Clean Water Act section 319 funds for Cornell University's Local Roads Program (CLRP) to broaden the extent and scope of their training and technical assistance to local roads officials. Since 1984, over 11,000 local highway officials have attended more than 400 CLRP one-day workshops across the state on road fundamentals, drainage, winter maintenance, and other related topics. Additionally, Cornell Cooperative Extension (CCE) activities will continue to implement relevant management measures for the New York State Coastal Nonpoint Pollution Control Program (CNPCP). Each year, more than eight million people participate in CCE seminars, computer-assisted learning programs, and tours or request help from Cornell Cooperative Extension in making decisions. Other community based environmental protection initiatives include local programs, in part funded by DOS, to develop intermunicipal waterbody management plans and equivalent efforts from DEC.

The Transportation Enhancement Program administered by NYS DOT is a reimbursement program, not a grant program. One category on the Federal Highway Administration's list of eligible project categories is mitigation of water pollution due to highway runoff. So far, this category has received few applications. The New York NPS Coordinating Committee has been made aware of this and will be promoting its use.

Additionally, New York is exploring the feasibility of developing a Community Environmental Management (CEM) Program based on the State's current Agriculture Environmental Management (AEM) Program. The CEM program would be broader in scope than AEM and address all non-agricultural nonpoint issues, chief among them urban local roads. CEM would provide a framework and process for municipalities to assess their current nonpoint abatement and control practices, identify gaps in those practices, and establish priorities for nonpoint pollution remediation and prevention projects. Thus the CEM program would function as a critical method for tracking and evaluating the success of voluntary efforts for the implementation of relevant management measures.

Legislative and Regulatory Actions

New York will explore the option of approaching the State Legislature with requests to establish legislation that would 1) require local Departments of Public Works / Highway Departments to adopt NYS Department

of Transportation (DOT) contract specifications, environmental procedures and highway design standards; 2) mandate DOT conditions on federal pass-through funds to local municipalities that would require implementation of state environmental procedures, design standards and contract specifications; 3) define federal pass-through funds to local municipalities as a Federal action open to review for consistency with State Coastal Policies; or 4) provide other mechanisms to assure the incorporation of nonpoint pollution control in local road management.

Once federal guidelines for the Phase II stormwater regulations are finalized (anticipated October 1999), New York will develop permits, regulations, etc., as appropriate for their implementation. It is expected these regulations will affect a significant portion of the coastal nonpoint area in New York. The need to address pollution from transport networks within the coastal zone will be considered in the determination of areas to be affected by the Phase II program.

Two major existing programs cap New York's strategy to implement controls on nonpoint pollution generated by stormwater runoff from urban local roads. These are the State Environmental Quality Review Act (SEQRA) and the New York State Coastal Management Program (CMP). SEQRA provides that every environmentally significant land development approval decision or direct action by a state or local agency are subject to a determination as to its impact on water resources. New York's CMP provides, in part, that all State and federal actions in the coastal zone are consistent with a single set of decision-making criteria, the state's federally-approved coastal policy statements.

STRATEGY SUMMARY

New York's strategy for addressing federal conditions on runoff systems for urban local roads includes a possibility of legislative action, existing and new regulatory programs, and voluntary elements as stated in the NOAA / EPA proposed administrative changes for enforceable policies and mechanisms. Those elements include:

- (1) In lieu of an attorney general's opinion regarding backup authority, the already demonstrated use of its existing back up authority to address pollution problems causing or contributing to water quality impairments;
- (2) incentive programs (including the Environmental Protection Fund and the Clean Water/Clean Air Bond Act) and voluntary efforts to encourage implementation of management measures for urban local roads, and a Community Environmental Management Program, modeled after an extant Agriculture Environmental Management Program, that will track and evaluate the success of these programs and efforts;
- (3) a formal memorandum of understanding that links the implementing agency (DEC's Division of Water) with the enforcement agency (DEC's Division of Environmental Enforcement) and establishes the intent to continue the use of existing enforcement authority where necessary.

ADDITIONAL MANAGEMENT MEASURES - Determination of Need for Full Approval of New York's Coastal Nonpoint Pollution Control Program

DESCRIPTION OF PROCESS

NYS has in place a process to determine whether Additional Management Measures (AMMs) are needed to protect water quality once all relevant 6217 management Measures are fully in place. That process begins with the updates to the Priority Waterbody List (PWL). In the past, the PWL was updated biennially. However, the program is shifting to updates on a rotating five year basis, in a process which is coordinated with the Rotating Intensive Basin Surveys (RIBS). The update process uses the results of the RIBS and other monitoring programs and input from regional DEC staff, localized efforts such as intermunicipal watershed management programs, national estuary programs, and regional management programs, local officials, County Water Quality Committees, and private interests. Individuals or groups may propose including a stream, lake, or other waterbody on the PWL and provide any supporting documentation available. Following the evaluation of available information, DEC develops draft revisions to the PWL. The PWL allows characterization of waterbodies as having designated uses precluded, impaired, stressed, or threatened. The PWL therefore focuses on waters with impairments or threatened impairments, which is a suitable basis for assessing the need for AMMs.

In addition to internal DEC review of the results of PWL updates, two standing committees have roles which are relevant in assessing the need for AMMs and what mechanisms are appropriate for their implementation. The Water Management Advisory Committee (WMAC) has membership which includes state agencies with authority and responsibility for addressing water quality in certain areas (Departments of Health, Agriculture and Markets, State, Transportation, etc.) as well as representatives of the legislature, Executive office, other levels of government (EPA and local governments), and private interest groups. WMAC meetings provide a forum for the discussion of the results of PWL updates. If a PWL update indicates a significant number of segments appearing on the list because of pollution sources not adequately addressed by existing programs, the WMAC can provide important advice on the need for additional management measures.

The Nonpoint Source Coordinating Committee (NPSCC), founded in 1990, has a membership which includes all state agencies with an interest in the management of nonpoint pollution. The NPSCC can therefore serve as an ideal forum in which DEC policy decisions regarding the management of a new source of nonpoint pollution can be translated into proposals for specific actions and programs. In addition, the NPSCC can initiate discussions without the need for referral from DEC. NPSCC agencies can thus discuss potential approaches to addressing nonpoint pollution problems, with all relevant state agencies present. Once there is agreement regarding the preferred approach, DEC and other relevant agencies can take steps to implement it.

In summary, DEC will use the periodic update of the PWL to review water quality status and trends on a watershed basin basis. The WMAC and NPSCC, in reviewing the PWL updates, will focus on pollution sources which cause water quality problems and which are either not addressed at present or are

inadequately addressed. WMAC recommendations to DEC regarding the management of nonpoint pollution will be brought to the NPSCC. The NPSCC provides a forum for the identification of problems and the analysis of potential solutions. Because the NPSCC contains as members all relevant state agencies, the resulting proposed solutions can readily be drawn to the attention of the appropriate authority.

In addition to the statewide process outlined above, regional or local efforts can also lead to the identification of the need for additional management of nonpoint pollution. Community based environmental protection initiatives such as some of the varied intermunicipal watershed management groups in the state, some of the regional management entities, etc., can identify the need for additional management and act on that need for the region served, without the necessity of developing a statewide response. Thus, for example, pollution management initiatives undertaken as part of the New York City watershed's programs need not involve statewide action.

On a watershed basis, the need for additional management measures may also be identified in the development of a Total Maximum Daily Load (TMDL). Waters that are targeted as a priority for TMDL development are identified on the 303(d) list which is submitted to, and approved by, the USEPA every two years. When a TMDL is developed, DEC will identify the need for additional management measures if the load allocation for nonpoint sources can not be met through the implementation of the State's 319 and 6217 Programs in that watershed.

Because it is by definition impossible to determine in advance what problems might in the future be identified, it is also impossible to describe with any specificity how they will be addressed. However, the PWL-WMAC-NPSCC route provides a process for the determination of need for AMMs. Because the PWL update is continuous (on a five year basis for each basin in the State), the process for revision and adaptation is also continuous.

Water Management Advisory Committee

In 1980, DEC's Division of Water (DOW) established the Water Management Advisory Committee (WMAC) to provide guidance and perspectives as the Division works to accomplish its goals and objectives. The WMAC serves as an important link between the Division and government, economic, professional, environmental and public interests. Its activities include

- ! Reviewing and commenting on DOW workplans, policies, and programs
- ! participating in problem-solving sessions,
- ! Sponsoring DOW public participation projects, and
- ! Participating in specific DOW activities

In addition WMAC members promote awareness of DOW activities and initiatives among their constituents, and in turn bring their constituents reactions and concerns to DOW.

DOW formally consults with the WMAC four times a year, and the WMAC itself meets twice a year. To widen the DOW's pool of expertise, other interested individuals or groups beyond the WMAC's 25 members may participate as corresponding members.

WMAC Representation

Association of Regional Planning and Development Organizations
New York Association of Counties
Conference of Directors of Local Environmental Health Services
Cooperative Extension
Association of EMC's
Association of Conservation Districts
American Water Works Association
Consulting Engineers Council
Farm Bureau
NYS Builders Association
Business Council
Water Environment Association

NYS Chemical Alliance
Environmental Advocates
Federation of Lake Associations
League of Women Voters
Trout Unlimited
Hudson River Sloop Clearwater
Citizens Environmental Coalition
Citizens Campaign for the Environment
Center for Environmental Research
Great Lakes Program
Great Lakes Consortium
members of the public

Liasons: NYS Legislative Commission on Water, NYS Department of State, NYS Department of Health, NYS Department of Agriculture and Markets, US Environmental Protection Agency, NYS Department of Transportation and the NYS Department of Environmental Conservation.

NYS NONPOINT SOURCE COORDINATING COMMITTEE

| |
|--|
| NYS Department of Agriculture & Markets |
| NYS Soil & Water Conservation Committee |
| NYS Department of Health |
| U.S. Geological Survey |
| NYS Department of State |
| USDA - Farm Service Agency |
| NY Water Resources Institute |
| Cornell Cooperative Extension |
| New York Sea Grant Extension |
| USDA - Natural Resources Conservation Service |
| U.S. Environmental Protection Agency |
| NYS Department of Environmental Conservation |
| NYS Department of Transportation |
| NYS Legislative Commission on Water Resource Needs of NY & LI |
| NYS Environmental Facilities Corporation |
| NYS Conservation District Employees Association |
| NYS Senate Committee on Water Resources |
| NYC Department of Environmental Protection |

APPENDIX E

APPENDIX E

The Key Elements of New York's Nonpoint Source Management Program

The United States Environmental Protection Agency (EPA) established nine key elements that are required for federal approval of a state's Nonpoint Source Management Program. This appendix describes in detail New York State's compliance with these key elements.

A. EPA's Nine Key Elements - An Overview

New York State's Nonpoint Source Management Program Update meets all of the nine key elements specified by EPA, as summarized below.

Key Element I Short-and Long-Term Goals: Long term restoration goals and specific short-term goals are set for statewide considerations and for the four most prominent nonpoint source categories. The priority categories were selected based on the Priority Waterbodies List and Section 305b Water Quality Report for 2000. The short-term goals and objectives specify measurable progress New York State will make by 2005 in protecting human health, conserving and enhancing ecological health of our waters and reducing nonpoint sources of pollution.

Key Element II Partnerships and Linkages: From the inception of the nonpoint source program, all aspects of policy and program development and implementation have been characterized by partnerships and collaboration. The statewide New York Nonpoint Source Coordinating Committee (NPSCC) was created in 1990 as an outgrowth of the participatory processes used to develop the original Nonpoint Source Management Plan. The collaborative model is repeated at the county level with county Water Quality Coordinating Committees (WQCCs) that provide guidance for local decision makers. Additional links to regional partners strengthen program direction and help guide the development and implementation of program elements. After identifying priority nonpoint source categories, the Nonpoint Source Coordinating Committee established collaborative workgroups to strengthen partnerships, refine policies and determine highest priority actions for addressing those source categories statewide. For the appropriate level and topic, representatives are involved from local, regional, state, interstate, tribal and federal agencies; business, industry and public interest groups; academic institutions; private landowners and producers, concerned citizens and other stakeholder interests.

Key Element III Balanced Approach: Statewide activities are coordinated through the NPSCC; institutionalized through MOUs and cooperative agreements; and implemented through processes to review, select, fund, initiate and oversee environmental restoration and protection projects. They are

tracked by databases and various water quality or compliance reports. Working groups of the NPSCC have been established to address the highest priority source categories at the statewide level. Basin or watershed-level activities are conducted by regional or local watershed management groups and range from broad partnerships in Comprehensive Conservation Management Plan (CCMP) areas to locally focused activities under geographically-specific watershed management plans.

Key Element IV Abating and Preventing NPS Pollution:

The Division of Water's Permitting and Compliance program staff work to abate NPS pollution through information, education, training, technical assistance and funding, with regulations and enforcement where necessary. The Clean Water/Clean Air Bond Act (Bond Act) and Environmental Protection Fund provide funding for water quality improvement projects, including nonpoint source pollution abatement and control. The Nonpoint Source Program has developed annually updated management practice catalogues addressing ten major categories of nonpoint source pollution. Partner agencies help distribute catalogues to appropriate audiences and work with them to select management practices to eliminate current problems and prevent future problems.

Key Element V Identification and Process: DEC's monitoring program covers all of New York's 17 drainage basins in a routine five-year cycle of intensive monitoring. For more than 15 years, New York has involved stakeholders in development of a Priority Waterbodies List (PWL) that identifies waters impaired or threatened by point and nonpoint sources of pollution and serves as a basis for focusing corrective actions on those waters most in need of protection and restoration. New York establishes local water quality priorities through its network of 58 county Water Quality Coordinating Committees, with guidance from the State Soil and Water Conservation Committee, the Nonpoint Source Coordinating Committee member agencies and the nonpoint source staff in DEC's nine regions and central office. Documentation for waterbodies characterized as threatened is derived from reports of imminent land use changes. The Department of Health and DEC's Division of Environmental Remediation provide information on threats and impairments to, or remediation of, the groundwater of New York.

Basin monitoring information was used to develop the Unified Watershed Assessment and serves as a starting point for developing the Watershed Restoration and Protection Action Strategies. Thus planning activities are focusing on both statewide priority source categories and specific watersheds in need of restoration and protection. Both initiatives include attention to prevention and restoration, considering identified problems and potential threats. Programs focus on a unified approach to water quality and natural resource issues. Within the five-year schedule for developing Watershed Restoration and Protection Action Strategies, New York's statewide Source Water Assessment Program and Agricultural Environmental Management Program will provide a second level of prioritization and planning at smaller watershed units, in cooperation with regional and local partners and consistent with our Community-Based Environmental Protection Strategy (CBEPS).

Key Element VI Program Review and Implementation: New York continues to implement all program components of section 319(b) of the Clean Water Act. Water quality-based elements of the program are reflected in the TMDL program, the Unified Watershed Assessment and the developing Watershed

Restoration and Protection Action Strategies. Technology-based elements are promoted through the use of the annually updated Management Practices Catalogues, from which landowners or facility operators can select, with appropriate technical assistance and involvement of county Water Quality Coordinating Committees, the best practices for their situation.

A full mixture of regulatory, financial and technical assistance is provided to support both the water quality-based and technology-based elements of the program. Program coordination is achieved primarily through the quarterly meetings of the Nonpoint Source Coordinating Committee and Memoranda of Understanding or cooperative agreements between DEC and other federal, state and regional agencies.

Key Element VII Federal Lands Management Consistency: Federal lands total only 414 square miles in New York State, including national historic sites and military installations. DEC continues to work closely with EPA in programs for interstate and international waters. New York relies upon its Nonpoint Source Coordinating Committee to present and resolve inconsistencies between state and federal program activities and to promote and develop complementary ones.

Key Element VIII Program and Financial Management: Program and fiscal management follow EPA GROG and GRITS procedures to ensure effective and efficient delivery of the nonpoint source program. The nonpoint source program is evaluated and adjusted through quarterly meetings of the Nonpoint Source Coordinating Committee.

Implementation funding has been focused in specific watersheds where waters are impaired and threatened. Water quality management, including nonpoint sources, follows a comprehensive management cycle, with attention to statewide needs and basin-specific issues; with focus on prevention and restoration; with both technology and water quality limits; and with attention to both water quality and natural resource issues. The cycle of monitoring, planning, implementation and compliance are supported by a full range of activities, including technical assistance, training, information and education, funding and enforcement.

Key Element IX Program Evaluation and Revision: As described in the Performance Partnership Agreement (PPA) between EPA and the Division of Water, the nonpoint source management program is reviewed and evaluated together with all the other elements of the water program. Each year, New York State assesses the effectiveness of its programs in meeting its goals and objectives, then revises its activities and annual workplans to continually focus on reaching the goals and objectives established in the PPA. The Nonpoint Source Assessment and Management Program is expected to be updated every five years. New York State will continue to refine the environmental measures and indicators that it uses to measure and report progress of watershed planning and implementation.

B. Analysis of the EPA Nine Key Elements in New York State's Nonpoint Source Management Program

Key Element I *The New York State program contains explicit short- and long-term goals, objectives, and strategies to protect surface and ground water.*

New York State conducts its Nonpoint Source Management Program under the following vision and mission statements:

Vision Statement

Nonpoint source pollution caused by natural and human activities no long impairs New York State's waters.

Mission Statement

The mission of New York's Nonpoint Source Program is to control, reduce or treat polluted runoff through the implementation of structural, operational or vegetative management practices; to administratively coordinate various state agencies and other interested partners having regulatory, outreach, incentive-based or funding programs that foster installation of management practices for any of the identified sources of nonpoint source pollution threatening or impairing the waters of New York; and to conduct local implementation and statewide coordination and evaluation on a watershed basis.

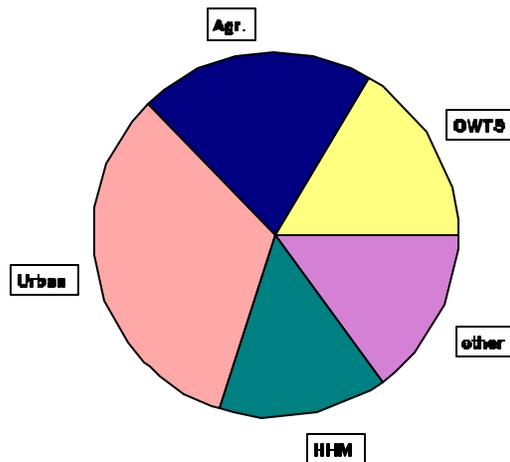
Long- and Short-Term Goals for the New York State

Nonpoint Source Management Program

PROBLEM: For the waters of New York State where uses are impacted by pollutants or disturbances, 90 percent are attributed to nonpoint sources. Problems associated with pollution from atmospheric deposition and contaminated sediments are being addressed at the regional and national levels. Of the remaining categories, urban runoff, which includes construction and roadway/right-of-way maintenance, constitutes 33 percent of the primary sources. Agricultural sources contribute 21 percent of the impacts, onsite wastewater treatment systems 17 percent and hydrologic and habitat modification, including streambank erosion, 14 percent. These are the four priority categories New York's

Primary Nonpoint Sources

Excluding Atm.Dep. and Cont.Sed.



program focuses on. The remaining 15 percent of sources (other) include unknown sources (9 percent), landfill and land disposal (3 percent), resource extraction (1 percent), and less than 1 percent each from silviculture, and chemical and petroleum leaks and spills.

Long-Term (15 year) and Short-Term (5 year) Goals for NPS Program

Statewide Long-Term Goals:

- LT 1 By 2015, restore designated best uses in 25 percent of New York State waters where pollution from nonpoint sources other than atmospheric deposition and contaminated sediments has had the most severe impacts.

- LT 2 By 2015, New York State will fully implement CZARA Nonpoint Management Measures in the 6217 management area designated by NOAA/USEPA. Many programs, such as the management of onsite wastewater treatment systems, will be Statewide.

- LT3 By 2015, New York State will implement all commitments identified in Watershed Restoration and Action Protection Strategies in all basins.

Statewide Short-Term Goals:

- ST1 **Water Restoration:** By 2005, restore designated best uses to 10 percent of the waters currently listed on the Priority Waterbodies List (PWL) as *precluded* or *impaired* from nonpoint sources other than atmospheric deposition and contaminated sediments.

- ST2 **Water Quality Impairment Verification:** By 2005, assess 50 percent of waters that currently need verification of impairment so that they are either verified and noted in the PWL or moved to a listing of no known impairment.

- ST3 **Water Quality Assessment:** By 2005, assess 50 percent of waters currently unassessed.

- ST4 **Natural Resource Information:** By 2005, increase the amount and type of natural resource information covered by the PWL.

- ST5 **Coastal Zone NPS Program:** New York State will work towards full approval of the Coastal NPS Program.

- ST6 **Watershed Strategies:** By 2006, all waters currently identified as precluded or impaired in the PWL will be reviewed. The cause and source of the impairments will be confirmed. New York

State will develop Watershed Restoration and Action Protection Strategies to correct these impairments for all basins.

ST7 **Section 303(d) List:** By 2002, New York State will update the 303(d) list which includes TMDL's for waters that have a nonpoint source component.

ST8 **TMDL's:** By 2008, New York State will develop TMDL's for all waters impaired by nonpoint sources.

ST9 **TMDL's:** Within 10 years after development of a TMDL with a nonpoint source component, New York State will implement NPS management measures in that area.

ST10 New York State will periodically review progress towards goal attainment.

Urban, Construction and Roadway Runoff

Note: For the purpose of setting priority source categories, New York State has combined Construction and Roadway and Right-of-Way Maintenance with the Urban/Stormwater Runoff source category, expressed as *urban, construction and roadway runoff (UCRR)*.

PROBLEM: Urban , construction and roadway runoff comprises 33 percent of the primary nonpoint sources that preclude, impair or stress New York's impacted waters, as reported in the state's Priority Waterbodies List. Stormwater management techniques have not always been understood and implemented at the local level, nor integrated with floodplain management.

UCRR Long-Term Goal:

By 2015, New York State will have restored designated best uses in 20 percent of its waters where *urban, construction and roadway runoff* is currently the primary source of pollutants causing a *precluded or impaired* designation on the Priority Waterbodies List (PWL).

Short-Term Goals:

UCRR1 Water Restoration: By 2005, New York State will have restored designated best uses in 5 percent of its waters where urban, construction and roadway runoff is currently the primary source of pollutants causing a *precluded or impaired* designation on the PWL.

UCRR2 Water Quality Improvement By 2005, 10 percent of the waters currently listed on the PWL as *precluded, impaired or stressed* from primary urban, construction site and roadway runoff sources will show a reduction in severity of impairment from their current levels as listed on the PWL.

UCRR3 Source Reduction: Due to improvements, by 2005 urban, construction site and roadway runoff will be reduced from a primary to a secondary source or the category will be removed entirely as a source for 10 percent of the segments currently listed on the PWL as *precluded, impaired or stressed* for this category and where urban, construction site and roadway runoff is currently listed as a primary or secondary source.

UCRR4 Corrective Management Strategy Development/Implementation By 2005, 20 percent of waters where urban, construction site and roadway runoff are currently identified as the primary source of pollution causing a *precluded or impaired* designation

on the PWL will have an implemented management strategy or will show progress toward the development/implementation of a strategy.

UCRR5 **Administrative Response:** The program will actively pursue administrative responses to achieve the Long and Short-Term goals of restoring water quality.

OBJECTIVES for implementing short-term goals:

- (1) Increase local capacity within each of New York's 62 counties to address urban runoff problems through information, education and training:
 - (a) By 2001, produce a stormwater manual to assist developers and their consultants and contractors, and state and local officials with practices selection and design of stormwater management measures for specific development sites.
 - (b) By 2001, establish a Floodplain and Stormwater Manager's Association in New York State to help facilitate the understanding of floodplain and stormwater management among association members, local officials, developers and contractors through regional conferences, workshops and outreach.
 - (c) By 2002, update the Management Practice catalogues for Urban/Stormwater Runoff and for Construction Runoff
 - (d) By 2002, develop a protocol for facilitating stormwater management planning on a watershed-wide basis.
 - (e) By 2002, establish a statewide award / recognition program to showcase good stormwater management practices
 - (f) By 2003, update the Management Practice catalogue for Roadway and Right-of-Way Maintenance.
 - (g) By 2003, update and revise the manual *Reducing the Impacts of Stormwater Runoff From New Development* to serve as a companion document to the above design manual.

- (2) Increase local capacity within each of New York's 62 counties to address urban runoff problems through technical assistance:
 - (a) By 2003, 85 percent of the municipalities automatically designated by the Phase II stormwater regulations will have been issued a stormwater permit.
 - (b) By 2002, update DEC's model Stormwater Management Ordinance ensuring that it is consistent with Phase II stormwater management requirements.

- (c) By 2002, conduct a pilot program through Nonpoint Education for Municipal Officials (NEMO) to provide technical tools to local officials.
 - (d) By 2001, provide copies of a video on roadway maintenance to all county highway superintendents.
- (3) Increase local capacity within each of New York's 62 counties to address urban runoff problems through funding: By 2005, New York State will spend at least \$25 million from the Bond Act and Environmental Protection Fund and \$20 million in loans from the Clean Water State Revolving Fund to plan and implement stormwater runoff abatement and control projects.

The following organizations are represented on the Urban Runoff Work Group:

Cornell University - Dept of Natural Resources, Water Resources Institute

Greene Co SWCD

NYCDEP - Bureau of Water Supply Quality & Protection, Stream Monitoring

NYSDEC - Bureau of Watershed Management, Bureau of Flood Protection, Bureau of Water Permits,
NYSDEC Region 4

NYSDOS - Division of Coastal Resources

NYSDOT - Environmental Analysis Bureau

Putnam Co. - Division of Planning and Development

Tioga Co SWCD

US Fish & Wildlife Service

US Geological Survey

USDA NRCS

USEPA Region 2

Upper Susquehanna Coalition

Onsite Wastewater Treatment Systems

PROBLEM: Failing or improperly installed onsite wastewater treatment systems (OWTS) comprise 17 percent of the primary nonpoint sources that preclude, impair or stress the use of New York's impacted waters, as reported in the state's Priority Waterbodies List. Often, homeowners moving from sewer homes to rural areas have no experience with onsite systems and do not know how to maintain them. Rural communities served by OWTS often cannot afford replacement sewers or other system enhancements. Local inspectors, installers and maintenance people may not have the skills necessary to oversee or to use proper installation techniques.

OWTS Long-Term Goal:

By 2015, New York State will have restored designated best uses in 30 percent of its waters where **onsite wastewater treatment systems (OWTS)** are currently the primary sources of pollutants causing a precluded or impaired designation on the Priority Waterbodies List.

OWTS Short-Term Goals:

OWTS1 **Water Restoration:** By 2005, New York State will have restored designated best uses in 10 percent of its waters where onsite wastewater treatment systems (OWTS) are currently the primary sources of pollutants causing a precluded or impaired designation on the Priority Waterbodies List.

OWTS2 **Water Quality Improvement:** By 2005, 10 percent of the waters currently listed on the PWL as *precluded, impaired or stressed* from primary onsite wastewater treatment systems sources will show a reduction in severity of impairment from their current levels as listed on the PWL.

OWTS3 **Source Reduction:** By 2005, due to improvements, onsite wastewater treatment systems will be reduced from a primary to a secondary source or the category will be removed entirely as a source for 10 percent of the segments currently listed on the PWL as precluded, impaired or stressed for this category and where onsite wastewater treatment systems are currently listed as a primary or secondary source.

OWTS4 **Corrective Management Strategy Development/Implementation:** By 2005, 20 percent of waters where onsite wastewater treatment systems are currently identified as the primary source of pollution causing a precluded or impaired designation on the PWL will have an implemented management strategy or will show progress toward the development/implementation of a strategy.

OWTS5 **Administrative Response:** The program will actively pursue administrative responses to achieve the Long and Short-Term goals of restoring water quality.

OBJECTIVES for implementing Short-Term goals:

- (1) Enhance local capacity within each of New York's 62 counties to address NPS problems from OWTS through information, education and training:
 - (a) By 2001, update the Management Practice catalogue for Onsite Wastewater Treatment Systems.
 - (b) By 2005, 30 counties in New York State will be using Home-A-Syst to educate homeowners about OWTS.
 - (c) By 2005, conduct a series of training sessions (at least 20 days/year) for local officials and OWTS installers and maintainers, with a total target attendance of 1200 persons

- (2) Enhance local capacity within each of New York's 62 counties to address NPS problems from OWTS through technical and administrative assistance: By 2005, the NYSEFC will have provided \$60 million in zero-interest loans to financial hardship communities to address OWTS problems through the Self-Help program.

- (3) Enhance local capacity within each of New York's 62 counties to address NPS problems from OWTS through funding: By 2005, New York State will spend at least \$40 million from the Bond Act and Environmental Protection Fund for projects to plan and implement OWTS improvements or replacements.

The following organizations are members of the OWTS Work Group:

AWT Environmental, Inc
Association of Towns
Bray Engineering
Cornell University - Textiles & Apparel
Delaware Co SWCD
Knight Treatment Systems
Madison Co Environmental Health - NYS Conference of Environmental Health Directors
NE RCAP
NYCDEP - Bureau of Water Supply Quality & Protection
NYS Dept of Agriculture & Markets - SWCC
NYSDEC - Bureau of Watershed Assessment & Research, Bureau of Watershed Management
NYSDOH - Bureau of Sanitation & Food Protection
NYSDOS - Division of Coastal Resources, Division of Local Government
NYS Environmental Facilities Corporation
NYS Federation of Lake Associations
NYSERDA
Northrup Septic Service

Hydrologic and Habitat Modifications

Note: For the purpose of setting priority source categories, New York State has combined Streambank Erosion with the Hydrologic and Habitat Modifications source categories, expressed as *hydrologic and habitat modifications (HHM)*.

PROBLEM: Hydrologic and habitat modifications comprise 14 percent of the primary nonpoint sources that preclude, impair or stress the use of New York's impacted waters, as reported in the state's Priority Waterbodies List. Stream restoration is often conducted on a site by site basis, without reference to the watershed or the stream's geomorphological characteristics. Although loss of wetlands is slowing, it still occurs. Local officials, especially local highway staff, often need training on techniques to protect water quality while solving their flooding or erosion problems.

HHM Long-Term Goal:

By 2015, New York State will have restored designated best uses in 20 percent of its waters where hydrologic and habitat modifications (HHM) are currently the primary source of pollutants causing a precluded or impaired designation on the Priority Waterbodies List.

HHM Short-Term Goals:

- HHM1 **Water Restoration:** By 2005, New York State will have restored designated best uses in 10 percent of its waters where hydrologic and habitat modifications (HHM) are currently the primary source of pollutants causing a precluded or impaired designation on the Priority Waterbodies List.
- HHM2 **Water Quality Improvement:** By 2005, 10 percent of the waters currently listed on the PWL and verified as *precluded, impaired* or *stressed* by pollutants from primary hydrologic and habitat modification sources will show a reduction in severity of impairment from their current levels as listed on the PWL.
- HHM3 **Source Reduction:** By 2005, due to improvements, hydrologic and habitat modifications will be reduced from a primary to a secondary source or the category will be removed entirely as a source for 10 percent of the segments currently listed on the PWL as precluded, impaired or stressed for this category and where hydrologic and habitat modifications are currently listed as a primary or secondary source.

HHM4 **Corrective Management Strategy Development/Implementation:** By 2005, 20 percent of waters where hydrologic and habitat modifications are currently identified as the primary source of pollution causing a precluded or impaired designation on the PWL will have an implemented management strategy or will show progress toward the development/implementation of a strategy.

HHM5 **Administrative Response:** The program will actively pursue administrative responses to achieve the Long and Short-Term goals of restoring water quality.

OBJECTIVES for implementing Short-Term goals:

- (1) By 2005, restore ecosystems impaired by hydrologic and habitat modifications:
 - (a) Restore 13,500 acres of shoreline vegetation along waterbodies and water courses.
 - (b) Restore 25,500 acres of wetlands.
 - (c) Restore 25 miles of morphologically impaired or flood-damaged water courses.

- (2) Increase local capacity within each of New York's 62 counties to address NPS problems from HHM through information, education and training:
 - (a) By 2002, update the Management Practice catalogue for Hydrologic and Habitat Modifications.
 - (b) By 2003, update *The Survey and Compendium of Local Laws for Protecting Water Quality From Nonpoint Source Pollution* and place it on the NPS web site.
 - (c) By 2004, update the manual entitled *Stream Corridor Management: A Basic Reference Manual*.
 - (d) By 2003, conduct two series of workshops per year across the state to train DEC regional staff, and DOS, SWCD, and DOT staff in tools for managing and restoring wetlands and stream corridors.
 - (e) By 2002, distribute 7,000 copies of new *New York State Forestry Best Management Practices for Water Quality Field Guide* to timber harvesters, foresters, Conservation Districts, and other natural resource management professionals.
 - (f) By 2001, develop and distribute new *Forestry Best Management Practices* brochure to increase landowner awareness and use of BMPs.
 - (g) By 2003, update the Silvicultural BMP Catalog.

- (h) By 2004, diversify State Forest Nursery operation to produce planting materials for riparian restoration and re-establishment.
 - (i) By 2002, expand cooperative NY Logger Training and Certification Program to include 2,000 operators; develop and conduct at least 5 workshops per year on BMPs and water quality protection.
- (3) Increase local capacity within each of New York's 62 counties to address NPS problems from HHM through technical assistance: By 2003, develop a certification program for highway superintendents to include ways to minimize stream disturbance and maintain a more natural flow regime.
- (4) Increase local capacity within each of New York's 62 counties to address NPS problems from HHM through funding: By 2005, New York State will spend at least \$30 million from the Bond Act and Environmental Protection Fund to plan and implement aquatic habitat restoration projects.

The following organizations are members of the Hydrologic/Habitat Modification (HHM) workgroup:

Cornell University - Dept of Natural Resources, Water Resources Institute
Greene Co SWCD
NYCDEP - Bureau of Water Supply Quality & Protection, Stream Monitoring
NYSDEC - Bureau of Watershed Management, Wetlands Coordinator - Fish and Wildlife,
Div of Lands & Forests, NYS DEC Region 4
NYSDOS - Division of Coastal Resources,
NYSDOT - Envir Analysis Bureau
Tioga Co SWCD
US Fish & Wildlife Service
US Geological Survey
USDA NRCS
USEPA Region 2
Upper Susquehanna Coalition

Agriculture

PROBLEM: Agricultural activities comprise 21 percent of the primary nonpoint sources that preclude, impair or stress the use of New York's impacted waters, as reported in the state's Priority Waterbodies List. Although the AEM program (see explanation below) has proved effective, it is not yet in widespread use in all farm counties, nor is it yet integrated into educational programs. Other existing programs need to be more fully implemented to increase progress in abating NPS runoff from agricultural activities.

AG Long-Term Goal:

By 2015, New York State will have restored designated best uses in 30 percent of its waters where agricultural runoff is currently the primary source of pollutants causing the precluded or impaired designation on the Priority Waterbodies List (PWL).

Short-Term Goals:

- AG1 **Water Restoration:** By 2005, New York State will have restored designated best uses in 10 percent of its waters where agricultural runoff is currently the primary source of pollutants causing the precluded or impaired designation on the Priority Waterbodies List.
- AG2 **Water Quality Improvement:** By 2005, 10 percent of the waters currently listed on the PWL as *precluded, impaired or stressed* by pollutants from primary agricultural sources will show a reduction in the severity of impairment from their current levels as listed on the PWL.
- AG3 **Source Reduction:** By 2005, due to improvements, agriculture will be reduced from a primary to a secondary source or the category will be removed entirely as a source for 10 percent of the segments currently listed on the PWL as precluded, impaired or stressed for this category and where agriculture is currently listed as a primary or secondary source.
- AG4 **Corrective Management Strategy Development/Implementation:** By 2005, 50 percent of waters where agriculture is currently identified as the primary source of pollution causing a precluded or impaired designation on the PWL will have an implemented management strategy or will show progress toward the development/implementation of a strategy.
- AG5 **Administrative Response:** The program will actively pursue administrative responses to achieve the Long and Short-Term goals of restoring water quality.

Since 1994 in New York State, the Agricultural Environmental Management (AEM) Initiative, a statewide, voluntary, locally-led and implemented approach, has been helping farmers comply with water quality objectives while meeting their business objectives. County Soil and Water Conservation Districts and their public and private sector partners

work with farmers in a five-step environmental planning and implementation process to address environmental concerns on their farms. With financial and technical assistance, they conduct farm assessments (Tiers I and II), make plans to abate pollutant runoff (Tier III) and implement projects (Tier IV), such as fencing livestock from waters and wetlands. Tier V evaluates the project effectiveness on the farm and in the watershed.

OBJECTIVES for implementing Short-Term goals:

- (1) By 2005, for sources of NPS pollutants from agricultural activities, including Concentrated Animal Feeding Operations (CAFOs) and Animal Feeding Operations (AFOs) with more than 10 acres and greater than \$10,000 in average gross annual sales,
 - (a) 50 percent will complete AEM Tier 1;
 - (b) 40 percent will complete Tier 2;
 - (c) 20 percent will complete Tier III planning;
 - (d) 15 percent will complete Tier IV implementation.
 - (e) An assessment survey (Tier 5) will be used to reevaluate these goals for 2010.

- (2) Increase local capacity within each of New York's 62 counties to address NPS problems from agricultural sources through information, education and training:
 - (a) By 2005, conduct AEM outreach and training for these special interest groups:
 - 170 qualified AEM planners
 - Future farmers, through community colleges and schools in 10 counties.
 - 25 Watershed organizations
 - Agricultural producers in 55 counties
 - Local decision-makers in 55 counties
 - (b) By 2002, update the Management Practice catalogue for Agriculture
 - (c) By 2002, establish a statewide award /recognition program to showcase good agricultural practices.
 - (d) By 2001, update the AEM manual.

- (3) Increase local capacity within each of New York's 62 counties to address NPS problems from agricultural sources through technical assistance: By 2005,
 - (a) Resource Management Systems will be planned on 165,000 acres of erodible cropland.

- (b) Resource Management Systems will be applied on 132,000 acres of erodible cropland.
 - (c) Nutrient Management Systems will be applied on 295,000 acres of cropland in New York State
 - (d) Integrated Pest Management (IPM) will be applied to 36,500 acres of cropland in New York State.
- (4) Increase local capacity within each of New York's 62 counties to address NPS problems from agricultural sources through funding: By 2005, New York State will spend at least \$15 million from the Bond Act and Environmental Protection Fund to plan and implement agricultural nonpoint source abatement and control projects.

The following organizations are members of the Agricultural Environmental Management (AEM) Committee:

Albany Co SWCD - USDA FSA
Cornell University - Cooperative Extension, Pro-Dairy Program, Water Resources Institute
Dutchess Co SWCD
NY Farm Bureau
NYC Watershed Agricultural Council
NYSDEC - Bureau of Watershed Management
NYSDOH - Bureau of Public Water Supply Protection
NYS Dept of Agriculture & Markets – SWCC
NYS Dept of State - Division of Coastal Resources
Natural Resources Conservation Service
Suffolk Co SWCD
Wyoming Co SWCD

Key Element II. ***New York State strengthens its working partnerships and linkages with appropriate state, tribal, regional, and local entities (including conservation districts), private sector groups, citizens groups and federal agencies.***

The statewide New York Nonpoint Source Coordinating Committee was created in 1990 as an outgrowth of the participatory processes used to develop the original Nonpoint Source Management Plan. Its purpose is to coordinate nonpoint source pollution control activities in partnership with federal and state agencies and other organizations with NPS responsibilities or interests. The statewide committee also provides guidance and acts as a model for local decision makers in county Water Quality Coordinating Committees (WQCCs). The WQCCs represent each of New York State’s 62 counties, where the county Soil and Water Conservation Districts usually play key roles. Other members usually include representatives of Cooperative Extension, NRCS, county health, county planning, environmental management council, lake associations, civic groups and other interested parties.

New York’s partner agencies work closely with one another and with key stakeholders to effectively avoid the transfer of problems among environmental media. At the state level, New York’s Environmental Quality Review Act, Comprehensive Conservation and Management Plans for priority watersheds, Remedial Action Plans for Great Lakes Areas of Concern and Multi-Media Pollution Prevention programs provide both statewide and site-specific mechanisms for partners to work together to control pollutant transfer. New York State has been a leader in avoiding the transfer of pollutants among environmental media, especially regarding atmospheric deposition from Midwestern sources, through the Coalition of Eastern States and through Great Lakes programs. Regional partners, e.g., the Adirondack Council, are effective in advocating regional protection.

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| <p>A. New York State uses the state-wide, interagency Nonpoint Source Coordinating Committee to provide cooperative programs and input from representatives of federal and state agencies and other organizations with nonpoint source interest or activities. Tribal interests are represented in specific geographical management programs.</p> | <p>Chap I Chap II</p> |
| <p>B. The NPSCC meets quarterly and promotes collaborative and inclusive decision-making. In addition, New York has established working groups for each source category. The Information and Education Subcommittee and Community- Based Environmental Management Subcommittee address cross-cutting outreach issues.</p> | <p>Chap II Chap IV</p> |

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| C. The state program specifies procedures to provide for periodic public input into the program through the annual Management Practices Catalog updating process, county WQCCs, and the Water Management Advisory Committee. | App. B Chap II 2-3 |
| D. New York State effectively incorporates a variety of organizations and interests into the implementation of nonpoint source activities and projects. The development and implementation of the NPS Management Plan has been based on participation of partners and stakeholders. The NPSCC's Information and Education Subcommittee has reconvened to continue sharing resources and providing outreach coordination. | Chap IV 3 Chap II 1-4 |
| E. Partner agencies and stakeholders work together to avoid the transfer of problems among environmental media. The State Environmental Quality Review Act (SEQR) ensures site-specific review; the management plans ensure a watershed perspective that will be enhanced through the Watershed Restoration and Protection Action Strategies; and Executive leadership and policy have focused on state and interstate initiatives. | Chap V |

Key Element III. ***New York State uses a balanced approach that emphasizes both state-wide nonpoint source programs and on-the-ground management of individual watersheds where waters are impaired and threatened.***

New York's Nonpoint Source Management Program Update presents programs that implement statewide control of nonpoint source pollutants and programs that address individual watersheds. New York's watershed planning process provides a mechanism for addressing nonpoint pollution problems individually while including them in a comprehensive planning process.

Statewide activities are coordinated through the NPSCC; institutionalized through MOUs and cooperative agreements; and implemented through processes to review, select, fund, initiate and oversee environmental restoration and protection projects. They are tracked by databases and various water quality or compliance reports. Working groups of the NPSCC have been established to address the highest priority source categories at the statewide level: Onsite Wastewater Treatment Systems, Urban Runoff, Hydrologic/ Habitat Modifications, and Agriculture. The Agricultural Environmental Management (AEM) initiative, under NYS Department of Agriculture & Markets leadership, established the prototype for continuing work in each source category. A parallel program for communities is being developed as Community-Based Environmental Management

Basin or watershed-level activities are conducted by regional or local watershed management groups and range from broad partnerships in CCMP areas to locally focused activities under geographically-specific watershed management plans. Watershed restoration and protection projects are selected and funded by basin to address the highest priority needs geographically. The CEM initiative will encourage more local responsibility and capacity for solving local problems within a broader watershed context. The Unified Watershed Restoration and Protection Action Strategies will coordinate all these activities within a given watershed, and identify additional steps to fully restore and protect New York’s watersheds.

Statewide, the NPSCC has focused on empowering regional, county and local staff so they can provide training, technical assistance and information and education to landowners and local officials to prevent nonpoint source problems everywhere in the state. Implementation funding has been focused in specific watersheds where waters are impaired and threatened.

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| A. | The annual or multi-year work plans contain nonpoint source implementation actions directed both at specific priority watersheds and at activities of a state-wide nature. | Chap V- steps at the end of each section; Chap VII. |
| B. | New York State tracks both state-wide activities and watershed projects. The Unified Watershed Assessment process and 305(b) report track statewide activities; basin projects are tracked through regional organizations’ reports, including NPS Implementation Project Reports, CCMPs and RAP documents. | App. A Chap V |
| C. | New York State has institutionalized its program beyond the annual implementation of 319-funded activities and projects through MOUs, contracts, Bond Act and EPF projects and basin-specific CCMPs. | Chap V tables |
| D. | New York State uses an integrated watershed approach for assessment, protection and remediation that is well integrated with other water and natural resource programs through programs that implement the Clean Water Action Plan. | Chap III Chap VI 2-7 |

Key Element IV. ***The New York State program (a) abates known water quality impairments from nonpoint source pollution and (b) prevents significant threats to water quality from present and future activities.***

New York's Nonpoint Source Program staff work closely with DEC's monitoring and assessment staff to determine water quality impairments, as reported in the NYS Priority Waterbodies List (PWL) for surface waters. A comparable process to assess ground water is currently under way.

The Division of Water's Permitting and Compliance program staff work to abate NPS pollution through regulatory means, technical assistance and enforcement where necessary. The Clean Water/Clean Air Bond Act (Bond Act) and Environmental Protection Fund provide funding for water quality improvement projects, including nonpoint source pollution abatement and control. For example, in SFY 98-99, New York State provided approximately \$10 million to municipalities and county Soil and Water Conservation Districts to implement nonpoint source management practices that would improve water quality in cases where the waters were listed on the PWL. The municipalities, Districts and landowners supplied a commitment of local match ranging from 10% to 50% for each project.

New York uses training, technical assistance and information/education materials to encourage the use of management practices that will prevent threats to water quality from present and future activities. The Nonpoint Source Program has developed management practice catalogues addressing ten major categories of nonpoint source pollution. Catalogues are updated annually with the help of NPSCC member agency staff. Partner agencies help distribute catalogues to appropriate audiences and work with them to encourage management practices to eliminate current problems and prevent future problems. Where regulatory controls exist, violations are pursued through appropriate enforcement measures. Even in cases without regulatory controls, if water quality standards are violated, DEC takes enforcement action.

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| A. | In the Priority Waterbodies List, New York State has comprehensively characterized water quality impairments and threats for which nonpoint sources are the principal origins or significant contributors. | Chap III |
| B. | New York State has comprehensively characterized water quality impairments and threats likely to originate from, or to receive significant contributions from, nonpoint sources, as indicated in the PWL and the 305(b) report. Program elements, e.g., TMDLs, that protect waters also implement the Clean Water Action Plan. | Chap V 1- 3 Chap III 2, 9 - 18 |
| C. | The New York State program addresses all significant nonpoint source categories and subcategories. | Chap III 2; Chap VII V 1- 3, 7-85 App. B |

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| D. | New York State has identified specific programs to abate pollution from categories of nonpoint sources which cause or substantially contribute to impairments identified in its assessments. The NPSCC has set up working groups for the top five categories. | Chap V 5 - 8 and tables |
| E. | New York State has identified specific programs to prevent future water quality impairments and threats that are likely to be caused by nonpoint source pollution. | Chap V 5 - 8 and tables |
| F. | Additional information: The program tables in Chapter V contain remedial programs, preventive programs and programs with both aspects. | Chap V tables |

Key Element V. ***The New York State program identifies waters and their watersheds impaired by nonpoint source pollution and identifies important unimpaired waters that are threatened or otherwise at risk. Further, New York establishes a process to progressively address these identified waters by conducting more detailed watershed assessments and developing watershed implementation plans, and then by implementing the plans.***

For more than 15 years, New York has involved stakeholders in development of a Priority Waterbodies List (PWL) that identifies waters impaired or threatened by point and nonpoint sources of pollution and serves as a basis for focusing corrective actions on those waters most in need of protection and restoration. The PWL expands on information listed in the 305b report and provides a listing and data sheet for each of the impaired or threatened waters in each basin.

New York identifies waters and watersheds impaired by nonpoint source pollution and establishes local water quality priorities through its network of fifty-eight county Water Quality Coordinating Committees, with guidance from the State Soil and Water Conservation Committee, the Nonpoint Source Coordinating Committee member agencies and the nonpoint source staff in DEC's nine regions and central office. Documentation for waterbodies characterized as threatened is derived from reports of imminent land use changes. DEC's monitoring program covers all of New York's 17 drainage basins in a five-year cycle of intensive monitoring. Biomonitoring program staff, and DEC Regional Water, Air and Fish, Wildlife and Marine Resources staff all provide information to assess nonpoint source impairments to New York's surface waters. The Department of Health and DEC's Division of Environmental Remediation provide information on threats and impairments to, or remediation of, the ground water of New York.

The Unified Watershed Assessment (UWA) approach, as outlined under the federal Clean Water Action Plan, integrates environmental quality and natural resource issues by watershed. The UWA,

submitted to EPA on October 1, 1998, describes how New York is identifying pollutant sources, establishing restoration priorities, and developing restoration action strategies for Category 1 watersheds, those where the water quality does not support their clean water or natural resource goals. A five-year schedule is included for addressing priority waters in the state. Within the UWA framework, New York's statewide Source Water Assessment Program and Agricultural Environmental Management Program provide a second level of prioritization and planning at smaller watershed units.

Agencies and groups such as WQCCs; SWCDs; regional planning boards; Regional DEC staff and other local, state, and federal groups have been addressing nonpoint source problems on a geographical basis for many years. The resulting local and regional watershed plans include those for Otsego Lake, New York City water supply, Keuka Lake, Skaneateles Lake (Syracuse water supply) and Wappingers Creek . In addition, management plans have been prepared for lakes that participated in the Citizens' Statewide Lake Assessment Process (CSLAP) for five consecutive years; implementation is proceeding under the leadership of specific lake associations. All these initiatives are part of our Community-Based Environmental Protection Strategy (CBEPS).

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| A. Water quality assessments (including those performed under sections 305(b), 319(a), 303(d), 314, and others), along with analysis of changing land uses within New York State, form the basis for the identification of the state's planned nonpoint source activities and projects. The PWL summarizes information on impaired and threatened waters. | Chap III 3-10 Chap VII 11-12, 17-19 |
| B. New York State activities focus on remediating the identified impairments and threats and on protecting the identified at-risk waters, based on priorities and schedules developed in management plans, and funding from Bond Act, EPF and PPA. The Unified Watershed Restoration and Protection Action Strategies will enhance this process. | Chap VI 2 -7 |
| C. New York State has provided for public participation in the overall identification of problems to be addressed in the state program and in the establishment of a process to progressively address these problems through statewide, regional and county coordination of agencies and interests. More targeted public participation is conducted for management plans in specific watersheds. | Chap III 9-10, 14 Chap VI 3 -5 |
| D. New York State nonpoint source priorities and funding decisions are developed collaboratively with other water resource management agencies operating within the state, primarily through the interagency Nonpoint Source Coordinating Committee. | Chap II |
| E. New York State revises its identification of waters on a five-year monitoring cycle of Rotating Intensive Basin Studies (RIBS), updates the PWL and revisits its process for progressively addressing these problems in preparing its various reports and through the NPSCC. The schedule for developing the Unified Watershed Restoration and Protection Action Strategies is based on the PWL update process. | Chap III 9 |
| F. Additional information: The Source Water Assessment Program, Agricultural Environmental Management and the developing CEM programs are additional sources of information for identifying impaired or threatened waterbodies. | Chap II 4 |

Key Element VI. *New York State reviews, upgrades, and implements all program components required by section 319(b) of the Clean Water Act and establishes flexible, targeted and iterative approaches to achieve and*

maintain beneficial uses of water as expeditiously as practicable. State programs include:

- (a) A mix of water quality-based and/or technology-based programs designed to achieve and maintain beneficial uses of water; and***
- (b) A mix of regulatory, non-regulatory, financial and technical assistance as needed to achieve and maintain beneficial uses of water as expeditiously as practicable.***

New York continues to implement all program components of section 319(b) of the Clean Water Act. Water quality-based elements of the program are reflected in the TMDL program and Unified Watershed Restoration and Protection Action Strategies. Technology-based elements are promoted through the use of the annually updated Management Practices Catalogues, from which landowners or facility operators can select, with appropriate technical assistance and involvement of county Water Quality Coordinating Committees, the best practices for their situation.

A full mixture of regulatory, financial and technical assistance is provided to support both the water quality-based and technology-based elements of the program, as described in section IV above. Program coordination is achieved primarily through the quarterly meetings of the Nonpoint Source Coordinating Committee and Memoranda of Understanding or cooperative agreements between DEC and other federal, state and regional agencies.

1. New York State includes in its program and implements the following eight items:

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| 1A. | The measures to be used to control nonpoint sources of pollution are identified in an annually updated series of Management Practices Catalogues, focusing on those measures that will be most effective to address the specific types of nonpoint source pollution prevalent within New York. The catalogues are developed for ten categories or subcategories of nonpoint sources; they are referenced in specific permits and in local and regional watershed plans. | Chap V 1-8 App. B |
| 1B. | Programs to achieve implementation of the measures are identified. | Chap V tables |
| 1C. | Processes used to coordinate and, where appropriate, integrate various programs used to implement nonpoint source controls in the state are achieved through the NPSCC and Memoranda of Understanding with other state or regional agencies. | Chap I 2, 7-9 |

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| 1D | A schedule with goals, objectives, and annual milestones for program implementation is presented for all programs, including the legal authorities to implement the program; available resources; and institutional relationships. | 1990 Program; Chap VII; Chap V tables |
| 1E | Recertification of the Nonpoint Source Program by the Attorney General was not sought as all new initiatives are operating under existing legal authorities. | N/A |
| 1F. | Sources of funding from federal (other than section 319), state, local and private sources are listed; all program elements are represented in the 1996 Clean Water/Clean Air Bond Act and in New York's Environmental Protection Fund. | Chap VIII |
| 1G. | Federal projects and programs conducted on state lands or in state waters and affecting state waters are subject to Section 401 water quality certification. Additionally, in the coastal zone, both federal and state agency actions are subject to the Coastal Consistency program under the Department of State. (See Key Element VII) | Table V-1 |
| 1H. | Monitoring and other evaluation programs to help determine short- and long-term program effectiveness are described and listed. | Chap III 5, 8-10, 17-18 |

2. The New York State program also incorporates or cross-references existing baseline requirements established by other applicable federal or state laws to the extent that they are relevant.

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| 2A-D | Program references include approved state coastal nonpoint source pollution programs under section 6217 of the Coastal Zone Act Reauthorization Amendments of 1990; state forestry management practices programs; state construction, erosion or nutrient management laws; and federal or state transportation laws governing runoff from construction or maintenance sites. | Chap V 1 Implementation steps at the end of each section Chap V tables |
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Key Element VII. *New York State identifies federal lands and activities that are not managed consistently with state nonpoint source program objectives. Where appropriate, New York State seeks EPA assistance to help resolve issues.*

Federal lands total only 414 square miles in New York State, or 0.08% of the state's land area. This includes recreational areas, such as national historic sites, and non-recreational areas, such as military installations. DEC continues to work closely with EPA in programs for interstate and international waters. New York has an interest in the USDA programs that provide assistance to individual landowners, as listed or discussed in the agriculture and silviculture source category sections. New York relies upon its Nonpoint Source Coordinating Committee to present and resolve inconsistencies between state and federal program activities and to promote and develop complementary ones. In addition, DEC influences how EQIP funds are distributed, through participation in the State Technical Committee and a subcommittee that reviews and recommends EQIP projects for funding.

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| A. | New York State reviews federal financial assistance programs, development projects, and other activities that may result in nonpoint source pollution for consistency with the state program. | Chap II, 1- 2 Chap V 1, 10 |
| B. | New York State works with federal agencies to resolve inconsistencies between federal programs and activities and the state programs. Agencies include NRCS and other USDA programs; DOT; USACE; USDA Forest Service and DOI National Park Service. | Chap II 1- 2 |
| C. | Where New York State cannot resolve federal consistency issues to its satisfaction, it requests EPA assistance to help resolve the issues. | Chap II 1 - 2 |
| D. | New York State coordinates with federal agencies to promote consistent activities and programs and to develop and implement joint or complementary activities and programs. | Chap II 1- 2, 4 |

Key Element VIII. ***New York State manages and implements its nonpoint source program efficiently and effectively, including necessary financial management.***

New York's watershed projects and statewide nonpoint source control activities are distributed among several divisions within DEC and other state agencies with their own budgets, resources (and resource limitations), mandates and agendas to accomplish their missions. Increasingly, information is shared among these entities and coordination of programs is growing under the NPSCC and its statewide and regional mechanisms.

Tracking of federal and state monies is conducted under the audit and control procedures established by the Office of the NY State Comptroller. The DEC Division of Water is developing

a contract and grants computer tracking system that will report information directly and automatically into the federal Grants Reporting and Tracking System (GRTS).

Locally-based agricultural and non-agricultural nonpoint source grant projects funded by federal and/or state funds involve review and selection procedures that include the NPSCC, DEC, And DEC Regional Water, Fish, Wildlife and Marine Resources staff and DEC Central Office staff. Tracking of project implementation will also be a cooperative responsibility of the NPSCC member agencies.

Comprehensive watershed plans are in place for Long Island Sound, NY/NJ Harbor Estuary, Hudson River Estuary, Lake Ontario, Lake Champlain and Onondaga Lake. Plans are under development for the Peconic and South Shore Estuaries. The state’s Clean Water/Clean Air Bond Act and Environmental Protection Fund operate under state legislation and fund projects supporting priority NPS actions in all of these management plan areas. The data gathering and planning aspects of the nonpoint source program guide funding decisions for investing in implementation projects through the Bond Act, EPF and Performance Partnership Grants. In addition, projects addressing nonpoint source pollution in the Finger Lakes and other waters of the state can be funded through these programs.

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| A. | New York State's plans for watershed projects and state-wide activities are well-designed, with sufficient detail to assure effective implementation. These plans guide funding decisions under the State Revolving Fund (SRF), Environmental Protection Fund and Clean Water/Clean Air Bond Act. | Chap VI Chap V 10-14 |
| B. | New York State's watershed projects focus on the critical areas, and critical sources within those areas that are contributing to nonpoint source problems. Priorities established through management plans allow proposals that address critical areas and sources to score high in evaluations for funding under the SRF, EPF and Bond Act . | Chap V 7-8 |
| C. | New York State implements its activities and projects, including all tasks and outputs, in a timely manner, as detailed in individual program reports and Bond Act/EPF/SRF project implementation reports. | App. A- reports Chap V tables |
| D. | New York State has established systems to assure that it meets its reporting obligations through the Performance Partnership Agreement, basin-specific Management Plans, federal Clean Water Act requirements and in Bond Act/EPF/SRF reports. | |

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| E. | New York State uses the Grants Tracking and Reporting System effectively, including Bond Act/EPF/SRF implementation. | See narrative above. |
| F. | New York State has developed and uses a fiscal accounting system capable of tracking expenditures of both section 319 funds and non-federal match, including Bond Act/EPF/SRF implementation. | See narrative above. |
| G. | Nonpoint source projects include appropriate monitoring to gauge effectiveness, including tracking and oversight of BMP project implementation. We will use indicators developed in the PPA. | Chap III 7-9, 17-18 |

Key Element IX. ***New York State periodically reviews and evaluates its nonpoint source management program using environmental and functional measures of success, and revises its nonpoint source assessment and its management program at least every five years.***

New York uses its Rotating Intensive Basin Studies (RIBS) and Source Water Assessment (SWAP) as the water quality monitoring system for both point and nonpoint source pollution of the state's waters. The evaluation is portrayed in the Priority Waters List and Source Water Assessment Report. As described in the Performance Partnership Agreement, the nonpoint source management program is reviewed and evaluated together with all the other elements of the water program. Each year, New York State assesses the effectiveness of its programs in meeting its goals and objectives, then revises its activities and annual workplans to continually focus on reaching the goals and objectives established in the PPA. The Nonpoint Source Assessment and Management Program is expected to be updated every five years.

Building on work by an agency-wide task force, together with the progress indicators outlined in the PPA, New York State will continue to refine the environmental measures and indicators that it uses to measure and report progress as watershed planning and implementation.

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| A. | New York State has and uses a process to periodically assess both improvements in water quality and new impairments or threats by updating the PWL and the sections 305(b), 303(d) and 319 reports at least every 5 years. | Chap III 7- 9, 15-18 |

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| <p>B. New York State uses feedback loops based on monitoring and other evaluative information, as described in the RIBS program, SWAP and watershed planning processes. The nonpoint source management program is reviewed and evaluated, and activities and annual workplans are adjusted to ensure progress in achieving the goals and objectives established in the PPA.</p> | <p>Chap I 9 Chap III 5-10</p> |
| <p>C. Quantitative goals for performance progress are established in the PPA. These will help assess the effectiveness of the NPS program in meeting its goals and objectives and in revising activities and annual work plans, as appropriate.</p> | <p>Chap I Chap VI</p> |
| <p>D. New York State has prepared two status reports since adopting the NPS Assessment and Management Program. The NPSCC is the vehicle for updating the NPS program on a five year cycle; reports from the workgroups will show progress in meeting milestones, implementing BMPs, and achieving water quality goals listed in the PPA.</p> | |
| <p>E. Additional information: The NPSCC is increasing its commitment to coordinating policy, partnerships and communication among member agencies and institutions and the regional and local entities involved.</p> | |