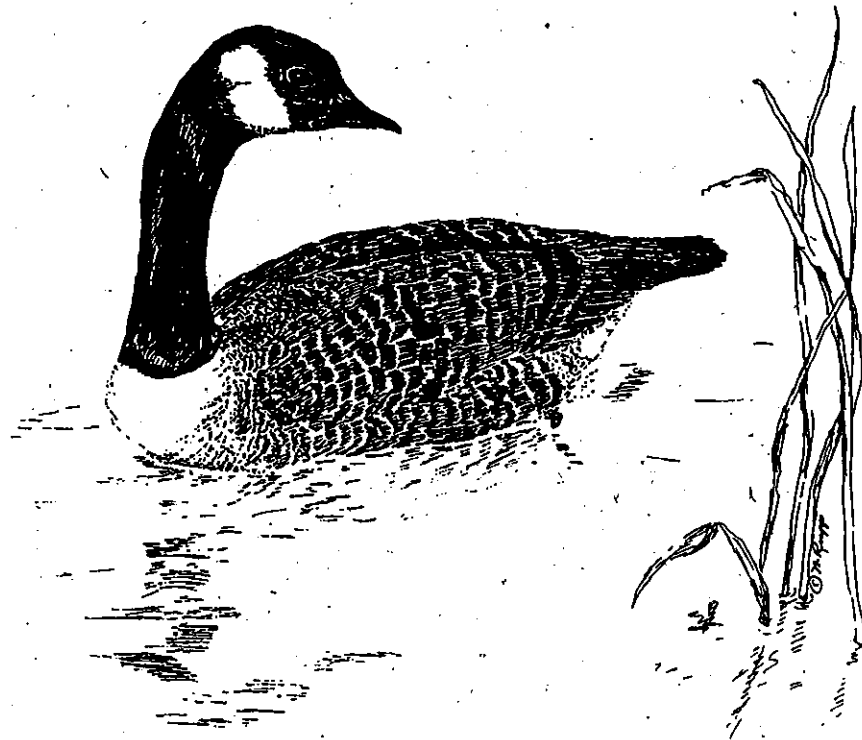


Rochester Embayment Remedial Action Plan Stage II

September 1997



John D. Doyle



George E. Pataki

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Frank Winkler, Natural Resources Conservation Service
Richard A. Young, Department of Geological Sciences, SUNY Geneseo
David Zorn, Genesee/Finger Lakes Regional Planning Council

Publications Services:

Joanne DelMonte
Thomas King
Betty Shangle
Amy Shiner

Art:

Nina Rupp

Format and Style Task Group:

Chris Fredette, Monroe County Water Quality Management Advisory Committee
Arthur Graham, Monroe County Water Quality Management Advisory Committee

Issue Task Group - Gorge Contamination:

Joe Albert, Monroe County Department of Health
Carole Beal, Monroe County Department of Health
Richard Burton, Monroe County Department of Health
Richard Elliott, Monroe County Department of Health
Chris Fredette, Monroe County Water Quality Management Advisory Committee
Mark Gregor, City of Rochester Department of Environmental Services
Louise Hartshorn, Monroe County Department of Environmental Services
James Holzbach, Monroe County Department of Engineering
Kevin Hylton, Rochester Gas and Electric Corporation
Margaret Peet, Monroe County Department of Health
Paul Sawyko, Monroe County Water Quality Management Advisory Committee,
Rochester Gas and Electric Corporation
Michael Schifano, Monroe County Department of Environmental Services
Edward Watson, Monroe County Water Quality Management Advisory Committee

Issue Task Group - High Priority Chemical Pollutants:

See Section 3.5 for list of members.

Chris Fredette, Monroe County Water Quality Management Advisory Committee
Ray Nelson, Monroe County Water Quality Management Advisory Committee
Edward Watson, Monroe County Water Quality Management Advisory Committee

Monitoring Task Group - Added Costs to Agriculture and Industry:

Carole Beal, Monroe County Department of Health
Michael Ruszczyk, Monroe County Water Quality Management Advisory Committee,
Eastman Kodak Company
Paul Sawyko, Monroe County Water Quality Management Advisory Committee,
Rochester Gas and Electric Corporation
Michael Schifano, Monroe County Department of Environmental Services

Monitoring Task Group - Database:

Carole Beal, Monroe County Department of Health
Richard Burton, Monroe County Department of Health
Charles Knauf, Monroe County Department of Health
Anna Madden, Monroe County Department of Health

Monitoring Task Group - Eutrophication:

Thomas Bannister, University of Rochester
Carole Beal, Monroe County Department of Health
Anna Madden, Monroe County Department of Health
Margaret Peet, Monroe County Department of Health
Paula Smith, Monroe County Soil and Water Conservation District
Frank Winkler, Natural Resources Conservation Service

Monitoring Task Group - Toxics:

Carole Beal, Monroe County Department of Health
Joseph Gorsuch, Eastman Kodak Company
James Haynes, Department of Biological Sciences, SUNY Brockport
Gary Neuderfer, New York State Department of Environmental Conservation

Rural Actions Ranking Task Group:

See Section 10.2 for list of members.

Studies and Monitoring Ranking Task Group:

See Section 10.3 for list of members.

Urban Actions Ranking Task Group:

See Section 10.1 for list of members.

Liz Berkley
Robert King
Judy Price

International Joint Commission, Reviewers:

Alice Chamberlain
John Hartig
Bruce Kirschner

Monroe County Department of Environmental Services, Reviewers:

Mark Ballerstein
Louise Hartshorn
Michael Kent
Sean Murphy
Susanne Quarterman
Harry Reiter
Michael Schifano
Lynn Schramel

Monroe County Department of Health, Environmental Health Division, Reviewers:

Joseph Albert
Margit Brazda
Richard Elliott
John Felsen
Willard Jones
Michael Koral
Margaret Peet

Monroe County Department of Health, Environmental Health Laboratory, Reviewers:

Richard Burton
Charles Knauf
Anna Madden

Monroe County Department of Planning and Development, Reviewers:

Gerald Charipar
Thomas Goodwin
Allan Grover
John Lamb

Monroe County Soil and Water Conservation District, Reviewer:

Paula Smith

Monroe County Water Quality Management Advisory Committee, Reviewers:

Chris Fredette, Chair

See Section 1.2 for list of members.

Monroe County Water Quality Management Agency, Reviewers:

John D. Doyle, County Executive

Richard Mackey, Deputy County Executive

Andrew Doniger, Department of Health

John Graham, Department of Environmental Services

Rocco Di Giovanni, Department of Planning and Development

Allen Cassady, Department of Parks

Frank Dolan, Department of Transportation

John Stanwix, Monroe County Water Authority

Max Streibel, Legislature Majority

R. Michael Loewke, Legislature Minority

Chris Fredette, Water Quality Management Advisory Committee

Douglas Dobson, Government Policy Group

Frank Winkler, Soil and Water Conservation District

Natural Resources Conservation Service, Reviewer:

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New York State Department of Environmental Conservation, Reviewers:

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Douglas Borschel, Region 8

Thomas Brown, Region 6

Thomas Carroll, Region 8

Thomas Cullen, Albany

Rosita DiCioccio, Albany

Richard Draper, Albany

Robert Hannaford, Albany

John Hick, Region 8

Craig Jackson, Region 8

Suzanne Jones, Albany

Robert Lange, Albany

Peter Lent, Region 8

Simon Litten, Albany

Frederick Luckey, Albany

Gerald Mikol, Region 9

Robert Miller, Wildlife Resources Center

Thomas Pearson, Region 8
Patricia Riexinger, Albany
Matthew Sanderson, Region 8
Timothy Sinnott, Albany
Robert Townsend, Albany
Robin Warrender, Albany
Karen Woodfield, Albany

U.S. Army Corps of Engineers, Reviewers:

Scott Pickard
Thomas Pieczynski

U.S. Fish and Wildlife Service, Reviewer:

Dieter Busch

Other reviewers:

Martin Brewster, Town of Pittsford
Ronald Cass, Town of Perinton
Craig Civalier, Monroe County Department of Transportation
Thomas Clark, Village of Brockport
Jeffrey Dodge, Braddock Bay Raptor Research, Inc.
Thomas Gasiewicz, University of Rochester Medical Center
Robin Goettel, Illinois-Indiana Sea Grant
Joseph Gorsuch, Eastman Kodak Company
Mark Gregor, City of Rochester Department of Environmental Services
Warren Hart, Ontario County Planning Department
James Haynes, Department of Biological Sciences, SUNY Brockport
John Herring, New York State Department of State
Ronald Kaplewicz, State Soil and Water Conservation Committee
David Klein, The Nature Conservancy
Betsy Landre, Water Resources Board
M.L. Meisenzahl, Monroe County Office of Emergency Preparedness
Daniel Miller, Monroe County Fisheries Advisory Board
Edward Mills, Cornell Biological Field Station
Ernest Mohr, Citizen
James Nugent, Monroe County Water Authority
Jennifer Pultz, Sea Grant
David Rinaldo, Monroe County Department of Parks
Charles Rouse, New York Audubon Society
Karen Sahler, Rochester Gas and Electric Corporation
Frank Sciremammano, Rochester Institute of Technology, International St. Lawrence
River Board of Control

Conservation

Richard Smallwood, Zenon Airport Environmental
Mary Sonntag, Erie County Department of Environment and Planning
Philip Steinfeldt, Monroe County Department of Engineering
Ralph Van Houten, Livingston County Health Department
John Wildeman, Steuben County Soil and Water Conservation District
Richard A. Young, Department of Geological Sciences, SUNY Geneseo



Chapter 1: Introduction



1.1.1 Historical Perspective

The stated purpose of the Great Lakes Water Quality Agreement (GLWQA), as established by the United States and Canada in 1972 (and revised in 1978 and 1987), is to "...restore and maintain the chemical, physical, and biological integrity of the waters of the Great Lakes Basin Ecosystem." In 1985, as part of the effort to fulfill this mission, the International Joint Commission¹ (IJC) identified 42 Areas of Concern (AOC) within the Great Lakes Basin, including the Rochester Embayment of Lake Ontario. AOCs are locations which are characterized by serious water pollution problems. The 1987 amendments to the GLWQA require that a Remedial Action Plan (RAP) be developed for each AOC. These RAPs are to be submitted to the IJC for review. For a more detailed discussion of the history leading up to the RAP effort, see Chapter 1 "Introduction" of the Rochester Embayment Remedial Action Plan Stage I.

1.1.2 Remedial Action Plans (RAPs)

The purpose of Remedial Action Plans (RAPs) is threefold: (1) to identify water quality problems and outline specific actions that need to be taken to address these problems, (2) to prevent further pollution of water resources, and (3) to protect human health. The Rochester Embayment RAP is being developed in two stages. The Stage I Rochester Embayment RAP, which was completed in 1993, provides background information, establishes water use and quality goals and objectives, and identifies water quality conditions and pollutant sources. The Stage II Rochester Embayment RAP outlines studies required to complete identification of water quality problems, describes both completed/ongoing and possible new remedial measures, evaluates possible funding mechanisms and sources, outlines monitoring programs, and presents selected actions to be implemented. For a more detailed explanation of the RAP process, see Chapter 1 "Introduction" of the Stage I RAP.

1.1.3 RAP Preparation

Among the six Areas of Concern (AOCs) in New York State, the Rochester Embayment is unique in that the RAP is being prepared locally. This unique arrangement is being used because substantial local watershed planning, public outreach, and implementation were already ongoing. The Rochester Embayment RAP is being prepared by Monroe County, under contract with the New York State Department of Environmental Conservation (NYSDEC). Local matching funds

¹The IJC, which was created by the Boundary Waters Treaty in 1909, is an independent body, composed equally of United States and Canadian appointees, that provides a quasi-judicial and investigative mechanism to cooperatively resolve problems, including water and air pollution and fluctuating lake levels, along the two countries' common border.

Department is coordinating the RAP process and writing the RAP documents. The RAPs for the other five AOCs in New York State are being prepared by NYSDEC staff.

1.1.4 Organizational Structure

Because of the long-standing concern for water quality in the Rochester Embayment watershed, a comprehensive water quality management structure was already in place prior to the initiation of the RAP process. The Monroe County water quality management structure is summarized by Figure 1-1. The primary elements of this structure are the Water Quality Management Agency (WQMA), the Water Quality Coordinating Committee (WQCC), and the Water Quality Management Advisory Committee (WQMAC).

In Monroe County, the primary administrative division which oversees water quality issues is the Water Quality Management Agency (WQMA). The WQMA is chaired by the Deputy County Executive and is comprised of department heads, representatives from the County Legislature, and selected water quality groups. The Agency's mission is to protect and improve water quality at the watershed level by developing, implementing and monitoring the effectiveness of policies and programs.

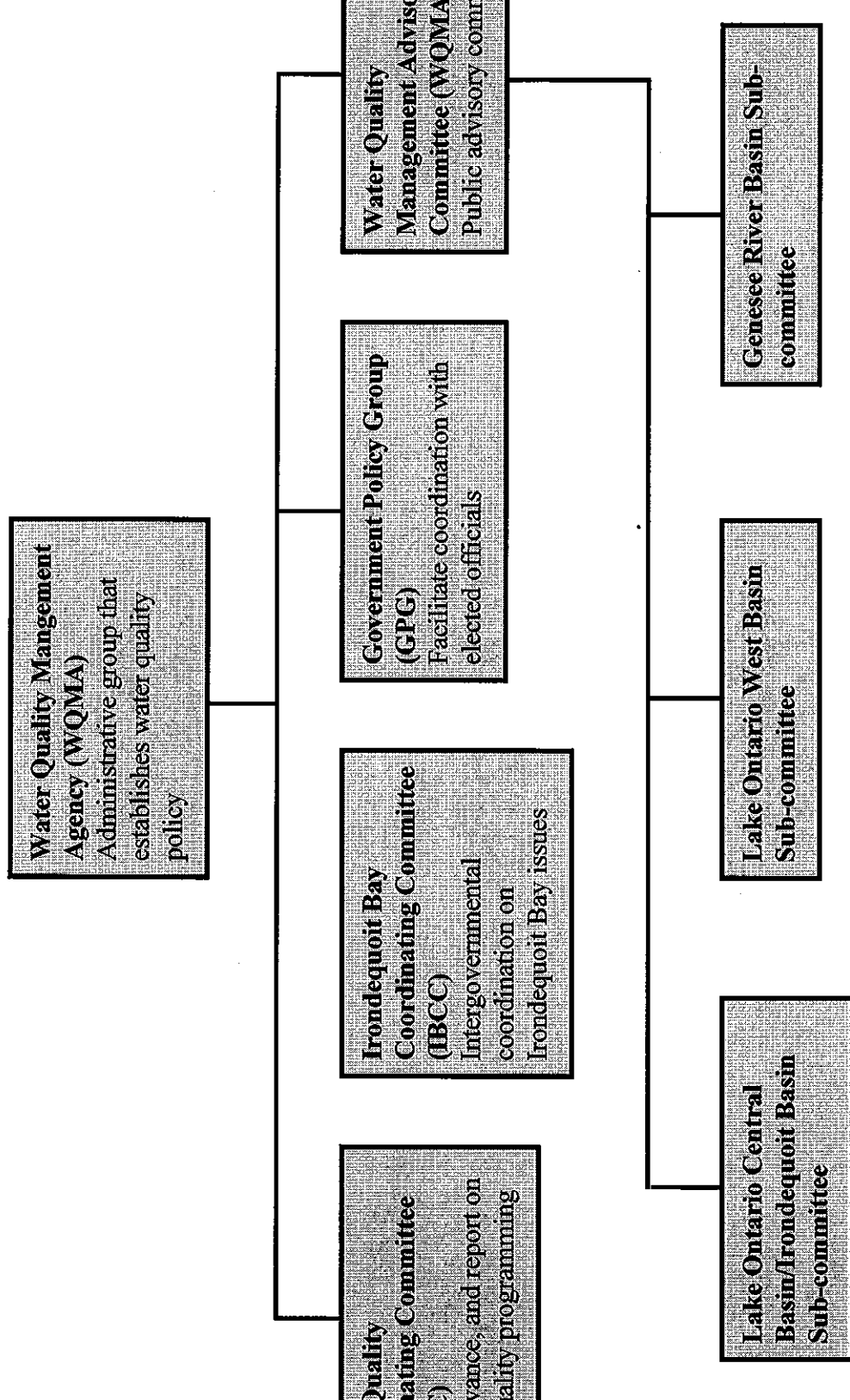
Another element of Monroe County's water quality management structure is the Water Quality Coordinating Committee (WQCC). The WQCC is a technical advisory committee consisting of representatives from municipal, county, state, and federal governments and agencies. The role of the WQCC is to coordinate the implementation of water quality related activities and to advise the WQMA.

The third principal element of Monroe County's water quality management structure is the Water Quality Management Advisory Committee (WQMAC). The WQMAC is a public advisory committee which is described in greater detail in Section 1.2 "Public Participation in the RAP Process".

Figure 1-1 also includes the Irondequoit Bay Coordinating Committee (IBCC) and the Government Policy Group (GPG). The IBCC is an advisory committee whose mission is to coordinate, among various levels of government with an interest in Irondequoit Bay, all levels of public and private use of the area, and to develop, recommend and monitor related policies. The creation of the IBCC is described in the Chapter 6 section "Irondequoit Bay Coordinating Committee". The GPG is discussed on page 1-15 of the Stage I Rochester Embayment RAP.

The water quality management structure utilized by the other counties within the Rochester Embayment watershed consists primarily of water quality coordinating committees. In the absence of an active WQCC, agencies such as the county Soil and Water Conservation District, Environmental Management Council, or Planning Department assume the lead role.

Figure 1-1. Monroe County Water Quality Management Structure



One of the guiding principles of the Great Lakes Water Quality Agreement is that of the ecosystem approach. The Agreement specifies that RAPs "shall embody a systematic and comprehensive ecosystem approach" [Annex 2,2 (a)]. For the purposes of the Rochester Embayment RAP, the term "ecosystem approach" is defined as a comprehensive resource management philosophy that recognizes the interrelationship of air, water, land, and biological systems, including humans. Therefore, the RAP must consider the impact of land use, air quality, etc. upon water quality. The findings of the Stage I Rochester Embayment RAP demonstrate the importance of these interrelationships. For example, the Stage I RAP documented the importance of atmospheric deposition and urban stormwater runoff as primary sources of locally contributed pollutants to the Rochester Embayment.

In addition, because humans are an integral component of the ecosystem, human health must be considered as part of the RAP. Throughout the Stage II RAP process, it has been recognized that remedial measures designed to restore beneficial uses of water resources also protect human health.

A fundamental implication of the ecosystem approach for the Rochester Embayment RAP is that political boundaries are meaningless because pollutants do not recognize them. Therefore, the study area for the RAP has not been limited to Monroe County but rather includes the entire watershed that drains to the Embayment (see Figure 2-2). A watershed is an area of land that drains to a particular water body.

1.1.6 Basin Plans

The original workplan for the Rochester Embayment RAP project included the development of plans for the three basins (Lake Ontario West, Genesee River, and Lake Ontario Central) that drain into the Embayment. The purpose of the basin plans was to address the unique mix of water quality problems and pollutant sources that characterize each of the three basins. The basin plans were to contain similar types of information as the RAP including the environmental setting, resource goals and objectives, existing conditions and problems, existing and new remedial measures, and a plan of action. The key portions of the basin plans were to be used to develop the full Stage I and Stage II RAPs. However, due to a shortage of funds and staff time, the basin plans were not finished. Instead, completing the Stage I and Stage II RAPs became the priority.

1.2.1 Strategies

During the development of the Stage II Rochester Embayment RAP, a number of strategies have been used to obtain public input including review teams, the WQMAC, ranking committees, and public meetings.

Substantial public input on the Stage II Rochester Embayment RAP was obtained through the use of review teams. As individual draft sections or chapters of the RAP were completed, they were distributed to these review teams which were ad hoc groups of experts, interested persons, or affected parties. These review teams provided valuable input which was carefully considered by the RAP writing team.

The WQMAC, which has existed in some form since approximately 1979, was the primary mechanism for obtaining public input on the development of the RAP. The WQMAC is the public advisory group to the Monroe County Water Quality Management Agency (WQMA) on water quality issues. Throughout the RAP process, the primary activity of this committee was to advise the WQMA and the NYSDEC on the development of the RAP. Committee members reviewed the draft narrative of the RAP and discussed substantive issues at the regular monthly meetings of the Committee. Members of the WQMAC also participated in the ranking of proposed remedial measures. This ranking process is described in Chapter 10 "Selected Actions".

From 1993 until December 1995, the WQMAC consisted of the following members:

Citizens:

Dr. Betty Lou Brett
John Ernst
Roy Hedman
Bob Jonas
Bess Marino
Janet Moffett
Mike Mosehauer

Public officials:

Roger Boily	Town of Greece
Don Navor	City of Rochester
Bill Richardson	Town Supervisor's Association
Pieter Smeenk	Monroe County Legislature
David Woods	Genesee Finger Lakes Regional Planning Council

Thomas Baird	Railroad United Transportation
Bruce Boncke	Rochester Homebuilders Association
Chuck Colby	Monroe County Farm Bureau
Dan Miller	Marine Operators & Dealers
Chris Rau	Industrial Management Council
Paul Sawyko	Rochester Gas & Electric
Ed Watson	Rochester Engineering Society

Public interests:

John Ferraro	Charlotte Community Association
Chris Fredette	RCSI, EMC, and CEI
Ernest Mohr	Ad Hoc Odor Committee
Ray Nelson	Sierra Club
Elmer Wagner	Monroe County Conservation Council

Ex-officio, non-voting members:

Margit Brazda	Monroe County Department of Health
Richard Burton	Monroe County Environmental Health Laboratory
John Davis	Monroe County Department of Engineering
Rocco DiGiovanni	Monroe County Department of Planning and Development
Rick Elliott	Monroe County Health Department
John Graham/ Mike Schifano	Monroe County DES
Jim Haynes	former WQMAC chair
Mary Merner	Sierra Club
Robert Norton	Chair, VanLare Subcommittee
Jim Nugent	Monroe County Water Authority
Margaret Peet	Monroe County Department of Health
Paul Schmied	NYSDEC
Gary Skoog	Chair, Lake Ontario West Basin Subcommittee
Dean Spong	Monroe County Parks Department
Larry Stid	City of Rochester Department of Planning
Frank Winkler	Natural Resources Conservation Service

Early in 1996, the WQMAC was restructured in order to increase both participation and member diversity. The new committee consists of 35 voting members who were jointly appointed by the Monroe County Executive and a designated representative of the NYSDEC. The membership of the WQMAC is as follows: citizens (maximum 10 members), public interest groups (maximum 8 members), economic interests (maximum 8 members), and public officials (maximum 9 members). The committee also includes four representatives from each of the three basins (Lake Ontario West, Lake Ontario Central, and Genesee Basin). As of March 15, 1996 the committee is comprised of the following members:

Citizens:

Dr. Betty Lou Brett
John and Gerry Ernst
Barry J. Fry
Bob Jonas
Janet Moffett
Dr. Jerrold N. Poslusny
Steven D. Reigle
Mariana L. Rhoades
Andrew Smith
Orlean I. Thompson

Public Officials:

Margit Brazda	Monroe County Health Department
Richard Elliott	Monroe County Health Department/WQCC
Kathy Harter	Town of Sweden Conservation/Environmental Board
Hon. Jeanne Loberg	Town of Mendon Supervisor
Hon. Max Streibel	Monroe County Legislature, 7th District
Linda Vera	New York State Department of Environmental Conservation
David Woods	Livingston County Planning Department
David Zorn	Genesee/Finger Lakes Regional Planning Council

Economic Interests:

Chuck Colby	Monroe County Farm Bureau
Douglas Daley	Malcolm Pirnie
Thomas Klein	Xerox/Council of Great Lakes Industries
Mike Ruszczyk	Industrial Management Council
Paul Sawyko	Rochester Gas & Electric
Ed Watson	Rochester Engineering Society
Charles T. Worboys	Vordex Inc.

Public Interests:

Lori Baster	WMAX Green Team
Hope Black	League of Women Voters
Chris Fredette	Environmental Management Council and the Rochester Committee for Scientific Information
Arthur Graham	Friends of the Genesee Valley Greenway
Michael R. McNulty	Trout Unlimited
Ray Nelson	Sierra Club
William D. Smith	New York Water Environment Association
Elmer Wagner	Monroe County Conservation Council

government or will impact local governments, the participation of public officials in the RAP process was identified as essential. During the development of the Stage II RAP, Monroe County Health Department and Genesee Finger Lakes Regional Planning Council staff invited local government representatives to participate in the ranking of the proposed remedial measures as outlined in Chapter 7. This process is described in Chapter 10 "Selected Actions". Local government representatives also provided input on the development of the RAP through their participation in the Water Quality Coordinating Committee.

Additional public input was obtained at a public meeting and at a public workshop held following the completion of the draft Stage II RAP. More than 50 people attended the RAP public meeting on February 25, 1997. Participants were given the opportunity to state their opinions about the most important water quality problems in the Rochester Embayment watershed and which proposed RAP actions are most important for addressing these problems. The public meeting initiated a six-week public comment period during which comments could be submitted verbally or in writing to Monroe County Health Department staff. A responsiveness summary was prepared to address both the comments that were made at the public meeting and those that were submitted during the public comment period. This responsiveness summary is included in Appendix J "Public Comment Period: Comments and Responses."

The public meeting laid the groundwork for the public workshop. More than 60 people attended the follow-up public workshop which was held on April 1, 1997. Attendees at this workshop consisted primarily of individuals who are likely to be involved in implementing actions to address water quality problems. Individuals who attended the public meeting were also invited to participate. At the workshop, participants were given the opportunity to participate in a decision making process to decide which remedial actions should be implemented first. The five actions that received the most votes will be initiated in 1997. Participants were also encouraged to volunteer to work on task groups that are being established in order to advance the five selected actions. For additional information regarding the workshop, see Appendix K "Public Workshop April 1, 1997."

Public participation in the RAP process was also encouraged through presentations at a wide range of community events and at the regular meetings of a number of organizations. For example, after the draft Stage II RAP was completed, presentations were made to the Livingston County Environmental Management Council, the Water Quality Coordinating Committees in Wyoming, Ontario, and Genesee counties, the Rochester Engineering Society, the Sierra Club, the Rochester Steam Generators and the Monroe County Legislature.

1.2.2 The Role of Public Participation in the RAP Process

Substantive issues that were raised by the WQMAC were discussed as a group by the full membership of the committee until consensus was reached and the RAP document could be revised accordingly. After the final revisions to the RAP are complete, the WQMAC will have

United States Environmental Protection Agency (USEPA) and the International Joint Commission (IJC) will also review the RAP.

The value of the public participation process is that it ensures that the Remedial Action Plan is a true reflection of what actions the community believes should be taken to address water quality problems in the Rochester Embayment of Lake Ontario. In addition, substantial public involvement in the development of the RAP will encourage public "ownership" of the effort. This sense of ownership will be essential because implementation of the RAP will require participation by all levels of government, industry, and the public.

1.2.3 Public Participation in Water Quality Programming

In 1994, the WQMAC formed the following task groups (comprised of WQMAC members and others from the community) in order to educate the public regarding water quality issues and the RAP process. These task groups are discussed further in the Chapter 6 section entitled "Educational Efforts Designed to Develop Stewardship of the Watershed".

1.2.3.1 Media and Communications Task Group

Purpose: Promote and publicize the RAP and related water quality issues and events through the local media, newsletters, organizations, and any other venues.

Members:	Janet Moffett	WQMAC
	Bob Jonas	WQMAC
	Gary Schmitt	Greece Environmental Board
	Ed Watson	WQMAC
	Paul Sawyko	Rochester Gas & Electric
	Wayne Howard	Citizen
	Margit Brazda	Monroe Co. Department of Health
	Jan Wellers	WQMAC

1.2.3.2 Water Resources Education at the Seneca Zoo Task Group

Purpose: Work with staff of the Seneca zoo to suggest ways to incorporate water quality / resource education into the Zoo.

Members:	Margit Brazda	Monroe Co. Department of Health
	Ernie Mohr	WQMAC
	Paula Smith	Monroe Co. Soil and Water Conservation District
	Karen Ervay	Monroe Co. Soil and Water Conservation District
	Judy Farrell	City of Rochester Dept. of Environmental Services
	Patty McLaughlin	Monroe County Parks Department

Purpose: Assist in the distribution of the fish consumption information pamphlet and, in some cases, talk to people about the information contained therein.

Members:	Paula Smith	Monroe Co. Soil and Water Conservation District
	Margit Brazda	Monroe Co. Department of Health
	Charles Knauf	Monroe Co. Department of Health
	Jan Wellers	WQMAC
	Mary Merner	WQMAC

1.2.3.4 Clean a Stream Task Group

Purpose: Develop a clean a stream program that can be implemented locally.

Members:	Ray Nelson	WQMAC
	Lee Nale	Citizen
	Charles Daniels	Citizen
	Margy Peet	Monroe Co. Department of Health
	Margaret Cleary	Monroe Co. Department of Health
	Ron Cass	Town of Perinton Department of Public Works
	Bill Dodge	Citizen
	John & Gerry Ernst	WQMAC
	Mike McNulty	Citizen

1.2.3.5 Special Projects Task Group

Purpose: Organize one-time events or projects. The first project was a conference on "Hormone Disrupters in the Environment: Human and Wildlife Health Issues".

Members:	Carole Beal	WQMAC
	Chris Fredette	WQMAC
	Margaret Cleary	Monroe Co. Department of Health
	Margy Peet	Monroe Co. Department of Health
	Betty Lou Brett	WQMAC
	Janet Moffet	WQMAC
	Larry Moriarty	WQMAC
	Tom Gasiewicz	University of Rochester
	Jim Haynes	SUNY Brockport
	Gary Neuderfer	NYSDEC
	Chris Rau	Eastman Kodak
	Karen Dean	Monroe Co. Cornell Cooperative Extension
	Butch Jones	Monroe Co. Department of Health

Willem Faber	Eastman Kodak
Joseph Stulb	Xerox
Libby Ford	Nixon Hargrave Devans & Doyle
Mary Joy Delconte	Nixon Hargrave Devans & Doyle

1.2.3.6 Presentations Task Group

Purpose: Identify and implement methods to promote and give water quality presentations to adult and childrens groups.

Members:	Chris Fredette	WQMAC
	Margaret Cleary	Monroe Co. Department of Health
	Lee Nale	Citizen
	Wayne Howard	Citizen
	Gary Schmidt	Town of Greece Environmental Board
	Larry Moriarty	WQMAC
	Bob Jonas	WQMAC
	Paula Smith	Monroe Co. Soil and Water Conservation District
	Dr. Betty Lou Brett	WQMAC
	Ed Watson	WQMAC
	Margit Brazda	Monroe Co. Department of Health

Author: Todd Stevenson

Chapter 2: Description of the Area of Concern

The Rochester Embayment is a broad bay on the south shore of Lake Ontario at the mouth of the Genesee River. For the purposes of the RAP, the Rochester Embayment Area of Concern (AOC) is defined as the approximately 35 square mile portion of Lake Ontario between Nine Mile Point in the Town of Webster (Monroe County, Lake Ontario Central Basin) and Bogus Point in the Town of Parma (Monroe County, Lake Ontario West Basin). The AOC also includes the approximately six mile reach of the Genesee River, from the Lower Falls to the mouth, that is influenced by water levels in Lake Ontario (see Figure 2-1).

Because a watershed approach is being taken in the preparation of the Rochester Embayment RAP, the study area also includes the approximately 3,000 square mile watershed that drains to the Rochester Embayment. The drainage area for the Rochester Embayment should be described as a "basin"¹. However, it is traditionally referred to as a "watershed".

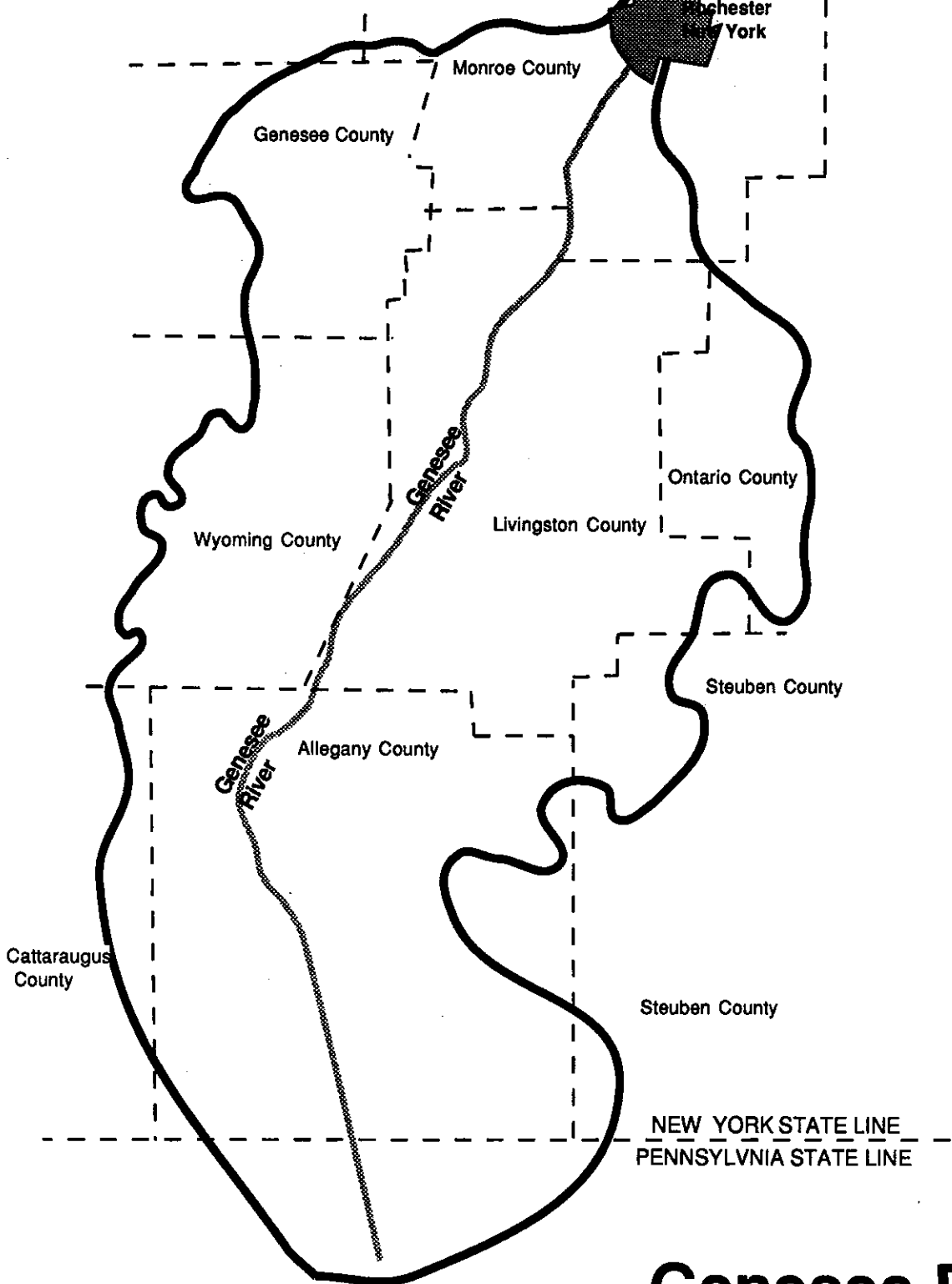
The Rochester Embayment Watershed is comprised of all or parts of three major basins: the Genesee River Basin (see Figure 2-2), the Lake Ontario Central Basin (see Figure 2-3) and the Lake Ontario West Basin (see Figure 2-3). The Genesee River basin is approximately 2,500 square miles in size and includes all or parts of ten counties (nine in New York and one in Pennsylvania). The entire Genesee Basin drains to the Rochester Embayment. The upstream areas of the Genesee Basin are characterized by farmland and mixed forest. Intensive urban development is concentrated in the downstream portion of the Basin in and around the City of Rochester.

The Lake Ontario Central Sub-basin is the 224 square mile portion of the Lake Ontario Central Basin that drains to the Rochester Embayment. The Central Sub-basin includes parts of Monroe and Ontario Counties and is predominantly urban and suburban in character. Irondequoit Bay is the dominant feature in the Sub-basin.

The Lake Ontario West Sub-basin is the 309 square mile portion of the Lake Ontario West Basin that drains to the Rochester Embayment². The West Sub-basin includes parts of Monroe and Orleans Counties and is primarily rural in character with development concentrated in the eastern part of the Sub-basin, along the Lake Ontario shoreline, and in a number of villages.

¹A basin is a collections of watersheds.

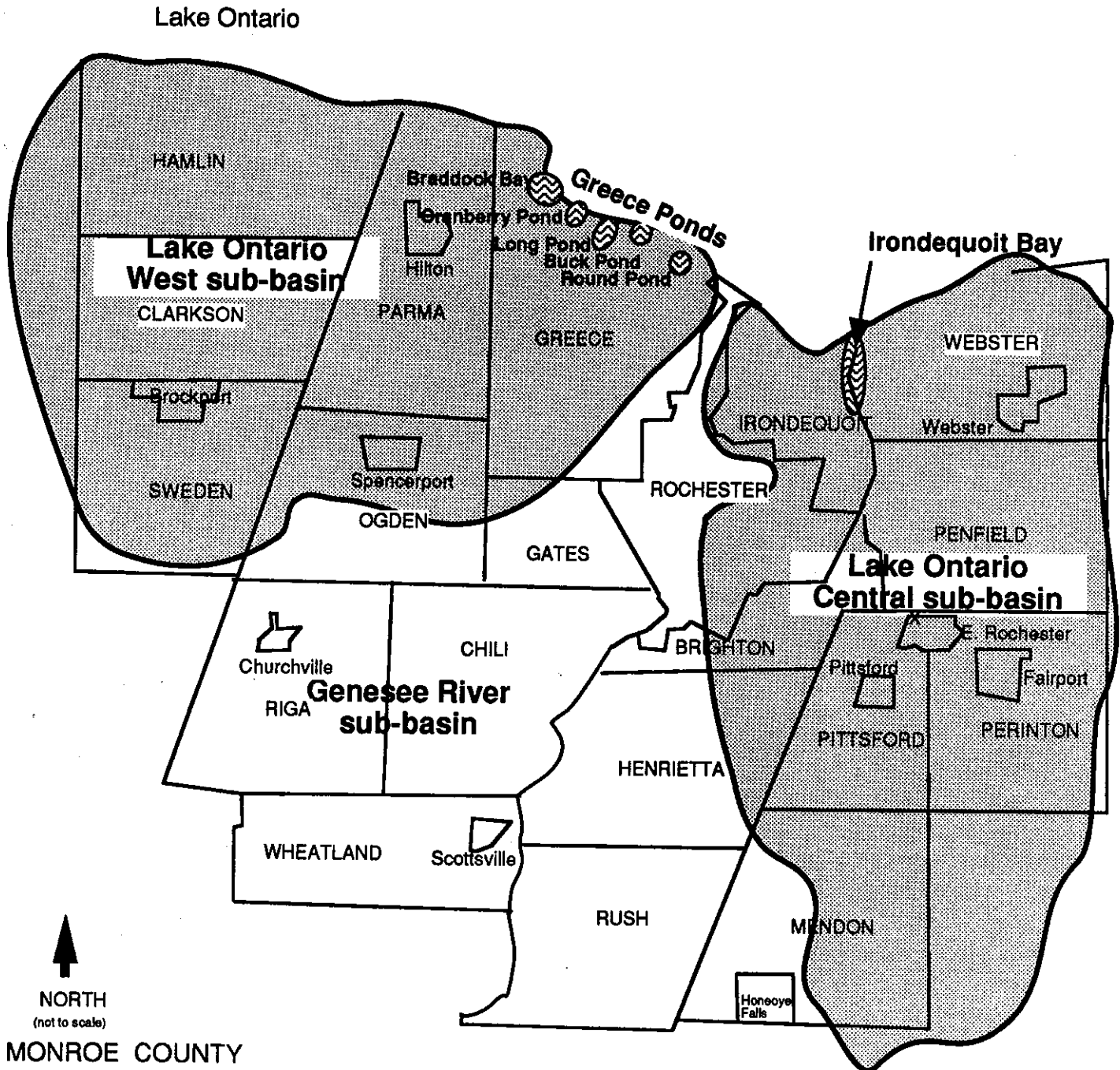
²Note that the watersheds of all streams within Monroe County, that flow directly into Lake Ontario west of the Genesee River Basin, are included in the Lake Ontario West Sub-basin. This delineation allows Monroe County to have consistent water quality policy throughout the County.



NORTH

Genesee River Basin

The Lake Ontario West Sub-basin & The Lake Ontario Central Sub-basin



Embayment watershed. The Canal receives water from and discharges water into a number of local waterways including the Genesee River and streams to its east and west. Any contributions from the Canal to beneficial use impairments in the Rochester Embayment are considered in the RAP insofar as the sources exist within the Rochester Embayment watershed. To learn more about the contributions from the Canal, monitoring of the Canal is proposed. (See the Chapter 9 section on "Monitoring of the Erie Canal".)

For a comprehensive discussion of the environmental features of the Rochester Embayment, including location and drainage area, flows, water levels, temperatures, winds, waves, food web, climate, topography, and uses, see Chapter 2 "Environmental Setting" of the Rochester Embayment Remedial Action Plan Stage I.

The following information includes additions to Chapter 2 "Environmental setting" of the Stage I Rochester Embayment Remedial Action Plan (RAP).

Revisions to the "definition of the geographic scope of the Rochester Embayment Area of Concern" section of the Stage I RAP as found on page 2-1:

- For purposes of the RAP, the Area of Concern also includes the approximately six miles of the Genesee River that are influenced by lake levels and internal seiches, also known as standing waves without evidence of surface movements (Ruttner, 1963), from the River's mouth to the Lower Falls.

Revisions to the "temperature stratification and overturn" section of the Stage I RAP as found on page 2-5:

- Seasonal stratification also affects what happens to runoff as it enters the Lake. Temperature differentials and sediment loads affect the density of stream water relative to the Lake, and may be a determining factor in how and where waters and pollutants become mixed within the Embayment. For example, in the summer, warm water from the Genesee River may flow many miles across the surface of colder Lake Ontario water before Lake and River waters mix completely. Occasionally, colder Lake water extends to the Lower Falls (extension of *internal seiches*). Evidence of the seiche phenomena has been documented by a consultant (HydroQual during the mid-70s).

Revisions to the "topography" section of the Stage I RAP as found on page 2-9:

- The Genesee River, from the Lower Falls to the Turning Point Basin, flows through a steep gorge with narrow shorelines. The bedrock channel in this segment of the River is only sparsely covered with sediment that is easily flushed downstream by rapidly flowing waters (e.g., rain and snowmelt runoff). Therefore, the type of benthic organisms that can thrive in this segment of the River is limited (J. Gorsuch).

Authors: Joseph W. Gorsuch and Todd Stevenson