

Chapter 7 (Rural): Possible New Remedial Measures

Chapter 7 (Rural): Possible New Remedial Measures Introduction

Each Remedial Action Plan shall include:

"An evaluation of alternative additional measures to restore beneficial uses..."

(Great Lakes Water Quality Agreement, as amended in 1987)

This Stage II chapter describes proposed new remedial measures for use impairments identified in the Rochester Embayment Area of Concern. The measures described in Chapter 7(Rural) address conditions in the Embayment by addressing conditions that exist in the rural areas of the Embayment's watershed.

Many of the proposed remedial measures will directly impact more than one use impairment, and may indirectly impact others. In most cases, there is no single cause for a use impairment. Consequently more than one action will be required to address each use impairment. For this reason, the table in Chapter 7 (Urban) showing the linkages between remedial measures and use impairments has been adapted to the rural remedial measures. The table is shown at the beginning of Chapter 7(Rural).

The measures described in Chapter 7 (Rural) were based on those proposed for Chapter 7 (Urban). The Rural Ranking Task Group, composed of representatives from Allegany, Genesee, Livingston, Ontario and Wyoming Counties, reviewed the remedial measures in Chapter 7 (Urban) and proposed revisions to several and additional remedial measures so that the chapter would reflect the rural perspective and include rural solutions. Each representative had additional opportunity to review Chapter 7 (Rural) after the revisions were made.

Because of the limited amount of resources that is available for additional remedial measures, the Rural Ranking Task Group evaluated the proposals and ranked them in importance to the RAP process according to a specific set of criteria. See Chapter 10 for a description of the rural ranking process and the ranked list of proposed remedial measures. See Chapter 10 also for a description of the urban ranking process.

Impairments Reference Table - Explanation
Identification of Use Impairments Impacted by Chapter 7 (Rural) Sections

Like the sections in Chapter 7 (Urban), each section in Chapter 7 (Rural) was developed with a specific use impairment in mind. However, most of the sections are actually related to more than one use impairment. After the completion of Chapter 7 (Urban), a three-person Task Group assisted with identifying all the use impairments associated with each section in that chapter. The table relating proposed remedial actions and use impairments that was developed for Chapter 7 (Urban) has been adapted for Chapter 7 (Rural).

Identification of the use impairments is sometimes obvious, but more often it is subjective. Recognizing that the actions in some sections will have more impact on use impairments than others, the Task Group divided the impacts into two categories: major/direct and minor/indirect.

Major/direct (denoted on the use impairments table by a black square): The actions to address the use impairment are literally actions, rather than recommendations, promotions or educational programs. The impact on the use impairment will be an improvement in an existing condition or the prevention of deterioration in an existing condition. If the actions are implemented, at least some success is ensured.

Minor/indirect (denoted on the use impairments table by a gray square): The actions to address the use impairment are:

- Dependent on the success of an educational program, a recommendation or a follow-up action (but success is not ensured); or
- Planned to address another use impairment, but has a secondary impact on the use impairment in question.

When the Task Group members identified the use impairments associated with each section, they recognized the impact of *preventing* impacts as well as *remediating* impacts.

**Table 7-8
Chapter 7 (Rural): Summary of Possible New Remedial Measures
and the Use Impairments that They Address**

Possible New Remedial Measures Name and Ch. 7 (Rural) Section #	Use Impairments (see below)													
	1	3	5	6	7	8	9	10	11	12	13	14		
25-Investigate PCB sources	■	■	■	■	■								■	
26 -NYS Water Quality Enhance/Protect	■	■	■	■	■							■	■	
27-Promote pollution prevention	■	■	■	■	■							■	■	
28-Identify hazardous waste sites	■	■	■	■	■				■			■	■	
29-Expand storm drain message system	■	■	■	■					■			■	■	
30-Institute intergovernmental agreements	■	■	■	■	■	■	■	■	■	■			■	
31-Onsite sewage disposal systems				■					■				■	
32-Point source phosphorus loadings		■						■	■	■			■	
33-Promote agricultural BMPs	■	■	■	■	■	■	■	■	■	■			■	
34-Education on lawn care	■	■	■	■	■	■	■	■	■	■			■	
35-Streambank erosion control program		■		■		■		■		■			■	
36-Educate local officials on wetlands		■				■							■	
37-Critical habitat along waterways		■				■							■	
38-Develop public education structure	■	■	■	■	■	■	■	■	■	■	■	■	■	
39-Complete basin water quality plans	■	■	■	■	■	■	■	■	■	■	■	■	■	
40 - Evaluate proposals for new measures	■	■	■	■	■	■	■	■	■	■	■	■	■	

Use Impairments identified in the Rochester Embayment:

1. Restrictions of fish and wildlife consumption
3. Degradation of fish and wildlife populations
5. Bird or animal deformities or reproductive problems
6. Degradation of benthos
7. Restrictions on dredging activities
8. Eutrophication or undesirable algae
9. Drinking water taste and odor problems
10. Beach closings
11. Degradation of aesthetics
12. Added cost to agriculture or industry
13. Degradation of plankton populations
14. Loss of fish and wildlife habitat

7.25. Investigate the extent of PCB sources and identify and remove PCB-containing equipment

7.25.1. Background:

Use impairments addressed: See Table 7-8

Affected water body: Lake Ontario, tributaries, Genesee River, groundwater

Current conditions that necessitate the measure: Released to the environment, PCBs adsorb strongly to soil and sediment, and may take several years to break down. PCBs have a low water solubility, and in a water environment most PCBs adsorb to particles and sediments. PCBs enter the bodies of fish primarily from ingestion of PCB-contaminated prey, and, to some extent, from sediment, particles in water, and water directly. Once ingested, PCBs have an affinity for fatty tissues. Bioconcentration factors from water to aquatic animals can vary from 26,000 to 660,000, and may depend on the water zone in which the aquatic animal predominantly resides. Presently, PCBs contribute to fish consumption advisories for certain fish species caught in Lake Ontario and various other waterbodies in the Embayment watershed. Likewise, degradation of mink populations within the Embayment has been attributed to the amount of PCB-contaminated fish in their diets.

(See also Chapter 6 section on "PCB ban and related activities.")

7.25.2. Proposed Action a: Investigate the extent of PCB sources

7.25.2.1. Description:

The investigation of the PCB problem would be a joint venture among the rural counties of the Rochester Embayment watershed. The funding and coordination of the joint venture could be facilitated by an Intergovernmental Agreement (IGA) among the participating counties (see Chapter 7 (Rural) section on "Institute Intergovernmental Agreements in the rural counties of the Rochester Embayment watershed").

Organization and staffing

If there is an IGA, funding would be implemented by the coordinating entity for the IGA. If there is no IGA, an implementing agency must be chosen by the participating counties. The implementor would assign or contract with an investigator, who might be an existing employee, a university professor or other environmental professional. The investigator could also be an employee of one of the utilities represented in the region. The investigator could be assisted by one or more student interns.

Basic information sharing

The investigator would begin by communicating with the various utilities serving the area to summarize for participating counties:

- What are PCBs?
- How and why have PCBs been used?
- Why are PCBs harmful if they escape into the environment?
- In what type of equipment and appliances are PCBs found?

The next steps build on the answer to the last question. The answers to the other questions will help in developing an educational program (see Action B).

Electric utilities

Electric utilities are required by law to inventory equipment containing 500 ppm or greater of PCBs and distribute the inventory to each county and city in which the PCB-containing equipment exists (see Chapter 6 section on "PCB ban and related activities"). The investigator could introduce the PCB program to the public by explaining what the utilities are required to do and how they are conducting their program to phase out the use of PCBs. This explanation would be followed with information about outreach to other sectors (see step #4). Information could be given to the public via enclosures with utility bills and press releases.

Businesses, municipal and educational facilities, and apartment complexes

The investigator would assist these facilities in performing inventories of equipment and appliances that are known or are likely to contain PCBs. The investigator would retain copies of the completed inventories.

Farms

The investigator would prepare a survey for use by the owners of farms as preparation for an estimation of the amount of PCB-containing equipment and appliances that exists at these sites. However, there would be no attempt to visit all farms. The investigator would assist the farm managers who volunteer in performing inventories of equipment and appliances that are known or are likely to contain PCBs. After learning what PCB-containing equipment and appliances might be found on the "average" farm, and using county data on number of farms, a rough estimate can be made for the entire area.

Residences

There would be no attempt to formally survey homes. However, science teachers could give their students a survey prepared by the investigator so that the students could survey their own homes as an educational exercise. The investigator may want to use the information to calculate a rough estimate for the entire area for PCB-containing appliances in individual houses. The

information may useful in designing a local hazardous waste collection program.

The extent of PCB sources

The investigator would combine the information from Steps #3-#5 about the PCB content of various types of equipment and appliances to estimate:

- The extent of the PCBs in the area that have the potential to be released to the environment.
- The amount of PCB-containing equipment that will eventually require disposal according to EPA-approved methods.
- The amount of PCB-containing equipment that may be eligible for disposal via a local hazardous waste collection program.

7.25.2.2. Time required: One-half year as a full-time position, or one year, as a half-time position

7.25.2.3. Estimated costs: \$15,000-\$25,000 for an environmental professional and costs of copying survey forms. The costs could be reduced if the work is performed by a college student working for credit under the supervision of an environmental professional. If the investigator is an employee of one of the electric utilities represented in the region, his/her salary might be donated by the utility.

7.25.2.4. Possible funding sources: Electric utility, New York State Department of Environmental Conservation (NYSDEC), U.S. Environmental Protection Agency (EPA)

7.25.2.5. Possible implementors: Electric utility; environmental management council, health department or planning department in one of the counties involved; Genesee Finger Lakes Regional Planning Council; New York State Department of Health

7.25.2.6. Expected benefits: The information gained in Action A would provide the base for planning Actions b and c, described below.

7.25.3. Proposed Action b: Educate about and identify equipment containing PCBs at commercial, municipal, educational and residential locations

7.25.3.1. Description:

It is probable that managers of commercial, municipal, and educational facilities and apartment complexes may not realize that they own electrical transformers and equipment that contain PCBs. Step #4 of Action A would be a first step in education for these facilities. Homeowners also may have appliances that contain small quantities of PCBs. A public information program should be initiated educating homeowners and further educating the managers of large facilities about the potential for PCBs to be present in electrical power equipment and appliances. Large

facilities should be encouraged to become familiar with existing PCB regulations.

7.25.3.2. Time required: An educational program of this type would likely take several months to one year to disseminate this information to the appropriate sources.

7.25.3.3. Estimated cost: Using established newsletters, mailings and press releases, costs for implementing this action would be minimal. Likewise use of public service announcements would also be low cost. Both of these approaches require primarily staff time to write and distribute information. Staff time could be provided by a student intern working at no cost under the supervision of an environmental professional.

7.25.3.4. Possible funding sources: Electric utility, Counties, NYSDEC, U.S. EPA

7.25.3.5. Possible implementors: PCB investigator (see Action A), commercial and municipal entities, public environmental interest groups, county environmental management councils, Cornell Cooperative Extension

7.25.3.6. Expected benefits: Identification and education will help to ensure that PCB-containing equipment and appliances will be disposed of properly, and that PCBs released to the environment are minimal.

7.25.4. Proposed Action c: Remove and dispose of equipment containing PCBs within commercial, municipal, educational and residential locations

7.25.4.1. Description:

Improper handling or disposal of PCB-containing items from commercial, municipal, educational and residential sources could lead to the release of PCBs into the environment. Commercial and municipal entities should comply with existing PCB regulations to ensure the proper handling and disposal of these items. A regional hazardous waste collection program should be organized to accept PCB-containing items from facilities that are not subject to PCB regulations, and PCB-containing items and other household hazardous waste from residences.

7.25.4.2. Time required: Including program development and implementation of removal, this proposed action would take several years.

7.25.4.3. Estimated costs: Example: In Monroe County, the first one-day household hazardous waste collection cost about \$90 per participating household. Fourteen hundred households participated. Sources of funding are shown below:

County:	\$ 63,000
City of Rochester:	5,000
Private sector donations:	<u>56,200</u>
Total cost:	\$124,200

As seen in a State University of New York (SUNY) example, complete equipment replacement can cost millions of dollars. SUNY schools within the Rochester Embayment watershed are Brockport, Geneseo, and two at Alfred. The cost of removal of transformers and related transformer room equipment containing PCBs for these schools is on the order of \$3,000,000. (The project is scheduled for completion in February 1998.)

7.25.4.4. Possible funding sources: Commercial and municipal entities would fund their own activities. Grants from EPA or NYSDEC may help to fund a hazardous waste collection program.

7.25.4.5. Possible implementors: PCB investigator (see Action A), commercial, educational and municipal entities, counties or Genesee Finger Lakes Regional Planning Council

7.25.4.6. Expected benefits: Proper disposal of PCB-containing equipment and appliances will ensure that PCBs will not be released to the environment.

Author: Carole Beal

7.26. Promote the New York State Water Quality Enhancement and Protection Policy

7.26.1. Background:

Use impairments addressed: See Table 7-8

Affected water body: All surface waters downstream of point sources

Current conditions that necessitate the measure:

Contaminant levels in fish and wildlife populations in Lake Ontario and other waterways exceed current standards, objectives or guidelines. Public health advisories are in effect for human consumption of fish and wildlife.

Fish and wildlife management programs have identified degraded fish or wildlife populations due to a cause within the Lake Ontario watershed.

Chemical contaminants in the ecosystem may affect the human immune or endocrine systems or act as carcinogens.

Additional information:

The New York State Department of Environmental Conservation (NYSDEC) is developing a Water Quality Enhancement and Protection Policy (WQEPP) to maintain the high quality of New York's waters and to advance the goals of federal and state laws to eliminate the discharge of pollutants. New York began developing the WQEPP based on the need to comply with the impending Great Lakes Water Quality Guidance, and the anticipated reauthorization of the Clean Water Act, which is expected to strengthen its antidegradation requirements. (See section in Chapter 6 on "Great Lakes Water Quality Guidance.") While parts of the policy will be required for the Great Lakes Basin, New York State is considering applying all three parts of the WQEPP statewide.

The policy has three main parts, one of which is an existing regulation, discharge Restriction Categories, and two of which are proposed policy or activity modifications. The promotion of the proposed policies will be described as part of proposed actions.

The first part of the WQEPP, an existing regulation, is Amendments to 6NYCRR Part 701 Concerning Discharge Restriction Categories (effective October 7, 1993). The goal of Discharge Restriction Categories (DRCs) is to protect sensitive waters that cannot assimilate the effects of new discharges or additional discharges of specified substances. Changes include two new discharge restriction categories added to the NYSDEC water use classification system:

- No new discharge: Prohibits any new discharge or an increase in any existing discharge.
- No new discharge of a specified substance: Prohibits the release of the specified substance in new discharges, or an increase in the release of the specified substance in any existing discharges.

The public can know in advance if a facility is planning a new discharge, because the facility would have to obtain a permit modification. The modification would require a notice in the NYSDEC publication Environmental Notice Bulletin.

The types of waterbodies to which DRCs could be assigned are waters of public health concern, waters of significant ecological or recreational value, and sensitive waters at risk from additional discharges. The implementation strategy is scheduled to be completed in 1995.

Because Discharge Restriction Categories are a regulation, they are enforceable by NYSDEC.

7.26.2. Proposed Action a: Promote antidegradation policy

7.26.2.1. Description:

The goal of antidegradation is to maintain the high quality of waters that are currently cleaner than standards now require. (NYSDEC does not maintain an "official" list of waters that are above standards for their use classification. A water body can be above the standard for one chemical but not for another. Any list would become out-of-date when new State regulations are completed to implement the Great Lakes Guidance. At that time, many of the standards will become stricter.)

The new Discharge Restriction Categories, effective in 1993, already provide an enhanced aspect to the existing antidegradation policy. NYSDEC is considering modifications to its existing antidegradation policy. The revised policy would specify a process for reviewing proposed actions that would result in discharges that significantly lower water quality. The process would require:

- The consideration of alternatives that would reduce or prevent the discharge of pollutants.
- The weighing of the social and economic benefits of actions that could significantly lower water quality.

Antidegradation is a policy still under development and is not currently enforceable. Development of the policy will be influenced by the antidegradation requirement in the federal Great Lakes Water Quality Guidance. (See Chapter 6 section on "Great Lakes Water Quality Guidance.") The Water Quality Coordinating Committees (WQCCs), of the Rochester Embayment watershed should also influence development of the policy by:

- Commenting to NYSDEC on the process for reviewing proposed actions.
- Promoting pollution prevention instead of discharge.
- Listing the benefits of a strong policy for the Rochester Embayment watershed.

The WQCCs should also ask their county legislatures to pass resolutions supporting a strong antidegradation policy. The resolutions would be forwarded to the NYSDEC.

7.26.2.2. Time required: 20 hours of staff time for one or more WQCC members to study the policy and its benefits for the Rochester Embayment watershed, and to communicate with

NYSDEC.

7.26.2.3. Estimated costs: Cost of staff time would be approximately \$480.

7.26.2.4. Possible funding sources: County, NYSDEC

7.26.2.5. Possible implementors: County, WQCCs, NYSDEC

7.26.2.6. Expected benefits: The antidegradation policy would protect the quality of water bodies that are cleaner than current New York standards.

7.26.3. Proposed Action b: Promote substance ban policy

7.26.3.1. Description:

The goal of substance bans is to protect all water from specific persistent toxic substances, those that are so threatening to the environment that the only way to avoid environmental problems is to ban their use. NYSDEC believes there is a need to develop a substance ban strategy. The proposed strategy consists of three components: (1) screening and prioritizing of chemicals using a criterion, regulatory review, use-tree or life cycle analysis, and waterbody impairment analysis; (2) legal authority options analysis; and (3) public participation.

Other international, federal and state initiatives are underway that may influence the direction of future substance ban efforts:

- The International Joint Commission's Virtual Elimination Workgroup.
- Federal and state policies developed as part of bioaccumulation and persistent toxic chemical controls (see Chapter 6 section on "Great Lakes Water Quality Guidance).
- Reauthorization of the federal Clean Water Act.
- An EPA proposal under the Toxic Substances Control Act to quantify the ecological threat from specific chemicals.

NYSDEC plans to study the regulatory impact of substance bans with technical support from the U.S. EPA.

The statutory authority for New York State to regulate the registration, commercial use, purchase, and custom application of pesticides in New York State is Article 33 of the New York State Conservation Law. Two federal statutes also address substance bans:

- The Federal Insecticide, Fungicide and Rodenticide Act (FIFRA). NYSDEC is assigned primary responsibility for elements of FIFRA delegated to New York State. New York State Pesticide Law ECL Section 33-0303(3)(d) authorizes NYSDEC to develop a list of restricted use pesticides subject to conditions and limitations that NYSDEC deems appropriate. "Restricted" may include "distributed, sold, purchased, possessed or used for any purpose". Examples are aldrin, chlordane and DDT.

- The Federal Toxic Substances Control Act (TSCA). Although TSCA allows a state government to prohibit the use of a substance under defined circumstances, the most desirable cause of action for a state is to seek federal legislation because of the multi-media cycling nature of persistent toxic substances in the environment and because of the economic and logistic complexities of their disposal.

The Water Quality Coordinating Committees (WQCCs) of the Rochester Embayment watershed should promote the completion of a substance ban policy for New York State. After the policy development has been completed, the WQCCs should suggest consideration of manufacture, sale and/or use bans for chemicals on the Rochester Embayment list of High Priority Pollutants (see Stage I RAP, page 5-40, and Stage II RAP, Chapter 3). The WQCCs should also ask their county legislatures to pass a resolution supporting specific substance bans for chemicals that are at or near the top of the High Priority Pollutant list. The resolution would be forwarded to the NYSDEC and to the State Legislature.

7.26.3.2. Time required: 20 hours of staff support time for one or more WQCC members to study the policy and its benefits for the Rochester Embayment Area of Concern, and to communicate with NYSDEC.

7.26.3.3. Estimated costs: Cost of staff time would be approximately \$480.

7.26.3.4. Possible funding sources: County, NYSDEC, U.S. Environmental Protection Agency

7.26.3.5. Possible implementors: WQCCs, County, NYSDEC

7.26.3.6. Expected benefits: Substance bans would protect all water classifications from specific toxic substances.

Author: Carole Beal

7.27. Promote pollution prevention

7.27.1 Background:

Use impairments addressed: See Table 7-8

Current conditions that necessitate the measure:

Contaminant levels in fish and wildlife populations exceed current standards, objectives or guidelines. Public health advisories are in effect for human consumption of fish and wildlife. Fish and wildlife management programs have identified degraded fish or wildlife populations due to a cause within the Lake Ontario watershed.

Chemical contaminants in the ecosystem may affect the human immune or endocrine systems or act as carcinogens.

7.27.2. Proposed Action: Initiate comprehensive pollution prevention efforts

7.27.2.1. Description:

Funding for pollution prevention efforts could be coordinated and administered at the regional level. The relationship among counties and any regional funding administrator could be governed by an Intergovernmental Agreement (IGA) among the participating counties.

Pollution prevention implementation could be done at either the regional or the county level. In either case, there should be a "point person" to manage implementation. The point person would be advised by a pollution prevention team that should include representatives of:

- Genesee Finger Lakes Regional Planning Council, if regional
- County departments, including planning and economic development departments
- Water Quality Coordinating Committee(s) (WQCC)
- Soil and Water Conservation District(s)
- Natural Resources Conservation Service
- Cooperative Extension(s)
- Environmental management council(s)
- Towns and villages
- Business community
- Agricultural community
- Citizens

Ad hoc members should be invited to participate when specific expertise is needed. If implementation is conducted at the county level, at least one person from each county pollution prevention team should communicate or meet with representatives from the other counties in the region on a regular basis to exchange ideas and information.

The county or regional pollution prevention team would:

- Determine priority pollutants to target, based on local concerns, RAP-identified pollutants and sources of pollutants.
- Develop an appropriate focus for the pollution prevention program, such as households, municipalities, small businesses or agriculture.
- Perform a preliminary analysis for each source category, including:
 - Type of pollutants (nutrients, oil, pesticides, paint, cleaners, etc.).
 - Causes of pollutant discharge (such as inadequate septic system, over-fertilization, etc.).
- Develop educational programs for each source category, or intensify existing programs. These should go beyond the distribution of pamphlets, and should include workshops appropriate to each source category. Workshops could be directed to:
 - Land-use decision makers on the control of stormwater and erosion at construction sites.
 - Municipal officials on the State Pollution Discharge Elimination System (SPDES) permit for stormwater discharges associated with construction activity (see Chapter 6 section on "Federal stormwater regulations").
 - Municipal officials on the New York State Environmental Quality Review Act.
 - Homeowners on environmentally sound lawn-care practices.
 - Homeowners on the care of septic systems.
 - Owners of auto body shops or dry cleaning establishments on handling of paints and/or chemicals.
- Offer assistance in the form of technical advice and onsite visits. Onsite visits might be particularly appropriate for explaining agricultural best management practices.
- Seek funding for a stormwater management specialist position for the region.
- Help counties establish pollution prevention programs at their own facilities.

Resources for educational programs and technical advice, in addition to the agencies represented on the team, include:

- U. S. Environmental Protection Agency (EPA)
- New York State Department of Environmental Conservation Pollution Prevention Unit (See Chapter 6 section on "New York State pollution prevention.")
- New York Association of Conservation Districts
- New York Conservation District Employees Association
- Erie County Office of Pollution Prevention (program described below)
- GLOW Solid Waste Management (Counties of Genesee, Livingston, Ontario and Wyoming)
- Monroe County
- City of Rochester (program described below)
- Information available through trade or professional associations

(For pollution prevention related actions for citizens, see Chapter 7 (Urban) section on "Develop public education structure".)

Erie County Office of Pollution Prevention (ECOPP)

The pollution prevention team may benefit from the experience of Erie County in their work with industry and business. The ECOPP is managed by the County Department of Environment and Planning through a \$300,000 grant from EPA. The program targets small- to medium-sized industries that may lack the resources and expertise to investigate waste minimization opportunities on their own. ECOPP serves as a conduit for information on pollution prevention and regulatory compliance from a nonthreatening and non-enforcement perspective. ECOPP's services are confidential, nonregulatory and free. The Office has identified a number of ways to identify companies for outreach and incentives to encourage participation.

A telephone survey to ECOPP's clients revealed that 92% feel that the overall value of ECOPP's services was good to excellent.

City of Rochester pollution prevention program

The City of Rochester has an active pollution prevention program that could serve as a prototype for other municipalities. It currently applies to the City's largest department, the Department of Environmental Services, but soon it will apply to all departments. The City has established an Environmental Compliance Coordinator position. The Coordinator's activities include:

- Supporting spill management.
- Giving technical assistance to the purchasing department if a hazardous substance is to be purchased and looking for a substitute.
- Performing compliance inspections at Department of Environmental Services facilities.
- Inspecting hazardous waste transport, storage and disposal facilities and keeping an "approved" list of such facilities.
- Conducting employee education and training on handling and labeling of hazardous materials.
- Promoting distribution of the NYSDEC document Environmental Self-Audit for Small Businesses through the Economic Development Department.
- Managing hazardous and nonhazardous waste transportation and disposal for wastes generated by the City and/or abandoned on City properties.
- Developing the Environmental Compliance/Pollution Prevention Program Manual which also includes information on purchasing, training, policy, and the responsibility of department heads, individuals and management.

7.27.2.2. Time required: Staff time of the members of participating agencies and volunteer time will be needed on an ongoing basis. The entire process would last for many years.

7.27.2.3. Estimated costs: A half-time staff person to coordinate the pollution prevention activities at the regional level would cost \$15,000-\$25,000 per year. A half-time staff person to coordinate activities at the county level would cost about the same, but the activities would probably be completed more quickly, and the total cost would be less. The time of ten agency

representatives to attend twelve two-hour meetings per year and spend a similar amount of time outside of meetings would cost approximately \$12,000 per year. Educational programs would be an additional cost that would depend upon the specific programs chosen.

7.27.2.4. Possible funding sources: Counties, New York State Department of Environmental Conservation, U.S. Environmental Protection Agency, Natural Resources Conservation Service. The work could be contracted to Erie County or the Genesee Finger Lakes Regional Planning Council.

7.27.2.5. Possible implementors: Regional or county pollution prevention team (see list above for representation on the team)

7.27.2.6. Expected benefits: Impacts of the pollution prevention program on water quality would be gradual. Educational programs rely on the willingness of participants to change ways of doing business. In some cases, funding may be necessary to make the changes. However, in some cases, money can be saved by making changes. The program can be expected to pick up speed as each person who is educated shares knowledge with and sets an example for others.

Author: Carole Beal

7.28. Identify hazardous waste sites

7.28.1. Background:

Use impairments addressed: See Table 7-8

Affected water body: Groundwater and surface water in the Rochester Embayment

Current conditions that necessitate the measure: Inactive hazardous waste sites located within the Embayment drainage basin, as well as landfills, have been found to contaminate surface water, groundwater, soil or sediment near the sites. Contaminants may eventually make their way into receiving waters and the food chain.

7.28.2. Proposed Action: Identify location and extent of hazardous waste sites

7.28.2.1. Description

The identification of hazardous waste sites could be a joint venture among the rural counties of the Rochester Embayment watershed. The funding and performance of the joint venture could be facilitated by an Intergovernmental Agreement (IGA) among the participating counties.

An alternative to a regional project would be to seek funding, to establish guidelines and to share information regionally, but to perform the identification as individual county projects.

Organization

Regional project: If there is an IGA, funding and staffing would be implemented by the coordinating entity for the IGA. If there is no IGA, an implementor could be chosen jointly by the participating counties' designated representatives (environmental management councils, Water Quality Coordinating Committees, or planning departments). The regional implementor would hire or assign an investigator, who might be a university professor, an environmental planner or other environmental professional. The investigator could be assisted by one or more student interns.

County projects: An alternative to the regional investigator would be a regional council, made up of participating counties, that would set guidelines for the investigation and allow for information sharing. There would then be an investigator assigned in each county who might be a county employee taking on the investigation as part of his/her position.

Information gathering

The investigator would use many sources of site information, such as:

- County planning and highway department reports

- Aerial photographs
- Citizen complaints
- Confidential surveys
- County health departments and the New York State Department of Health
- GLOW Solid Waste Management (Counties of Genesee, Livingston, Ontario and Wyoming)

The investigator would also consult agencies that have experience in identifying waste sites, such as the New York State Department of Environmental Conservation (NYSDEC) and counties that have already undertaken an identification project. The investigator would denote suspected hazardous waste sites on preliminary county waste site maps.

Verification

Field checking of suspected sites would be carried out with the permission of the landowners. The investigator would note any debris at the ground surface, any apparent disturbance of the ground surface, and would take soil samples, if appropriate. Whether or not permission is granted for a field check, the investigator can obtain further information from citizen representatives on advisory committees, such as environmental management councils, conservation boards and Cooperative Extension. Citizens who have lived in an area for many years are often very knowledgeable about the history of the land.

Record keeping

After suspected sites have been verified, corrections should be made to the preliminary county waste site maps. Information about the sites should be recorded, including the address, owner, years that waste disposal activity was carried out, and suspected types and quantities of waste.

Communication with NYSDEC

The investigator would communicate with personnel at the regional NYSDEC office about the sites. NYSDEC would further investigate sites if they are likely to qualify for the State hazardous waste or hazardous substance site lists and, therefore, may be eligible for future funding for cleanup of the site. Local (regional or county) guidelines should be developed to address potential problems at sites that are not likely to ever receive state funding. Local guidelines could outline a procedure to follow when property incorporating a waste site or near one changes hands. The procedure would involve, at a minimum, a site investigation and soil testing. Property transfer also offers an opportunity to require cleanup of a site.

7.28.2.2. Time required: Steps #1-5 would take about two years for the regional approach.

7.28.2.3. Estimated costs: The annual salary of a regional investigator is expected to be in the range of \$25,000-40,000. However, this project would be only a half-time position and would cost \$25,000-\$40,000 for two years. These costs do not include soil testing, site cleanup or

development of local guidelines.

If the county approach is used, existing staff of county agencies could perform the investigation.

7.28.2.4. Possible funding sources: U.S. Environmental Protection Agency, NYSDEC, Senator Initiatives, Aid-to-localities

7.28.2.5. Possible implementors: Regional or county investigator, Genesee Finger Lakes Regional Planning Council, county environmental management councils, county health departments, county planning departments, Water Quality Coordinating Committees.

7.28.2.6. Expected benefits: A record of the location of hazardous waste sites will allow the region to be prepared to receive state cleanup money. For smaller and less hazardous sites, the counties can reduce the risk to human health by requiring soil testing and cleanup, if needed, at the time the property changes hands.

Author: Carole Beal

7.29. Expand the storm drain message system

7.29.1. Background:

Use impairments addressed: See Table 7-8

Current conditions that necessitate the measure: The public is unaware that storm drains, such as street catch basins and drop inlets, drain to local streams, ponds and lakes. (In some areas of the City of Rochester, storm drains flow to the Van Lare Wastewater Treatment Plant via the combined sewers system.) Likewise, the public is unaware that dumping household waste products (such as paint, used motor oil, antifreeze, etc.) down storm drains can pollute nearby waterways. Through the food chain, chemicals of concern can bioaccumulate in fish and wildlife.

7.29.2. Proposed Action: Expand the storm drain stenciling project

7.29.2.1. Description

Storm drain stenciling pilot projects by citizen groups have been conducted since 1992 in Monroe County. Messages were stenciled (painted) on or near storm drains on roads or streets that read: "Don't Dump - Drains to Stream" or "Pond" or "Lake". Stenciling projects done by nonprofit groups, such as neighborhood associations, Boy or Girl Scout troops, 4-H clubs, etc., should continue. The projects are a good educational tool that gets people involved in educating their local community about household hazardous wastes, water quality and pollution prevention. Training should be offered by employees of county departments of transportation or health or by Cooperative Extension. Reflectorized vests, cones and "men working" signs should be provided for participants' protection on roads and streets. The stencils can be purchased through the New York Sea Grant's Drain Stenciling Program or commercial printers/graphic artists.

Because of weather conditions and winter road salting, a message system that relies on stencils and paint, however, lasts only two-three years. Other types of storm drain message systems are proposed that are more durable:

- Metal plaques screwed into concrete or installed with street epoxy. - The manufacturer claims that the plaques last a minimum of seven years and are maintenance-free; they are easy to install and the process can involve local volunteer or service organizations; each installation takes 5-10 minutes.
- Heat-fused plastic pavement markings applied with a heat gun - These would be applied by transportation department personnel. According to the manufacturer, the marking would last for the lifetime of the pavement.
- Message "branded" into concrete during road construction and improvement projects (still in testing phase).

The type of message selected would depend on type of road, gutter and drain, cost, and whether

or not volunteers will be involved. The expertise of the county transportation department is needed for decision making. Whatever type of message is selected, brochures describing the project and informing people how to properly dispose of household hazardous waste should be available in libraries and town halls and should be distributed to the neighborhoods during stenciling. Short radio and television spots should also describe the program to inform the general public.

7.29.2.2. Time required: The stencils would be installed from mid-April through the end of October on a yearly basis. The short radio and television spots will be broadcast in April, centered around Earth Day. The brochures describing the project will be available year-round.

7.29.2.3. Estimated Costs:

Cost of stenciling (For all these methods, it is likely that at least one transportation department employee would be involved in application, even in the presence of volunteers):

Stencils and paint:

Stencils - For 50 stencils that says "DON'T DUMP" in four-inch high letters on a 8"x24" stencil:

\$4.00 per stencil on high-impact styrene x 50 = \$200

\$7.50 per stencil on polyester (2-3 times more durable than styrene) x 50
= \$375

Die (from which to make stencils, a one-time cost): \$360

Cost for 200 applications: \$200-\$375 + cost of die (However, the next 200 applications would cost "0")

Paint - \$3/9-oz spray can; \$4/12-oz spray can; 10-15 drains/spray can, depending on the surface (more paint required for asphalt than concrete)

Cost for 200 applications: \$56-\$80 + cost of stencils

Metal plaques: \$2.90 per plaque + \$76 for 200 screws and \$29 for 200 screw anchors. An initial purchase of one or more appropriate screwdrivers at \$5 apiece, a drill at \$70 and concrete bits at \$10 may also be necessary.

Cost for 200 applications: Approximately \$700 + initial costs for equipment.

Heat-fused plastic pavement markings: \$11-\$20 per unit, depending on the quantity ordered. Up to \$2,000 may be necessary to purchase application equipment.

Cost for 200 applications: \$3400 + cost of application equipment.

Branded message: Because this technique is still in the testing phase, it is too soon to establish costs.

Cost of brochures:

Cost of 20 hours for professional staff to develop the brochure and five hours to plan distribution: Approximately \$800

Printing: \$112.50 for 1,000 brochures

Volunteers from the WQMAC and other organizations can assist with distribution.

7.29.2.4. Possible funding sources: Grants, contributions of staff time from existing agencies, donations from citizen groups and private corporations, corporate sponsorship

7.29.2.5. Possible implementors: County department of health, county department of transportation, county Cooperative Extension, town agencies, nonprofit organizations, community civic groups

7.29.2.6. Expected benefits: The public will become aware of the importance of protecting the aquatic environment from improper disposal of hazardous wastes.

Authors: Craig Civalier, Carole Beal

7.30. Institute Intergovernmental Agreements in the Rural Counties of the Rochester Embayment Watershed

7.30.1. Background:

Use impairments addressed: See Table 7-8

Affected water bodies: the Rochester Embayment Watershed

Current conditions that necessitate measure:

There is a need to foster coordination and cooperation among the counties and municipalities in their efforts to remediate water quality problems. Cooperation is essential because the Rochester Embayment Watershed crosses many political boundaries. The Watershed includes all or parts of nine counties and contains numerous municipalities.

Cooperation is also needed because of New York State's tradition of home rule. In New York, land use regulatory authority is concentrated at the town, village, and city level of government. Land use decisions can have a significant impact on water quality. For example, the protection of stream corridors can minimize water pollution resulting from streambank erosion. However, municipalities frequently do not have the staff resources to ensure that land use decisions do not degrade water quality. Therefore, there is a need to facilitate the implementation of land use tools that protect water quality.

Thirdly, limited financial and staff resources create a need for cooperation. Individually, a county or municipality may not have the resources to research or remediate a particular water quality problem. However, if counties and municipalities pool their resources, a particular program may become feasible.

Additional information:

A water quality intergovernmental agreement (IGA) is a formal written agreement between government entities that outlines cooperative actions and strategies designed to improve and protect water quality. The focus of IGAs in the rural counties of the Rochester Embayment Watershed might include the following.

- Pollution prevention
- PCB removal
- Septic systems
- Agricultural best management practices
- Landfills and hazardous waste sites
- Streambank erosion

Possible partners that might participate in IGAs in rural areas include counties, municipalities, regional planning councils, soil and water conservation districts, Natural Resources Conservation

Service, Cornell Cooperative Extension, New York State Department of Health, and the New York State Department of Environmental Conservation.

7.30.2. Proposed Action a: Develop a Water Quality Intergovernmental Agreement among the Rural Counties within the Rochester Embayment Watershed

7.30.2.1. Description:

The eight rural counties in the Rochester Embayment Watershed could enter into an intergovernmental agreement in order to facilitate cooperation in their efforts to remediate their shared water quality problems. The development of an IGA would involve the following steps.

- Identify water quality problems that are common to all of the counties
- Identify remedial actions or programs that could be implemented cooperatively by the rural counties
- Identify opportunities to share information and expertise

As part of an IGA, the counties could make a commitment to jointly analyze the ranked list of remedial actions developed by the Rural Ranking Task Group in order to determine which actions should be implemented. As part of this analysis, it should be determined which actions could be more effectively implemented collectively by the rural counties.

7.30.2.2. Time required: One year

7.30.2.3. Estimated cost: The primary cost associated with developing an IGA among the rural counties would consist of staff time. It is estimated that the cost would be approximately \$2,000 per county assuming that two weeks of staff time for an environmental professional from each county was required to coordinate the negotiation of the IGA.

7.30.2.4. Possible funding sources: Counties

7.30.2.5. Possible implementors: The rural counties within the Rochester Embayment Watershed (Allegany, Cattaraugus, Genesee, Livingston, Ontario, Orleans, Steuben, and Wyoming).

7.30.2.6. Expected benefits: The development of an IGA among the rural counties within the Rochester Embayment Watershed would facilitate the sharing of information and expertise, the implementation of cooperative remedial programs, and the pursuit of funding.

7.30.3. Proposed Action b: Develop Intergovernmental Agreements within the Rural Counties in the Rochester Embayment Watershed

7.30.3.1. Description:

Each of the counties within the Rochester Embayment Watershed could enter into

intergovernmental Agreements (IGAs) with each of the municipalities within that county in order to cooperatively address water quality problems. Land use strategies that protect water quality could be a major focus of the IGAs. The development of these IGAs could involve the following steps.

- The Water Quality Coordinating Committee (WQCC) (or in the absence of an active WQCC, the agency that provides coordination of water quality activities) could identify a watershed within the county that is characterized by significant water quality problems and could serve as a case study.
- The WQCC would work with the municipalities within the selected watershed to identify opportunities for cooperation. Examples of cooperative activities might include the sharing of information, the provision of technical assistance, developing and implementing new remedial programs, or pursuing funding opportunities.
- The IGA would be negotiated and implemented.
- Following the implementation of the initial IGA, the program could be expanded to other watersheds and municipalities within the county.

An element of these IGAs could be a commitment on the part of the county and the municipalities to conduct an analysis of the ranked list of remedial actions developed by the Rural Ranking Task Group. The purpose of this analysis would be to determine which actions should be implemented. In addition, it would be determined whether the selected actions could be more efficiently implemented jointly by the county and the municipality.

7.30.3.2. Time required: 5 years

7.30.3.3. Estimated cost: The cost associated with developing IGAs would consist primarily of staff time. If one staff person from both the county and municipality took primary responsibility for developing the IGA, and a total of two weeks of staff time was required to complete the process, the total cost would be approximately \$4,000.

7.30.3.4. Possible funding sources: Counties and municipalities

7.30.3.5. Possible implementors: Counties and municipalities

7.30.3.6. Expected benefits: Increased cooperation among counties and municipalities in remediating water quality problems.

Author: Todd Stevenson

7.31. Identify and solve onsite sewage disposal system problems

7.31.1. Background:

Use impairments addressed: See Table 7-8

Affected water body: Lake Ontario and Rochester Embayment tributaries, groundwater

Current conditions that necessitate the measure:

NYS Department of Environmental Conservation nonpoint source assessments have indicated many areas where failing septic systems may be leading to water quality problems. (See also Chapter 6 section on "Identify, solve and prevent onsite sewage disposal systems problems".)

7.31.2. Proposed Action a: Conduct septic system surveys

7.31.2.1. Description:

Septic system surveys would be conducted by the county Department of Health (DOH) near stream segments identified by the county Water Quality Coordinating Committee, Soil and Water Conservation District or county health department as potentially contributing to water quality problems. If the county does not have its own health department, the county should consider forming one (see Action C). Otherwise, the surveys could be conducted by the New York State Department of Health, the Soil and Water Conservation District or Water Quality Coordinating Committee. The survey would require several steps.

Notification

The DOH would make a public announcement about its intention to carry out a septic system survey in a designated area. The announcement would:

- Request homeowner and facility manager (for a business or school) cooperation with a written survey about the building's septic system.
- Request information about septic system failures that have been observed anywhere in the community.
- Announce the availability of free dye test kits for homes.
- Offer a free onsite inspection.
- Offer to give the homeowner or manager information about obtaining a loan or grant for system replacement, should it be necessary.
- Explain the risks to human health associated with a failing septic system.
- Announce that county-owned and village-owned septic systems will be inspected and repaired or replaced, if necessary.

Survey

The DOH would prepare a brief written survey to be mailed to each home, business and school in the county, unless it is known to be in a sewered area. The survey would ask:

- The location of the septic system.
- The last time the septic tank was pumped.
- Any evidence of system failure.
- The results of a dye test performed by the homeowner (if a residence).

Some managers and homeowners will not respond to a written survey. In these cases, the DOH should follow through with a phone call or home visit.

Verification and enforcement

The DOH should perform an onsite inspection of a septic system and determine whether or not repairs or replacement are required, in the case of:

- A citizen complaint
- A property transfer
- A homeowner request
- A county-owned or village-owned system

If a clear risk to human health is found, the DOH should order the repair or replacement of the system within a certain period of time. If the repairs or replacement are not carried out, the DOH should levy a fine for each day that repair or replacement is delayed. The DOH should help the homeowner obtain information about any loans or grants that will help to fund the remedial activity.

7.31.2.2. Time required: One year if one full-time person is assigned; two to five years if the work is done using portions of time of existing staff.

7.31.2.3. Estimated costs:

County: \$20,000-\$35,000, for staff resources. There would be additional costs for mailing of a survey.

Homeowner costs will vary depending on the type of repair or replacement:

Pumpout: \$95-\$135 for a 1,000-gallon tank

Replacement:

- Tanks
 - 1250-gallon (for 3-bedroom home, installed) \$850-\$1,800
 - 1500-gallon (for 4-bedroom home, installed) \$1,150-\$2,200
- Conventional leachlines, \$6-10/foot \$1,200-\$6,000
- Full-size raised system worst case (sand and leach lines)
 - 3-bedroom home \$12,000
 - 4-bedroom home \$15,000

7.31.2.4. Possible funding sources: County budget, New York State Department of Health, New York State Department of Environmental Conservation, user fees, inspection fees in the case of property transfer

7.31.2.5. Possible implementors: County Department of Health, New York State Department of Health, the Soil and Water Conservation District or Water Quality Coordinating Committee. (The latter two would not have the legal authority for enforcement.)

7.31.2.6. Expected benefits: This action would help to reduce pollution from failing septic systems. However, in some areas, problem soils will make system repairs very difficult to achieve. In villages, small lot sizes may also make repairs difficult. Opposition could develop due to the fact that some residents and businesses do not have the financial ability to repair or replace their septic systems, or may not regard this as a high priority.

7.31.3. Proposed Action b: Seek funding for septic system repair and replacement, and for sewers in high-density residential and commercial areas

7.31.3.1. Description:

The county DOH should assign a person to devote part of his/her time to identifying potential funding sources for both homeowners and municipalities.

7.31.3.2. Time required: One-eighth of a full-time position. The project would be ongoing.

7.31.3.3. Estimated costs: One-eighth of a full-time sanitarian position would cost about \$4,000 per year. (However, this project would not have to be performed by a sanitarian.)

7.31.3.4. Possible funding sources: County budget, New York State Department of Health

7.31.3.5. Possible implementors: County DOH, Water Quality Coordinating Committee, planning department

7.31.3.6. Expected benefits: Funding for homeowners will allow septic system repair or replacement that could not be afforded otherwise. Funding for municipalities would allow septic system repair or replacement or installation of sewers without raising taxes for the community.

7.31.4. Proposed Action c: Establish a county health department and sanitation code

7.31.4.1. Description:

Counties that do not have a health department or a sanitation code should consider establishing them. This would give the county authority over septic system issues and many other health issues instead of relying on the State. The county sanitation code could have stricter

requirements than the state code. The county DOH would administer the sanitation code and perform other duties normally carried out by a health department. The code would provide for:

- Standards for construction of new septic systems.
- Inspection of a septic system and repair and replacement, if necessary, when property changes hands.
- Onsite inspections by DOH personnel if there is a suspected system failure.
- Levying of fines if failing systems are not repaired or replaced.

7.31.4.2. Time required: Two years to develop a county health department and a sanitation code.

7.31.4.3. Estimated costs: Salary ranges for public health personnel are:

Director	\$28,000-\$50,000
Public health engineer	\$35,000-\$50,000
Sanitarian	\$20,000-\$35,000

The number of professionals hired would depend on the population of the county, and the duties to be performed. There would be additional cost for support staff, office space and supplies.

7.31.4.4. Possible funding sources: County budget, New York State Department of Health

7.31.4.5. Possible implementors: County executive, and legislature or board of supervisors

7.31.4.6. Expected benefits: The county would have authority over septic system issues instead of relying on the State. The county sanitation code could have stricter requirements than the State code.

7.31.5. Proposed Action d: Education

7.31.5.1. Description:

Educational materials and programs for homeowners should be provided.

Printed materials that may be used include:

- Northern Virginia Planning District Commission pamphlet Your Septic System: A Reference Guide for Homeowners. There is also a videotape version available through the EPA Small Flows Clearinghouse (800-624-8301).
- New York State DOH pamphlet Septic Systems: Operation and Maintenance.
- Cornell Cooperative Extension fact sheet Septic Tank Additives.
- Cornell Cooperative Extension fact sheet Terminology for Onsite Sewage Treatment Systems.
- Cornell Cooperative Extension 13-page bulletin Septic Systems, Soils, and Groundwater Protection.
- Michigan State University Cooperative Extension manila folder Maintaining Your Septic System, printed with information and blank tables for record keeping. (The Oswego

County Environmental Management Council and Health Department designed a modified version).

A homeowner who will be maintaining a septic system can receive educational materials in the following ways:

- Information packets available through real estate agents, the developer's engineer, or lawyers who assist home buyers at real estate closings.
- Printed materials mailed to homeowners when a permit or construction approval is mailed.
- Printed materials available at health departments, town halls, cooperative extensions, libraries, hardware or building supply stores.
- A video distributed through the public library system.

Presentations on septic system maintenance and problems would also be appropriate at home shows, hardware or building supply stores or cooperative extension or health department programs. A presentation could be a speaker or a video, alone or in combination.

7.31.5.2. Time required: One half-time public health sanitarian

7.31.5.3. Estimated costs: Approximately \$10,000-\$17,500 for the equivalent of one-half of a public health sanitarian position. Education could also be implemented by many persons in various positions adding up to a total of one-half position. The cost of creating, copying or procuring educational materials would be about \$200-\$500.

Total: approximately \$10,200-\$18,000 per county.

7.31.5.4. Possible funding sources: County, New York State Department of Health, New York State Cooperative Extension

7.31.5.5. Possible implementors: County health department and/or environmental management council, Cooperative Extension

7.31.5.6. Expected benefits: Homeowners would understand how septic systems work, why they need to be maintained, and the problems that are caused by poorly operating systems.

Author: Carole Beal

7.32. Implement a phosphorus point source management strategy

7.32.1. Background:

Use impairments addressed: See Table 7-8

Affected water body: Rochester Embayment, ponds downstream of point sources of phosphorus

Current conditions that necessitate the measure: Although the open waters of Lake Ontario have reached the Great Lakes Water Quality Agreement (GLWQA) target value of 10.0 $\mu\text{g/l}$ of phosphorus, the nearshore areas in the Rochester Embayment remain eutrophic. These areas experience massive blooms of *Cladophora* and other algae that contribute to the other impairments listed above. Phosphorus is the limiting nutrient for plant growth in most temperate latitude lakes and is the nutrient that can most feasibly be controlled in most cases. (See Chapter 9 section on "Monitoring for eutrophication or undesirable algae". A proposed monitoring action is to measure phosphorus at defined sampling sites in the littoral zone of the Rochester Embayment.)

Additional information:

Wastewater treatment plants (WWTPs) are the major point sources of phosphorus. Large treatment plants that discharge into Lake Ontario or a tributary have phosphorus concentration limits associated with New York's implementation of the GLWQA, as amended in 1987, and their State Pollution Discharge Elimination System (SPDES) permits.

WWTP Effluent Concentration Limits

<u>Actual Flow</u> (not design flow)	<u>Existing effluent concentration limit</u>
More than 1 million gal/day:	1.0 mg/l phosphorus
Less than 1 million gal/day:	No phosphorus limits

Stricter limits apply to WWTPs with an actual flow over 1 million gallons per day if there is intermediate ponded water between the discharge and Lake Ontario. The stricter limits do not apply to WWTPs with an actual flow less than 1 million gallons per day.

Phosphorus effluent concentrations for some of the treatment plants in the rural counties of the Rochester Embayment watershed for 1994 are listed below. All have a permit limit of 1.0 mg/l (a monthly average) because they discharge over 1 million gallons per day and discharge to a tributary of Lake Ontario.

<u>Treatment plant</u>	<u>Range of monthly averages, mg/l</u>	<u>Discharges to:</u>
Albion	0.4-1.3	Sandy Creek, West Branch
Avon	<1.0	Genesee River
Dansville	0.14-0.72	Canaseraga Creek
Wellsville	0.4-1.1	Genesee River

If the arithmetical average is exceeded, this is reported to NYSDEC, along with the cause of the problem and plans to correct it.

There are many small WWTPs in the Rochester Embayment watershed that *do not* have phosphorus effluent concentration limits unless there are documented negative water quality impacts. Small WWTPs, especially those that discharge into streams (with limited assimilative capacity), may be contributing to eutrophication problems. However, the extent to which they may be contributing to problems is unknown.

7.32.2. Proposed Action a: Investigate phosphorus discharge from small wastewater treatment plants (flow of less than 1 million gallons per day)

7.32.2.1. Description:

The counties, individually or working together through Regional Planning Councils, should develop a liaison with the New York State Department of Environmental Conservation (NYSDEC) to work on this project cooperatively. NYSDEC should work with the municipal operators of small WWTPs to calculate the phosphorus loadings from these sources. If it is determined that these small WWTPs are contributing to eutrophication problems, a cost-benefit analysis should be conducted in order to develop appropriate loading goals. Ultimately, NYSDEC could provide technical assistance to municipal operators in order to reduce phosphorus discharges.

This assistance might be similar to the cooperative effort between the Monroe County Department of Environmental Services (DES) and the Village of Spencerport to reduce phosphorus discharges to Northrup Creek from the Spencerport WWTP. At the suggestion of DES staff, ferrous sulfate was added to the treatment process during 1995. As a result, total phosphorus discharge from the Spencerport WWTP was reduced from 2-3 mg/l to 0.7-0.9 mg/l. The costs for chemicals at the Spencerport plant are approximately \$3,000 per year. There is no equipment cost because surplus Monroe County equipment is used.

7.32.2.2. Time required:

Regional project: The equivalent of six months of total time spread out over three years for one environmental engineer.

County basis: The equivalent of two months of time spread out over three years for one environmental engineer.

7.32.2.3. Estimated costs:

Regional:

Staff time at the state and local level: Approximately \$25,000

County:

Staff time at the state and local level: Approximately \$9,000

7.32.2.4. Possible funding sources: NYSDEC, counties, municipalities

7.32.2.5. Possible implementors: NYSDEC, counties, regional planning councils, municipalities

7.32.2.6. Expected benefits: A reduction in phosphorus discharges to area waters

7.32.3. Proposed Action b: Promote the use of nonphosphate-based alternatives for commercial and residential dishwasher use

7.32.3.1. Description:

New York prohibits the sale of household cleaning products with added phosphorus (in the form of phosphate) except for products used in automatic dishwashers, food and beverage processing equipment, and dairy equipment. (See Chapter 6 section on "Phosphate detergent ban.") The phosphate in products for those uses is limited to 8.7% by weight. The exemption for dishwashers was recommended by the NYSDEC in 1973 on the grounds that no feasible substitute was available and that dishwasher compounds amounted to only 3% of the phosphate discharge at that time.

Restaurants and other high-volume users of phosphate-based detergents that are not in an area where public sewers are available would be the primary target of this action. Although septic systems are generally considered to be nonpoint sources, some large restaurants in unsewered areas have commercial sand filters with a discrete discharge point, and can be considered to be point sources. However, users discharging to a public sewer would help the municipal treatment plant meet the goal of Action A if they also used phosphate-free detergents.

A study should be conducted of nonphosphate-based detergents. They should be evaluated for:

- Cleaning effectiveness.
- Safety for contact with cooking and eating utensils and with food industry equipment.
- Safety for user.
- Cost.
- Environmental impacts.
- Regulatory issues

The study could include:

- A literature search.
- Contacts with NYSDEC and the New York State Department of Health, and their

- equivalents in other states.
- Contacts with representatives in the detergent industry.

The initial research could be conducted by a student intern working with NYSDEC, the New York State Department of Health (DOH), a regional planning council, a county department, or Cornell Cooperative Extension.

If a potentially satisfactory substitute exists, a pilot project should begin with a high-volume user not on a public sewer. The incentive for the user could be a supply of free detergent for the duration of the pilot project.

If a pilot project is successful, use of the substitute could be promoted by educational materials and programs provided by NYSDEC, New York DOH, regional planning councils, county departments, Cooperative Extension, and professional organizations for the restaurant business and for the food and dairy industries.

Although the primary target of this action is high-volume users not on a public sewer, an educational program could be extended to users on public sewers in order to reduce the loading at the sewage treatment plant.

7.32.3.2. Time required: Initially the time of a student intern for a three-month to six-month project

7.32.3.3. Estimated costs: Approximately \$3,500 for a three-month project or \$7,000 for a six-month project

7.32.3.4. Possible funding sources: NYSDEC, New York DOH, detergent manufacturer, restaurant or food processing industry professional organization

7.32.3.5. Possible implementors: NYSDEC, New York DOH, regional planning council, Cooperative Extension, county departments, restaurant or food processing industry professional organizations

7.32.3.6. Expected benefits: Reduction in phosphate discharge from septic systems of high-volume commercial users who are not on sewers and a reduction in phosphate that must be treated at the sewage treatment plant.

Authors: Carole Beal, Todd Stevenson

7.33. Promote Agricultural Best Management Practices

7.33.1. Background:

Use impairments addressed: See Table 7-8

Affected water bodies: the entire Rochester Embayment watershed

Current conditions that necessitate measure:

Agriculture is a primary land use in the Rochester Embayment watershed. The improper management of tillage, fertilizer, pesticides, manure, or waste water can result in nutrient (primarily phosphorus) and sediment contamination of water resources. The Stage I Rochester Embayment Remedial Action Plan identified agricultural runoff as an important contributor to eutrophication which has contributed to drinking water taste and odor problems, beach closings, degradation of aesthetics, degradation of phytoplankton and zooplankton populations, and loss of fish and wildlife populations.

While recent federal legislation has attempted to address erosion which results from agricultural practices, nutrient management has not been a major focus. However, in the Rochester Embayment watershed, there is a recognized need to address both soil erosion and nutrient management. Because soil testing is frequently not included in farm fertility programs, excessive quantities of manure or chemical fertilizer may be applied to fields. This manure or fertilizer can be washed off the field and contribute to water quality degradation.

7.33.2. Proposed Action : Intensify the Implementation of Agricultural Best Management Practices

7.33.2.1. Description:

Agricultural Best Management Practices (BMPs) are proven strategies designed to address specific nonpoint source water quality problems by preventing or reducing the availability, release, or transport of substances which adversely affect surface and ground water quality. Currently, the Consolidated Farm Service Agency (CFSA, formerly known as the Agricultural Stabilization and Conservation Service), Soil and Water Conservation Districts (SWCD), and Cornell Cooperative Extension (CCE) are engaged in efforts to (1) educate agricultural producers regarding BMPs and (2) facilitate implementation of BMPs. For information regarding these efforts, see Chapter 6 "The Promotion of Agricultural BMPs".

In order to increase the implementation of agricultural BMPs in the Rochester Embayment Watershed, additional staff or consultants, as well as additional funds for cost-share assistance, will be required. Specifically, an Agricultural BMP Coordinator position should be created (within the SWCDs, Natural Resource Conservation Service, or CCE) in order to facilitate the implementation of BMPs within the Watershed. A number of strategies should be utilized to

facilitate the implementation of BMPs including demonstrations, individual consultations with agricultural producers, and the provision of cost share assistance. The focus of these efforts should include Integrated Crop Management (ICM) and Whole Farm Planning.

The advantage of demonstrations as a strategy to facilitate the implementation of BMPs, is that they do not require a great deal of the farmer's time, are non-threatening, and very "real-world". Possible topics for demonstrations include manure injection into the soil, the use of cover crops, and new precision pesticide sprayers. These demonstrations might be organized by equipment dealers who are anxious to market their products or by Cornell Cooperative Extension whose mission is to bring the latest research to the public. Consultants who have completed CCE's crop consultant certification program, and thus are knowledgeable regarding water quality issues, should be utilized in this educational effort.

Integrated Crop Management (ICM) should be one of the focuses of this educational effort. ICM is a holistic agricultural production strategy which emphasizes nutrient and pest monitoring, information-based and precise application of fertilizers and pesticides, and cost efficiency. Important actions which might be taken as part of an ICM strategy include soil and manure testing, pest identification and population counts, and equipment calibration and refinement.

ICM is an approved conservation practice under CFSA's Agriculture Conservation Program. As part of this program, agricultural producers who bear a part of the cost of an approved conservation practice are eligible for federal cost-share assistance. In the Spring of 1995, the Monroe County SWCD was awarded \$37,000 through the New York State Environmental Protection Fund for promoting nutrient management through soil testing and the use of cover crops. Because ICM implementation became eligible for cost-share assistance only recently, there is a need to implement these types of projects in order to increase the acceptance and adoption of ICM principles within the local agricultural community.

Whole-farm planning should be another focus of this intensified education effort. This concept refers to a comprehensive farm planning process in which the impacts of agricultural management systems on all types of natural resources (i.e. water, soil, rare species, etc.) are considered and addressed. Such an approach would replace the existing structure in which numerous narrowly focused plans are developed in order to comply with a range of different government programs. Currently, whole-farm planning as a policy is being examined at both the federal (Food Security Act re-authorization) and state (Responsible Environmental and Agricultural Planning proposal) levels.

7.33.2.2. Time required: 5 years

7.33.2.3. Estimated costs: The cost of funding an Agricultural BMP coordinator position would be in the range of \$35,000 to \$40,000 per year including salary and associated expenses. The cost of funding consultants would be in the range of \$7-\$10 per acre of cropland. The cost of the expanded cost share assistance program would be in the range of \$150,000 per county per year

depending upon the nature and extent of agricultural activity within a particular county.

7.33.2.4. Possible funding sources: In recognition of declining federal funds to support the implementation of agricultural BMPs, the coordinated pursuit of alternative funding sources is required. The WQCCs, SWCDs, CCE, NRCS, and other interested parties within the Watershed should jointly pursue funding in order to support an Agricultural BMP Coordinator position and obtain additional cost-share funds. This cooperation should be facilitated through periodic meetings organized by the New York State Soil and Water Conservation Committee.

Possible funding sources include counties, Aid to Localities funds, foundations, and the New York State Agricultural Non-Point Source Grant Program (administered by the Environmental Protection Fund). This program is administered by the New York State Department of Agriculture and Markets and funded by the New York State Environmental Protection Fund. These funds became available to address agricultural non-point sources in 1994 when roughly \$800,000 was distributed among 21 projects (as mentioned above, Monroe County was one of the recipients). In 1995, roughly \$1,000,000 is allocated to address agricultural non-point sources. The advantage of utilizing the WQCCs to coordinate the pursuit of these funds is that it would demonstrate (as required) strong local support, integration with the county's water quality strategy, and that a watershed approach is being used.

7.33.2.5. Possible implementors: WQCCs, SWCDs, CCE, and the NRCS. In some counties within the Watershed, the WQCC may not be active. In these cases, another agency is responsible for coordinating water quality activities.

7.33.2.6. Expected Benefits: The widespread implementation of agricultural BMPs would minimize nutrient and sediment runoff from agricultural operations into area waters.

Authors: Frank Winkler, Todd Stevenson

**7.34. Educate the Public regarding Lawn Care
Best Management Practices that Protect Water Quality**

7.34.1. Background:

Use impairments addressed: See Table 7-8

Affected water bodies: the Rochester Embayment watershed

Current conditions that necessitate the measure:

The residents of the Rochester Embayment watershed place a high value on an aesthetically pleasing lawn and landscape. Unfortunately, certain lawn care management practices can contribute to water quality degradation. The improper or excessive use of lawn care fertilizers may contribute to cultural eutrophication and habitat degradation in local waters. The improper or excessive use of lawn care pesticides may contribute to toxic contamination of local waters and threaten public health and wildlife habitat. There is a need to educate the public regarding these impacts, as well as how their lawn care practices may be modified in order to protect water resources. Several alternative educational strategies are described below.

7.34.2. Alternative Action a: Conduct Demonstration Project

7.34.2.1. Description:

Conduct a demonstration of the impact of lawn care practices on water quality. The project would involve identifying a residential neighborhood where watershed inputs could be monitored and where baseline water quality data is available. Water quality sampling would then be performed in order to determine the extent to which runoff from residential lawns contributes to nutrient/pesticide contamination of the watershed.

The next stage of the project would consist of an educational program designed to inform residential property owners and lawn care professionals regarding cultural and pest management techniques that maintain lawn quality and at the same time reduce pollutants in runoff. Ultimately, water quality sampling would be conducted in order to determine the effectiveness of the educational effort.

7.34.2.2. Time required: Two years

7.34.2.3. Estimated costs: \$100,000, which includes the salary of a full time employee

7.34.2.4. Possible funding sources: Counties, NYSDEC

7.34.2.5. Possible implementors: CCE

7.34.2.6. Expected benefits: The demonstration project would quantify and reduce nutrient and pesticide runoff to local waters. The project would also quantify the effectiveness of an educational program. The results of the program could be transferred to other locations within the Watershed.

7.34.3. Alternative Action b: Targeted Public Education Effort

7.34.3.1. Description:

Neighborhoods within high priority watersheds (such as lakes and public water supply) would be the target of an intense educational campaign. This campaign would include meetings with neighborhood associations in order to discuss local water quality problems and the impacts of lawn care practices on water quality. These meetings would be followed-up by field visits in order to educate residents regarding lawn care management practices that could be implemented in order to improve water quality.

7.34.3.2. Time required: The targeted education program could be implemented over a period of four months (February through May).

7.34.3.3. Estimated cost: The campaign would require 50% of the time of one full time employee for approximately four months. Therefore, the cost of the program would be approximately \$7,425.

7.34.3.4. Possible funding sources: Counties, NYSDEC

7.34.3.5. Possible implementors: CCE, Soil and Water Conservation Districts, counties

7.34.3.6. Expected benefits: Residents would be educated regarding the impacts of lawn care practices on water quality, thus contributing to a reduction in nutrient and pesticide runoff to area waters.

7.34.4. Alternative Action c: Implement Homescape Program

7.34.4.1. Description:

A third alternative would be to implement the Homescape program. This program was originally developed in Prince William County, Virginia and has more recently been implemented in Erie County, New York. The purpose of the program is to reduce suburban nonpoint source water pollution by encouraging homeowners to adopt environmentally sensitive lawn and landscape practices.

The Homescape program consists of identifying a residential subdivision to be the target of the educational effort, training volunteers and homeowners, monitoring reductions in fertilizer and

pesticide usage, and publicizing successes. A unique aspect of the Program is the use of volunteer Master Gardeners. Each participating homeowner in the targeted subdivision is assigned a trained Master Gardener who helps the property owner monitor their use of water, fertilizers, and pesticides and provides information regarding Best Management Practices. This one on one assistance ensures greater participation and stricter adherence to the appropriate management practices. These Master Gardeners are trained through the Cornell Cooperative Extension (CCE) by university faculty. In the case of the Erie County program, additional water quality training was provided by New York Sea Grant and CCE.

At the initiation and completion of the Program, a survey is taken in order to monitor fertilizer and pesticide usage. On-site demonstrations by lawn and landscape professionals and a demonstration garden featuring native plants were also included as part of the Erie County program. Those homeowners that participated in the program received an engraved landscape rock in recognition of their efforts.

7.34.4.2. Time required: One year

7.34.4.3. Estimated Costs: The cost of implementing the Homescape Program at a location in the Rochester Embayment Watershed would be minimal because the Master Gardeners are volunteers and speakers donate their services. The primary costs associated with the program would consist of staff time (one-half time for one employee for a period of six months would cost approximately \$11,250), the engraved rock (approximately \$40 each times 15 - 20 homeowners), and the demonstration garden (approximately \$400). The total cost for a one-year program would be approximately \$12,250.

7.34.4.4. Possible funding sources: Counties, NYSDEC, Great Lakes Protection Fund

7.34.4.5. Possible implementors: Cornell Cooperative Extension, New York Sea Grant, Soil and Water Conservation Districts, and counties within the Watershed.

7.34.4.6. Expected benefits: A reduction in fertilizer and pesticide runoff into area waters.

Authors: Liz Berkley, Tom Nally, Todd Stevenson

7.35. Implement a Comprehensive Streambank Erosion Control Program in the Rural Counties of the Rochester Embayment Watershed

7.35.1. Background:

Use impairments addressed: See Table 7-8

Affected water bodies: Rochester Embayment watershed

Current conditions that necessitate the measure:

Streambank erosion is a natural process which continuously adds sediments and nutrients to water courses. However, human activities in the Rochester Embayment watershed such as suburban development and agriculture have significantly increased the rate of streambank erosion. Activities associated with suburban development which contribute to this process include the destruction of streambank vegetation and the proliferation of impervious surfaces. Vegetation is critical for holding streambank soil in place. Impervious surfaces increase the quantity of stormwater runoff thus increasing stream flow and erosion (see the Chapter 7 sections entitled "Promote Impervious Surface Reduction" and "Stormwater Management in Existing and Newly Developing Urban Areas"). Agricultural activities, such as allowing livestock to damage streambanks, may also contribute to erosion (For additional information see the Chapter 7 section entitled "Promote Agricultural Best Management Practices").

The excessive sediment and nutrient loadings associated with severe streambank erosion destroy fish and wildlife habitat and promote aquatic weed growth. Suspended sediments contribute to increased turbidity which impairs plant photosynthesis, reduces vision (which is critical for sight feeding fish), and clogs the gills of both invertebrates and many adult fish. As sediments settle out of the water column, they may smother fish eggs and non-moving invertebrates. Excessive aquatic weed growth (eutrophication) may contribute to drinking water taste and odor problems and oxygen depletion.

Severe streambank erosion may also threaten structures and roads.

Additional information:

A comprehensive streambank erosion control program should address existing erosion problems, as well as seek to prevent the creation of additional erosion problems. Such a program should consist of land use controls, policy changes, and innovative erosion control structures. The New York State Department of Environmental Conservation (NYSDEC) publications, Stream Corridor Management: A Basic Reference Manual and Hydrologic and Habitat Modification Management Practices Catalogue, describe a wide range of strategies that could be used to address streambank erosion problems. In the Rochester Embayment Watershed and in other Areas of Concern (AOCs) in the Great Lakes Basin, a wide range of innovative land use controls

and erosion control structures are being utilized to address streambank erosion.

Innovative land use controls:

A number of municipalities in the Rochester Embayment Watershed have developed environmental protection overlay districts (EPODS) to protect stream corridors and address streambank erosion. Although the use of EPODS may help to prevent the creation of additional streambank erosion problems, they do not address existing erosion problems.

An EPOD is designed to provide the municipality with an additional level of control over environmentally sensitive areas such as stream corridors. The EPOD supplements, rather than replaces, the existing underlying zoning. Applicants who wish to conduct a regulated activity within the overlay district must comply with specific standards which are designed to minimize the impacts of human activities on environmentally sensitive resources.

For example, in the case of the Town of Brighton's (Genesee River Basin and the Lake Ontario Central Basin) watercourse protection districts, applicants must comply with a number of conditions including the retention of a natural vegetative buffer of one hundred (100) feet from each bank. In addition, new structures in the watercourse protection district must be designed and constructed in accordance with the erosion and stormwater control standards as found in the NYSDEC "Stream Corridor Management" manual.

The Town of Mendon's (Genesee River Basin and Lake Ontario Central Basin) Factors Affecting Development ordinance is another land use control strategy that may be used to protect stream corridors and address erosion. The ordinance provides the Mendon Planning Board with the authority to require a conservation easement to the Town in order to protect sensitive environmental areas such as streams and floodplains. The conservation easement may restrict or prohibit certain activities including construction, the removal of vegetation, and the use of fertilizers and pesticides.

Innovative erosion control structures:

The installation of some types of erosion control structures such as rip-rap create an ecological barrier between the aquatic and terrestrial zones and are not aesthetically pleasing. Therefore, wherever possible, bio-engineering should be employed to remediate streambank erosion. Bio-engineering is a technique that utilizes live plants instead of unnatural or hard materials. As an example, a bio-engineered cribwall consists of a hollow, interlocking arrangement of timbers constructed as a wall. This structure is filled with soil and layers of live branch cuttings. Once the cuttings have taken root and grown, they will eventually take over the structural functions of the timbers. The end result is a stable vegetated slope.

7.35.2. Proposed Action: Implement a Comprehensive Streambank Erosion Control Program in the Rural Counties of the Rochester Embayment Watershed

7.35.2.1. Description of proposed action:

The implementation of a comprehensive program to address streambank erosion problems in the rural counties in the Rochester Embayment Watershed would involve the following steps.

Step 1 - A task group comprised of experts on streambank erosion would be formed in each county in order to coordinate the remediation of streambank erosion. The task group would include representatives from the county water quality coordinating committee (WQCC), soil and water conservation district (SWCD), the Natural Resources Conservation Service (NRCS), and the New York State Department of Environmental Conservation (NYSDEC). The task group would develop a comprehensive list of the stream segments within the county that are characterized by significant erosion problems.

Step 2 - The task group would develop a set of criteria so that the stream segments could be prioritized in terms of "need for remedial action".

Step 3 - The task group would analyze the full range of remedial strategies that could be implemented to address the identified streambank erosion problems. These strategies might include land use controls, policy changes, and innovative erosion control structures. The task group would select a set of remedial strategies that is most appropriate for the types of streambank erosion found within the county.

Step 4 - The task group would research different funding options that might be used to fund streambank erosion remediation. The task group would develop and implement a funding strategy.

Step 5 - The task group would coordinate and facilitate the implementation of the selected streambank erosion remedial measures.

7.35.2.2. Time Required: Steps 1 through 4 would take approximately 1 year to complete. Step 5 "Implementation" would be an ongoing action.

7.35.2.3. Estimated Costs: The costs associated with steps 1 through 4 would consist primarily of staff time. Assuming that three staff persons each devoted 20% of their time to the project for a period of one year, the cost would be approximately \$24,000 per county. The cost of step 5 "Implementation" would depend entirely on the types of remedial strategies that are selected by the task group.

7.35.2.4. Possible Funding Sources: NYSDEC, counties, municipalities

7.35.2.5. Possible Implementors: NYSDEC, counties, WQCCs, SWCDs, NRCS, and municipalities

7.35.2.6. Expected Benefits: A reduction in streambank erosion and associated water quality impacts

Author: Todd Stevenson

7.36. Educate local officials and the public on the value of wetlands

7.36.1. Background:

Use impairments addressed: See Table 7-8

Current conditions that necessitate measure: Currently, expanding development has the potential to impact existing wetlands and to create new wetlands. Many local officials who have the authority to make land use decisions are unaware of the benefit of wetlands to fish and wildlife habitat. Officials with land use decision making responsibilities need to be provided with information that will result in protection and enhancement of such areas. The general public also needs to be educated so that they support land use decision-making that supports wetlands.

7.36.2. Proposed Action: Educate local officials and the public on the value of wetlands

7.36.2.1. Description:

There are many methods that can be used to educate about wetlands. (See the following six options.) The ones that are chosen depend upon the audience, costs, availability of existing materials, and opportunities to incorporate into existing programs.

Workshop for local officials

A workshop for local officials would include a local wetland tour to educate participants on the benefits of wetlands and discuss opportunities and methods to make land use decisions that benefit wetlands. The audience would include town and village board and city council members, planning board members, conservation/environmental board members, building inspectors, and department of public works staff. The workshop location should be convenient and close for the audience it expects to educate. If representatives from the entire rural portion of the Rochester Embayment watershed are to be educated, workshops would need to be held in a minimum of three locations.

Time required: Workshops are proposed to be held once a year for new officials. Three- to five-hour sessions with a break, lunch, and a tour would be included.

Estimated costs: The costs would include the use of an indoor facility, educational materials (some of which exist but need to be assembled, and others which may have to be prepared), advertising, staff or volunteer time for organization, and refreshments. The total estimated cost, including staff time, is expected to be less than \$2,500 per workshop (approximately \$10,000 for four workshops).

Possible funding sources: Grants, contributions of staff time from existing agencies, fees for workshop participation

Possible implementors:

Organizers and Co-Sponsors: Regional planning council(s), environmental management council(s), The Nature Conservancy, county health department(s), department(s) of planning and development, New York State Department of Environmental Conservation (NYSDEC), county Soil and Water Conservation District(s), county fisheries advisory board(s), county planning councils, town supervisor association(s)

Workshop presenters/contributors: University faculty, US Army Corps of Engineers, NYSDEC, New York State Department of State, county environmental management council(s), county Soil and Water Conservation District(s), county department(s) of health, county department(s) of planning and development, towns or villages, The Nature Conservancy

Expected benefits: Public officials with a background on the importance of wetlands that will result in a receptive attitude to the protection and development of wetlands in municipalities.

Distribution/presentation of wetlands information

This action involves ensuring the development and staffing of a speakers bureau to solicit audiences and give presentations of a video on the value of wetlands. The Speakers Bureau would be a group comprised of individuals knowledgeable about wetlands and committed to marketing and staffing wetland talks, slide shows, videos, etc. An agency or an individual would need to take primary responsibility so that there is a single contact for scheduling. The audience would include local planning officials, real estate developers and agents, adult citizens and students (including students at Finger Lakes Community College Environmental Conservation/Law program).

Time Required: Videos, slide shows and subsequent discussions would take approximately one hour. One day of training may also be needed once a year for volunteers who would staff the presentations. Less than one day a week of staff or volunteer time would be needed to arrange presentations. If the presentations were given twice a week, an additional five hours a week would be needed by speakers bureau volunteers.

Estimated Cost: Costs include duplication of slide shows, and staff or volunteer time to update the slide show(s), prepare and conduct a volunteer training session, and staff the speakers bureau. The costs should total no more than \$2,000 per year, assuming that the group of volunteers who give the presentations would remain the same for a significant period of time.

Possible funding sources: NYSDEC, county governments, corporate donations

Possible implementors: County environmental management councils. Other potential collaborators include: The Nature Conservancy, NYSDEC

Expected benefits: People will become more aware of the functions and benefits of wetlands and support development, management and preservation of wetlands areas.

Community photography/art contest/display of local wetlands photographs/art

A photography contest would be advertised and promoted in local schools, colleges, and in the community at large. Age categories would be established for entries. The entries would be displayed locally. The contest forms would include information on wetlands discussing practical methods to avoid damaging wetlands or their inhabitants by contest participants while taking their photographs.

Time required: Staff or volunteer time for advertising, display, judging, and set up is estimated to take approximately 120 person hours.

Estimated costs (assuming volunteer time):

Application design, copying, and distribution:	\$500
Advertising:	\$500
Awards:	<u>\$500</u> (also seek donations)
Total costs:	\$1,500

Possible funding sources: Corporate donations, United States Environmental Protection Agency (USEPA)

Possible/implementors: Regional planning council(s), conservation and environmental boards, local government and town boards, The Nature Conservancy, Sierra Club, Trout Unlimited, Bassmasters, county Soil and Water Conservation Districts, NYSDEC, Cornell Cooperative Extension

Expected benefits: This would spark community interest and awareness about wetlands to create an appreciation for these areas with aesthetic and habitat value stressed.

Make elementary and middle school teachers aware of wetlands curriculum materials and encourage field trips

A listing of programs, contacts, and brief descriptions of elementary school curricula would be prepared and distributed to teachers. Also included could be information on local wetlands to visit with suggested activities for different age groups. Materials could also be loaned to teachers via an informal "library."

Wetlands education curricula already exist for teachers. Examples include:

- "Aquatic Wild" (affiliated with "Project Wild")
- Great Lakes in My World, developed by the Ohio Sea Grant Education Program
- The Finger Lakes, It Begins With You, developed by the U.S. Fish and Wildlife Service in Cortland, N. Y.
- Wow, Wonders of Wetlands, written and illustrated by Brit Slattery,

available from Environmental Concern Co. of Maryland.

Time required:

- Research and development of information: 120 person hours
- Duplication/mail distribution: 24 person hours
- Answering questions of teachers: 40 person hours per year

Estimated costs:

- Research and development of information \$1,800
- Duplication/mail distribution \$700
- Answering questions \$600
- Total costs \$3,100

Possible funding sources and implementors: Regional planning council(s), universities/colleges (for work-time costs an intern opportunity exists), Sea Grant Extension/Cornell Cooperative Extension (for printing or distribution costs), Grants (printing and distribution costs), NYSDEC, teachers associations, school board associations

Expected benefits: By creating a listing of resources available and an easy means to obtain the information, teachers/schools would be more likely to include wetlands education in the curriculum, and more children and their parents would be made aware of the value of wetlands.

Facilitate/advertise community wetlands tours

This involves promoting educational/recreational tours at local wetland areas highlighting the beauty, ecological significance, and functions of wetlands.

Time required: Staff and volunteer time for the activities and for promotion (advertisement in local papers or on community calendars) are necessary.

Estimated costs: Staffing is the main cost for promoting and advertising the tours/walks. Staffing tasks would include developing and distributing pamphlets and other kinds of advertising. It is likely this could be done with one day or less per week of a staff person. Likely cost is \$5,000 per year.

Possible funding sources/implementors/sponsors: Bergen Swamp Preservation Society, Fish and Wildlife Management Areas, NYSDEC, The Nature Conservancy, nature centers, regional planning council(s), county parks and recreation departments, towns and villages, donations

Prepare and/or distribute a pamphlet that summarizes the New York State Freshwater Wetlands Act

This action involves the development of an understandable, clear and concise explanation of the

New York State Freshwater Wetlands Act that would be mailed to a targeted audience. The pamphlet would emphasize what the Act means for construction, real estate and local government, This action needs to include an inventory of existing pamphlets to see whether an existing pamphlet can be used or modified.

Time required: The review of existing pamphlets and/or efforts to modify existing pamphlets or prepare new pamphlets would require a minimum of 140 person hours of staff and/or volunteer time. The development of a mailing list and the actual mailing would take another 100 person hours.

Estimated costs: Work time for staff and mailing are the costs. If paid staff were used for the research and development of the written materials, and for the development of the mailing list, staff costs would be approximately \$5,000. Printing and mailing costs would be an additional \$300 to \$800. The project cost should fall below \$7,000.

Possible funding sources and implementors: NYSDEC, The Nature Conservancy, regional planning council(s), environmental management council(s), real estate associations

Expected benefits: The implementation of this action is expected to improve awareness that will lead to improved land-use decision making by public officials.

Author: Marie Lewis

7.37. Identify and Rank Critical Habitat in and along Waterways in the Rural Counties in the Rochester Embayment Watershed

7.37.1. Background:

Use impairments addressed: See Table 7-8

Affected water bodies: The Rochester Embayment watershed

Current conditions that necessitate the measure:

Fish and wildlife habitat along or in waterways throughout the Rochester Embayment watershed has been lost as a result of a number of factors including urban/suburban development, draining of wetlands, deforestation, boat traffic, dredging, sedimentation, and eutrophication. The Stage I Rochester Embayment Remedial Action Plan (RAP) cites the decline in the number of black terns nesting in Braddock Bay, the absence of bald eagles, and the decline of native fish species (the fish community of the lower Genesee River exhibits low species diversity as a result of heavy sediment loads from the upper watershed) as evidence of this loss of fish and wildlife habitat.

In recognition of the need to protect fish and wildlife habitat, a number of agencies and organizations maintain databases of critical habitats including the New York State Departments of State (NYSDOS) and Environmental Conservation (NYSDEC), and The Nature Conservancy. For example, a valuable habitat database is maintained as part of the Significant Coastal Fish and Wildlife Habitats Program. The purpose of this program, which is a cooperative effort of the NYSDOS and the NYSDEC, is to preserve the recreational, commercial, and ecological benefits derived from New York's coastal fish and wildlife resources. As part of the program the most significant coastal habitats in the State are identified, mapped, and described. The following criteria are used to identify the most significant coastal habitats:

- 1.) The habitat is essential to the survival of a large portion of a particular fish or wildlife population.
- 2.) The habitat supports populations of species which are endangered, threatened, or of special concern.
- 3.) The habitat supports populations having significant commercial, recreational, or educational value.
- 4.) The habitat exemplifies a type which is not commonly found in the State or in a coastal region.

Also, the significance of certain habitats increases to the extent that they could not be replaced if destroyed.

The NYSDOS uses this database when performing consistency reviews of federal and State

actions which affect the coast. In addition, municipalities which prepare Local Waterfront Revitalization Programs as part of the New York State Coastal Management Program are required to protect designated significant habitats.

In the Rochester Embayment watershed, the following habitats have been designated as part of the DOS Significant Coastal Fish and Wildlife Habitats program:

- Irondequoit Creek/Bay (Lake Ontario Central Basin/Irondequoit Basin)
- Genesee River (Genesee River Basin)
- Slater Creek (Lake Ontario West Sub-basin)
- Braddock Bay / Salmon Creek (Lake Ontario West Sub-basin)
- Sandy Creek (Lake Ontario West Sub-basin)

Another valuable habitat data base is the North American Waterfowl Management Plan. The purpose of the Plan, which was signed by the United States and Canada in 1986, was to create a blueprint for maintenance of adequate habitat to halt the decline of waterfowl. As part of this effort, key habitat ranges, such as the Lower Great Lakes/St. Lawrence Basin (including the Rochester Embayment), were identified. For each of these habitat ranges, goals and objectives were established and critical resource areas were identified. In addition, resource protection and enhancement needs were identified through assessment of major sources of habitat impediment.

The following resource areas in the Rochester Embayment watershed were identified as part of the Lake Shore Marshes Focus Area Plan (a component of the North American Waterfowl Management Plan):

- Yanty Creek Marsh
- Sandy Creek Harbor Marsh
- Benedict Beach Marsh
- Cowsucker Creek Marsh
- Brush Creek Wetlands
- Lighthouse Beach Wetlands
- Payne Beach Wetlands
- Braddock Bay Wetlands
- Cranberry Pond and Wetlands
- Long Pond Wetlands
- Buck Pond Wetlands
- Round Pond Wetlands
- Slater Creek Wetlands
- Genesee River
- Durand-Eastman Park Wetlands
- Irondequoit Creek Wetlands
- Irondequoit Bay

Another habitat database is maintained as part of the New York Natural Heritage Program. This program is a cooperative effort of the NYSDEC and The Nature Conservancy (an international not-for-profit organization). The goal of the program is to maintain an up-to-date inventory on the status and distribution of rare and endangered animals and plants and the best examples of New York's ecological communities.

7.37.2. Proposed Action : Identify and Rank Critical Habitat in and along Waterways in the Rural Counties in the Rochester Embayment Watershed

7.37.2.1. Description:

A program would be implemented to identify and rank critical habitat in and along waterways in the rural counties in the Rochester Embayment watershed. The program would involve the following steps.

Step 1: Identify Critical Habitats

A task group comprised of habitat experts would be formed to identify critical habitats in and along waterways in the rural counties of the Rochester Embayment Watershed. The task group would be comprised of representatives from water quality coordinating committees (WQCCs), the NYSDEC, and not-for-profit organizations such as the Nature Conservancy and the Genesee Land Trust. Initially, available databases such as those described above would be analyzed in order to develop a list of waterway habitats. If additional data is required, resources such as the Ontario Ministry of Natural Resources' (OMNR) Guidelines for Collecting Baseline Aquatic Habitat Data for the Great Lakes Areas of Concern should be utilized. This document provides a comprehensive list of the types of data which should be compiled, important background information, and possible data sources.

Step 2: Rank Critical Habitats

After the database is compiled, the habitats should be systematically ranked. The joint Environment Canada - United States Environmental Protection Agency's (USEPA) State of the Lakes Ecosystem Conference: Aquatic Habitat and Wetlands of the Great Lakes Working Papers outlines a methodology for ranking habitat types according to ecological significance.

Ecological significance is determined by evaluating a particular habitat's role/impact on: (1) nutrient cycling, (2) productivity, (3) water quality and quantity, (4) life cycle of species, (5) biodiversity, and (6) indicator species. Using this system, coastal shorelines and marshes are generally considered to be the most ecologically significant habitat type.

Step 3: Next steps

After the ranked list is developed, the task group would outline the next steps in the program. The next steps could involve researching land use controls and restoration projects that could be

implemented to protect and/or improve fish and wildlife habitat in the rural counties.

A number of land use strategies could be considered to protect wildlife habitat including Environmental Protection Overlay Districts, the acquisition of lands or easements, and stewardship programs. For more information regarding these ideas, refer to the following Chapter 7 sections: "Promote the Use of Local Government Land Use Powers to Protect Fish and Wildlife Habitat" and "Develop Streambank Erosion Control Program".

A document published by the National Research Council of Canada entitled Methods of Modifying Habitat to Benefit the Great Lakes Ecosystem outlines a number of habitat restoration and enhancement projects that the rural habitat task group could consider. Examples include the creation of wetland pods, soil bioengineering, and the restoration of natural habitat structure. Wetland pods, constructed of chicken wire and designed to protect re-established aquatic plants and serve as a haven for juvenile fish, have been constructed in both Collingwood and Hamilton Harbours.

Soil bioengineering combines structural, biological, and ecological concepts to construct living structures for erosion, sediment, and flood control. For example, a bioengineered cribwall consists of a hollow, interlocking arrangement of timbers constructed as a wall. This structure is filled with soil and layers of live branch cuttings. Once the cuttings have taken root and grown, they will eventually take over the structural functions of the timbers. The end result is a stable, vegetated slope. From a habitat perspective, the advantage of bioengineering, as opposed to conventional methods of erosion control such as the installation of rip-rap, is that it does not function as an ecological barrier between aquatic and terrestrial areas. Soil bioengineering has been utilized in Collingwood Harbour for streambank protection and fish habitat enhancement.

In the Toronto area of concern, efforts are underway to enhance fish habitat in the littoral zone of Lake Ontario through the placement of woody brush and fallen trees at sheltered warm-water sites in order to develop physical complexity in areas degraded and simplified by lake-filling, dredging, and the installation of erosion control structures.

7.37.2.2. Time required: 1 year (Steps 1 and 2)

7.37.2.3. Estimated cost: The primary cost associated with developing and ranking a list of the critical habitats would consist of staff time. In addition, it is anticipated that some of the work associated with Step 1 (Habitat identification) could be performed by volunteers. Assuming that one staff person from each county devoted 15% of their time to the project, the cost would be approximately \$6,000 per county.

7.37.2.4. Possible funding sources: counties, NYSDEC, New York State Aid to Localities, Great Lakes Protection Fund, private foundations

7.37.2.5. Possible implementors: counties, NYSDEC, not-for-profit organizations

7.37.2.6. Expected benefits: The restoration, enhancement, and/or protection of habitat would contribute to increased fish and wildlife populations and thus address existing beneficial use impairments. In addition, recreational fishing and wildlife observation are important contributors to the local economy. Also, natural diversity contributes to the quality of life in the Rochester Embayment watershed.

Author: Todd Stevenson

7.38. Develop Public Education Structure

7.38.1. Background:

Use impairments addressed: See Table 7-8

Affected water bodies: the Rochester Embayment watershed

Current conditions that necessitate the measure:

As major reductions in point source discharge are being achieved, the importance of nonpoint source water pollution is becoming more apparent. Based on water quality information collected by the New York State Department of Environmental Conservation over the past decade, nonpoint pollution from sources such as urban runoff, agriculture, and onsite wastewater treatment systems is responsible for over 90% of the water quality impairments in New York State. In the Rochester Embayment watershed, the Irondequoit Basin Nationwide Urban Runoff Program documented that nonpoint sources of pollution are the primary contributors to eutrophication in Irondequoit Bay. Because many types of nonpoint source pollution are the result of citizen actions, there is a growing need to intensify existing public outreach efforts. For information regarding existing educational efforts, see Chapter 6 "Educational Efforts Designed to Develop Public Stewardship of the Watershed".

Additional information:

Currently, a number of government agencies, educational institutions, and not-for-profit organizations are involved in promoting public stewardship of water resources including Soil and Water Conservation Districts (SWCD), Cornell Cooperative Extension (CCE), the Natural Resources Conservation Service (NRCS), schools, and The Nature Conservancy. However, these efforts have been limited by funding, staff time, and a lack of awareness regarding what other organizations are doing. Therefore, there is a need to coordinate these efforts in order to maximize their impact.

7.38.2. Proposed Action: Develop Public Education Structure

7.38.2.1. Description:

The county water quality coordinating committee (WQCC), or the agency that provides coordination of water quality activities, would develop a fact sheet that describes water quality educational programs and opportunities within the county. This project could be performed by a student intern. The process of developing the fact sheet would help to keep those involved in stewardship building programs up to date as far as what other educators are doing. After the fact sheet is completed, it would be distributed throughout the community (including schools) by means of environmental/county fairs, direct mailings, etc. The fact sheet would need to be

updated every five years in order to remain accurate and useful.

7.38.2.2. Time required: The development and distribution of the fact sheet would take a student intern approximately one month to complete.

7.38.2.3. Estimated cost: If a student intern was employed to conduct the project, the cost of developing and distributing the fact sheet would be approximately \$1,500 per county.

7.38.2.4. Possible funding sources: counties, grants

7.38.2.5. Possible implementors: counties, WQCCs

7.38.2.6. Expected benefits: Educational efforts build public stewardship of water resources and therefore result in reduced nonpoint source pollution. For example, stewardship activities such as the responsible use of lawn care fertilizers or the proper maintenance of septic systems would contribute to improved trophic conditions and fish/wildlife habitat in area waters. In addition, an informed public is essential in order to create support for policies which protect water resources such as land use planning.

Author: Todd Stevenson

7.39. Gather data in preparation for watershed plans and a Genesee River basin plan

7.39.1. Background:

Use impairments addressed: See Table 7-8

Affected water body: Surface waters of the Genesee River basin

Current conditions that necessitate the measure:

The Rochester Embayment watershed is divided into three drainage basins (see Figure 7-3):

- Lake Ontario West Basin (generally, parts of Monroe and Orleans Counties)
- Genesee River Basin (generally, all or parts of Allegany, Genesee, Livingston, Monroe, Ontario and Wyoming Counties)
- Lake Ontario Central Basin/Irondequoit Basin (almost entirely in Monroe County)

Each of these basins has a different pattern of land use and, in some cases, different use impairments and different types of sources. In order to gather as much information as possible about each basin and use an ecosystem approach, it is necessary to involve the government officials and citizens who work and live in each basin. The information that is gathered will be used to identify appropriate remedial measures.

Additional information:

Early in the Remedial Action Plan (RAP) process for the Rochester Embayment Area of Concern (AOC), it was decided to develop basin plans to identify and address problems in each basin that affect the water quality in the AOC and the water quality in the basin waterways. This effort was initiated at the same time as the Stage I RAP. A great deal of information was gathered about the environmental setting of the three basins and the goals and objectives for each of these three basins. Some work was also completed to identify water quality conditions in these basins.

Basin plan development has been assisted by advisory committees that were established as basin subcommittees of the Monroe County Water Quality Management Advisory Committee. These advisory committees helped identify basin use impairments through discussions and through field surveys. The basin subcommittees also established water quality and resource use goals and objectives. In addition, completed written work on the basin plans was done by the Stage I RAP consultant team headed by the Center for Governmental Research. The content of each basin plan is parallel to the Rochester Embayment RAP. A listing of major chapters of the Genesee River basin plan, with which the rural counties are involved, and the status of its preparation are shown below.

**Table 7-9. Status of Genesee River Basin Plan Development
March, 1994**

Chapter	Status
Introduction	Not started
Environmental setting	Completed
Water quality and resource goals and objectives	Completed
Impairments/conditions	Draft 1 completed
Analysis of remedial measures to address impairments	Draft 1 in progress
Analysis of remedial measures to achieve other goals	Draft 1 in progress
Basin plan of action	Not started
Monitoring and program assessment	Some monitoring; no text
Commitments received to carry out program	Not started

Preparation of the basin plans was suspended in 1994 because funds originally allocated to complete the RAP and the basin plans had been completely expended and the New York State Department of Environmental Conservation (NYSDEC) directed Monroe County to concentrate on the completion of the Stage I and II RAP in order to fulfill its contract.

7.39.2. Proposed Action: Gather data in preparation for watershed plans and a Genesee River basin plan

7.39.2.1. Description:

Data should be gathered to update and supplement the data recorded in the Genesee River Basin Plan that was begun early in the 1990s. The data should include:

- Land use
- Status of municipal, industrial and commercial SPDES permits
- Water quality monitoring
- Status of landfills and hazardous waste sites (see also Chapter 7 (Rural) section on "Identify hazardous waste sites")
- Any other "new" data required to complete watershed plans

Sources of pertinent data include:

- NYSDEC
- U.S. Geological Survey
- Cornell Laboratory for Environmental Applications of Remote Sensing (CLEARS)

Because watersheds do not correspond to municipal boundaries, watershed planning should be facilitated by the regional planning councils working with the county Water Quality Coordinating Committees (WQCCs).

7.39.2.2. Time required: The equivalent of one-half year for data collection, spread over a two-three year period, for one regional or county environmental planner

7.39.2.3. Estimated costs: The cost for the environmental planner would be approximately \$25,000. The costs could be reduced if the environmental planner(s) involved could be assisted by a student intern working for college credit. There would be additional costs for: (1) the time of members of county WQCCs for meetings and communication with each other and NYSDEC, and (2) personnel at the state level for data dissemination and, if appropriate, water sampling and laboratory analysis.

7.39.2.4. Possible funding sources: NYSDEC, regional planning councils, Water Resources Board of the Finger Lakes Association, counties

7.39.2.5. Possible implementors: Regional planning councils, Water Quality Coordinating Committees, Water Resources Board of the Finger Lakes Association, NYSDEC

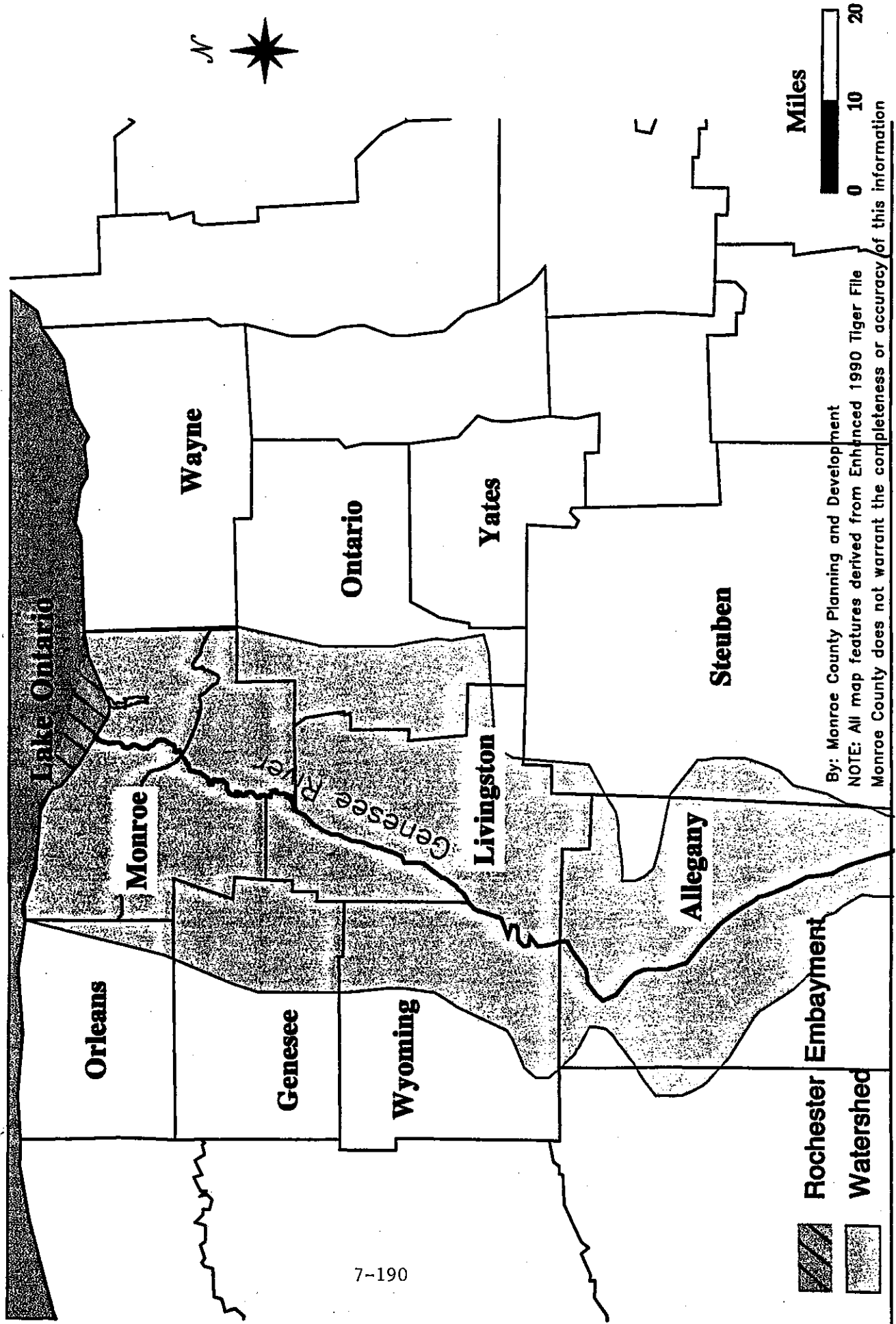
7.39.2.6. Expected benefits: Data collection is the first step of a process that would eventually lead to watershed plans that would help to meet the water quality goals of the rural counties and a Genesee River basin plan that would help to meet the water quality goals of the Rochester Embayment RAP.

Author: Carole Beal

Rochester Embayment and Watershed

Western New York

Figure 7-3



By: Monroe County Planning and Development
 NOTE: All map features derived from Enhanced 1990 Tiger File
 Monroe County does not warrant the completeness or accuracy of this information

7.40. Continually evaluate and implement proposals for possible new remedial measures

7.40.1. Background:

Use impairments addressed: See Table 7-8

Affected water body: Could affect any water body in the rural counties, and downstream of them.

Current conditions that necessitate the measure: A system must be put in place to facilitate proposals and updates to RAP actions by county and subcounty agencies.

7.40.2. Proposed action: Continually evaluate proposals for possible new remedial measures

7.40.2.1. Description:

Municipal and county agencies tend to work through their county Water Quality Coordinating Committees (WQCCs). Proposals could be brought to the county WQCC for inclusion in the County Water Quality Strategy. In this way, new actions would be considered as funding becomes available.

If a particular action concerns more than one county, it may be brought to the Genesee/Finger Lakes Regional Planning Council (G/FLRPC), either through the Planning Coordination Committee (PCC) or as part of the proposed Regional Water Quality Strategy process. In either case, it would then become part of the coordination component of the G/FLRPC Water Quality Program. G/FLRPC would then take the lead responsibility for updating the action or developing the proposal.

7.40.2.2. Time required: Will vary from county to county, and will also depend on whether the proposal is for a county or regional action.

7.40.2.3. Estimated costs: Will vary from county to county, and will also depend on whether the proposal is for a county or regional action.

7.40.2.4. Possible funding sources: County WQCC, G/FLRPC

7.40.2.5. Possible implementors: County WQCC, G/FLRPC

7.40.2.6. Expected benefits: County and regional water quality strategies can change as needs change, build upon previous actions, incorporate new creative ideas, and add ideas based on new technologies.

Author: David Zorn

