TOWN OF PERINTON

1350 Turk Hill Road
Fairport, New York 14450
(585) 223-0770 • Fax (585) 223-3629 • www.perinton.org

Town of Perinton
Village of Fairport
Pre-Disaster Mitigation Plan

DRAFT August 18, 2003

TABLE OF CONTENTS

Page

Foreword

INTRODUCTION

AUTHORITY

MISSION

SITUATION

ORGANIZATION

A. Planning Committee
B. Risk Assessment
C. Mitigation Strategy
   1. Goals and Objectives
   2. Mitigation Measures
D. Action Plan

IMPLEMENTATION, MONITORING & EVALUATION

A. Documentation and Plan Adoption
   1. Public Involvement
   2. Legislative Authorization
B. Plan Review and Approval

REFERENCES

APPENDICES

A. Hazard Analysis Worksheet

B. Hazard-Specific Analyses

1. Ice Storm
2. Flood
3. Water Supply Failure
4. Civil Disturbance
5. Utility Failure
6. Structural Collapse
7. Hazardous Materials (at Fixed Facilities)
8. Blizzard
9. Hazardous Materials (Transportation)
10. Explosion
11. Fire
12. Tornado

13. Dam Failure

14. Transportation Incident
15. Landslide
16. Radiological (Fixed)
17. Windstorm
18. Earthquake
19. Drought
20. Terrorism
21. Energy Crisis
22. Extreme Temperatures
23. Disease
24. Ice Jam
25. Air Contamination
26. Infestation
27. Blight
28. Radiological (Transit)
29. Food Shortage

C. Hazard-Specific Action Plans

1. Ice Storm
2. Flood
3. Water Supply Failure
4. Civil Disturbance
5. Utility Failure
6. Structural Collapse
7. Hazardous Materials (at Fixed Facilities)
8. Blizzard
9. Hazardous Materials (Transportation)
10. Explosion
11. Fire
12. Tornado
13. Dam Failure
14. Transportation Incident
15. Landslide
16. Radiological (Fixed)
17. Windstorm
18. Earthquake
19. Drought
20. Terrorism
21. Energy Crisis
22. Extreme Temperatures
23. Disease
24. Ice Jam
25. Air Contamination
26. Infestation
27. Blight
28. Radiological (Transit)
29. Food Shortage

D. Planning Committee Roster

E. Geographic Information Systems (GIS) Maps (NOTE: on a CD)

1. “FEMA-regulated Flood Hazard Zones” including Floodways and Floodplains for 100 and 500-year floods
2. Waterways
3. Water Supply in Monroe County
4. Hazardous Facilities (at Fixed Sites) – intentionally left blank
5. Monroe County Fire District Map
6. Dam Locations – intentionally left blank
7. Transportation Corridors
8. Steep Slopes
9. Radiological (Fixed)
10. Woodlots
11. Geological Faults
12. Tracking Disease – West Nile Virus
13. Tracking Disease – Rodent Baiting
14. Agricultural Districts
15. Urban Areas

Foreword

This *Pre-Disaster Mitigation Plan* is a multi-jurisdiction Plan. This community planning process engaged the municipal subdivisions of the Town of Perinton and the Village of Fairport. Other representatives included the school district, special districts, fire and EMS jurisdictions, and community partners including business and utility interests.

This document represents their collective expression of Mitigation practices. Several municipalities have created additional plans that specify local conditions and detail their attention in these areas. Where local documents have been developed, additional community members have been engaged in the process. Community participants at all levels have demonstrated a commitment to the intent of this program, and to its process.

To all of you who have researched, written, commented and otherwise contributed . . . thank you. Your work has added tremendous value to your community's Emergency Management Program. We acknowledge Monroe County Emergency Management Office staff and agency personnel who have offered guidance through meetings, correspondence, and telephone inquiries. Your assistance was always helpful.

INTRODUCTION

Before the introduction of the Disaster Mitigation Act 2000, mitigation planning was primarily a State function. States were required to have a statewide hazard mitigation plan that was updated after every disaster.

Although not required, some local governments did choose to prepare a mitigation plan for their community. Local plans took many different forms: National Flood Insurance Program (NFIP) Repetitive Loss Plans, Floodplain Management Plans, Flood Mitigation Plans (since 1984) and All-Hazard Mitigation Plans. Several municipalities prepared these plans to meet the Community Rating System (CRS) mitigation planning criteria so that their residents could obtain NFIP insurance premium reduction.

This plan is designed to establish a viable direction for the mitigation of natural and technological disasters within Monroe County.

AUTHORITY

The Disaster Mitigation Act of 2000 amends the Robert T. Staffard Disaster Assistance and Emergency Act 42 USC 5133 by adding a new section, 322 – Mitigation Planning. Section 322 establishes a new requirement for local mitigation plans. The Act provides a framework for linking pre-and post-disaster mitigation planning and initiatives with public and private interests to ensure an integrated, comprehensive approach to disaster loss reduction. It requires all local governments to have an approved All-Hazard Mitigation Plan in place by November 1, 2004 to be eligible to receive Hazard Mitigation Grant Program (HMGP) project funding.

Under 44 Code of Federal Regulations (CFR) which contains the implementing regulations for the Act, Section 201.2, defines local government as one of the following:

County	Special district
City	Intrastate district
Municipality	Public Authority
School District	Regional or interstate government entity
Council of Governments	Indian Tribe/Alaskan Native Village
Town	Agency of a local government
Township	Other public entity

In developing the local plan criteria, other FEMA planning requirements were considered (CRS, Flood Mitigation Act (FMA) among others) to allow for the production of a single, comprehensive local mitigation plan that will fulfill the planning requirements of the various programs.

MISSION

This plan is a “multi-jurisdictional plan” that encompasses the Town of Perinton and the Village of Fairport. As prescribed by regulation it is *a combined planning effort of two or more local governments* (i.e. two municipalities sharing a common political boundary, or a county plan encompassing several, or all municipalities within its boundaries, etc).

Participating local governments include:

- Town of Perinton
- Village of Fairport
- Community Participants: Fairport Central School District, Board of Cooperative Education Services, Village of Fairport Fire Department, Bushnell's Basin Fire Association, Egypt Fire Association, Perinton Volunteer Ambulance.

The planning regulations require an open public involvement process in the formation of the plan. Broad public participation enables the development of mitigation measures that are supported by the various stakeholders within the community. The planning process must include: opportunities for the public to view and comment on the plan during its formation; involvement of any pertinent neighboring communities, interested agencies, private and non-profit organizations; and, review of any existing plans or studies and incorporation of these, if appropriate.

SITUATION

A. Monroe County applied for and was awarded a Pre-Disaster Mitigation Planning Grant which the Legislature authorized as Resolution No. 112 of 2003, on April 8, 2003.

B. Monroe County respects the jurisdictional autonomy of the participants in this multi-jurisdictional planning process.

C. In compliance with grant requirements, the County (through the Office of Emergency Preparedness) will submit its Plan, and the participating municipal Plans, as a "DRAFT" to the State by August 31, 2003, for their submission to FEMA for final approval.

D. When FEMA has approved the Plans, each municipal participant will submit its Plan to their respective legislative body for adoption by November 1, 2004.

E. With FEMA approval, and local legislative adoption, all municipal participants will be eligible for Federal Mitigation funding authorized by the Act.

ORGANIZATION

A. Planning Committee. The Planning Committee roster includes representatives from the participating local governments, and community partners. The Committee Roster is attached as Appendix D.

The Planning Committee met:

- May 13, 2003
- July 14, 2003

In addition to these meetings, communications with the Planning Committee was facilitated by "Newsletters" and emails.

B. Risk Assessment. This plan includes a local risk assessment that provides the factual basis for activities proposed in our strategy to reduce losses from these hazards.

The community may be affected by any, or all of the following categories of hazards:

Natural Hazards: These are naturally occurring hazards that pose a risk to life and property when they adversely impact the built environment. Examples of natural hazards include tornadoes, hurricanes, earthquakes, drought, flooding, winter storms (blizzards, ice storms), severe summer storms/wind events, tsunamis, wildfire, and landslide/avalanche among others.

Technical Hazards: These hazards are caused by human processes that have developed along with our dependence on modern technology. Technological hazards include explosions, urban fires, uncontrolled chemical or hazardous materials release (either at a fixed location or in transit), nuclear radiation release, and power outage among others.

Human-Caused Hazard: This type of hazard is caused by the direct (purposeful) actions of humans. Possible human-caused hazards include civil unrest/riots and terrorism (either small scale or large scale). NOTE: This plan incorporates Human-Caused Hazards in the Technological Hazard category on the "Hazard Analysis Worksheet, Appendix A."

The Plan's *Hazard Analysis Worksheet* is included as Appendix A. An analysis of each of the specific hazards threatening Monroe County is addressed in Appendix B.

C. Mitigation Strategy

1. Goals and Objectives. Goals are broad or general statements (that cannot be quantified) indicating potential accomplishments, objectives are measurable. Goals are to:

    a. Reduce vulnerability to life-safety threats. Objectives include: increasing public awareness by identifying ways to increase public knowledge of threats and preparedness measures; enhancing and expanding Public Alerting and notification means.

    b. Reduce property and economic losses. Objectives include: increasing public awareness; enhancing and expanding Public Alerting and notification means; identifying appropriate insurance for vulnerabilities; identifying protective measures.

    c. Keep emergency plans current. Objectives include: plan review for accuracy; maintenance of resource databases and contacts; practicing review cycles that satisfy regulatory requirements.

    d. Maintain readiness for an effective and safe response. Objectives include: provision of state-of-the-art training programs and equipment for Public Safety providers; identification of voids in the Public Safety infrastructure; coordination of resources for effective and efficient response.

    e. Expedite the recovery process. Objectives include: identification and deployment of assistive resources; ensuring accurate and timely communication with the public; promoting neighbor helping neighbor concepts.

    f. Strive to be "the best we can be." Objectives include: seeking professional accreditations; continuing personal and professional development opportunities; seeking additional community partnerships; informing municipal officials about activities and eliciting their support; seeking funding sources to assist program goals and objectives.

2. Mitigation Measures. The planning committee reviewed the various types of projects that could be employed to solve the identified hazards, i.e. actions that may reduce the risks from the identified hazards. Mitigation Measures may include:

    a. "Prevention. Measures such as planning and zoning, open space preservation, land development regulations, building codes, storm water management, fire fuel reduction, soil erosion, and sediment control.

    b. "Property Protection. Measures such as acquisition, relocation, storm shutters, rebuilding, barriers, floodproofing, insurance, and structural retrofits for high winds and earthquake hazards.

    c. "Public Education and Awareness. Measures such as outreach projects, real estate disclosure, hazard information centers, technical assistance, and school age and adult education programs.

    d. "Natural Resource Protection. Measures such as erosion and sediment control, stream corridor protection, vegetative management, and wetlands preservation.

e. "Emergency Services. Measures such as hazard threat recognition, hazard warning systems, emergency response, protection of critical facilities, and health and safety maintenance.

f. "Structural Projects. Measures such as dams, levees, seawalls, bulkheads, revetments, high flow diversions, spillways, buttresses, debris basins, retaining walls, channel modifications, storm sewers, and retrofitted buildings and elevated roadways (seismic protection)."[1]

D. Action Plan. The Action Plan identifies feasible and cost-effective Mitigation Measures that should be implemented to eliminate or reduce the identified hazards. A lead agency, or a responsible individual, is required to guide the implementation of each identified Mitigation Measure. Action Plans specific to the hazard identified in Appendix B, are addressed in Appendix C.

Actions that overlay all hazards identified in Appendix B are listed below as Figure 1.

1 FEMA, "STATE AND LOCAL MITIGATION PLANNING how-to-guide: Getting Started." p.1-8.

Figure 1.

A. **Prevention.**

Measure: (describe measure)	**#1. Enforce Building Code**				
Priority Rank (pick one and delete others)	**High**, Medium or Low				
Cost Estimate (pick one and delete others)	under $1,000	$1,001 – 4,999	$5,000 – 9,999	$10,000 – 19,999	**over $20,000**
Source of Funds	**local municipal annual operating budgets**				
Lead Agency	**local municipal Code Enforcement Officers**				
Timetable (pick one and delete others)	within 1 year	within 1-3 years	within 5 years	**continuous**	

Measure: (describe measure)	**#2. Comply with applicable federal and state regulations**				
Priority Rank (pick one and delete others)	**High**, Medium or Low				
Cost Estimate (pick one and delete others)	under $1,000	$1,001 – 4,999	$5,000 – 9,999	$10,000 – 19,999	**over $20,000**
Source of Funds	**local municipal annual operating budgets**				
Lead Agency	**local municipal officials and employees**				
Timetable (pick one and delete others)	within 1 year	within 1-3 years	within 5 years	**continuous**	

Measure: (describe measure)	**#3. Local Planning Department review of local municipal subdivision and zoning proposals under General Municipal Law, Sections 2391., 239m, and 239n.**				
Priority Rank (pick one and delete others)	**High**, Medium or Low				
Cost Estimate (pick one and delete others)	under $1,000	$1,001 – 4,999	$5,000 – 9,999	$10,000 – 19,999	**over $20,000**
Source of Funds	**Annual operating budget**				
Lead Agency	**Planning Departments/Boards**				
Timetable (pick one and delete others)	Perinton/Fairport				
	within 1 year	within 1-3 years	within 5 years	**continuous**	

Measure: (describe measure)	**#4. Annual Review of *Comprehensive Emergency Plans***				
Priority Rank (pick one and delete others)	**High**, Medium or Low				
Cost Estimate (pick one and delete others)	under $1,000	$1,001 – 4,999	$5,000 – 9,999	$10,000 – 19,999	**over $20,000**
Source of Funds	**Annual operating budget, state Local Emergency Management Preparedness Grant (LEMPG), state All-Hazards Comprehensive Emergency Management Planning Program**				
Lead Agency	**Office of Emergency Preparedness**				
Timetable (pick one and delete others)	within 1 year	within 1-3 years	within 5 years	**continuous**	

Measure: (describe measure)	**#5. Regular review of Local Laws**				
Priority Rank (pick one and delete others)	**High**, Medium or Low				
Cost Estimate (pick one and delete others)	under $1,000	$1,001 – 4,999	**$5,000 – 9,999**	$10,000 – 19,999	over $20,000
Source of Funds	**local municipal annual operating budgets**				
Lead Agency	**local municipal legislative body**				
Timetable (pick one and delete others)	within 1 year	within 1-3 years	within 5 years	**continuous**	

B. **Property Protection.**

Measure: (describe measure)	**#1. Identify "special hazard" areas**				
Priority Rank (pick one and delete others)	**High**, Medium or Low				
Cost Estimate (pick one and delete others)	under $1,000	$1,001 – 4,999	**$5,000 – 9,999**	$10,000 – 19,999	over $20,000
Source of Funds	**local municipal annual operating budgets, Mitigation Grants**				
Lead Agency	**local municipalities (agency identified locally)**				
Timetable (pick one and delete others)	within 1 year	**within 1-3 years**	within 5 years	continuous	

Measure: (describe measure)	**#2. Maintain public infrastructure**				
Priority Rank (pick one and delete others)	**High**, Medium or Low				
Cost Estimate (pick one and delete others)	under $1,000	$1,001 – 4,999	$5,000 – 9,999	$10,000 – 19,999	**over $20,000**
Source of Funds	**local municipal operating budgets, categorical grants, Mitigation Grants**				
Lead Agency	**appropriate municipal authority**				
Timetable (pick one and delete others)	within 1 year	within 1-3 years	within 5 years	**continuous**	

Measure: (describe measure)	**#3. Solicit intermunicipal and interagency cooperation**				
Priority Rank (pick one and delete others)	**High**, Medium or Low				
Cost Estimate (pick one and delete others)	**under $1,000**	$1,001 – 4,999	$5,000 – 9,999	$10,000 – 19,999	over $20,000
Source of Funds	**local government, private-sector**				
Lead Agency	**local municipal officials and employees**				
Timetable (pick one and delete others)	within 1 year	within 1-3 years	within 5 years	**continuous**	

Measure: (describe measure)	**#4. Promote purchase of appropriate hazard insurance policies.**				
Priority Rank (pick one and delete others)	**High**, Medium or Low				
Cost Estimate (pick one and delete others)	under $1,000	**$1,001 – 4,999**	$5,000 – 9,999	$10,000 – 19,999	over $20,000
Source of Funds	**local government, Mitigation Grants**				
Lead Agency	**local governments (assistance available from NYS Insurance Dept., e.g. brochures)**				
Timetable (pick one and delete others)	within 1 year	within 1-3 years	within 5 years	**continuous**	

Measure: (describe measure)	**#5. Property acquisition**				
Priority Rank (pick one and delete others)	**High**, Medium or Low				
Cost Estimate (pick one and delete others)	under $1,000	$1,001 – 4,999	$5,000 – 9,999	$10,000 – 19,999	**over $20,000**
Source of Funds	**local government, Mitigation Grants**				
Lead Agency	**local municipal legislative body**				
Timetable (pick one and delete others)	within 1 year	within 1-3 years	within 5 years	**continuous**	

C. **Public Education and Awareness.**

Measure: (describe measure)	**#1. Expand emergency Public Alerting means**				
Priority Rank (pick one and delete others)	**High**, Medium or Low				
Cost Estimate (pick one and delete others)	under $1,000	$1,001 – 4,999	$5,000 – 9,999	$10,000 – 19,999	**over $20,000**
Source of Funds	**local municipal annual operating budgets and capital improvement budgets, categorical grants, Mitigation Grants**				
Lead Agency	**County Office of Emergency Preparedness**				
Timetable (pick one and delete others)	within 1 year	within 1-3 years	within 5 years	**continuous**	

Measure: (describe measure)	**#2. Provide Education and training for municipal officials**				
Priority Rank (pick one and delete others)	**High**, Medium or Low				
Cost Estimate (pick one and delete others)	under $1,000	$1,001 – 4,999	$5,000 – 9,999	$10,000 – 19,999	**over $20,000**
Source of Funds	**local municipal annual operating budgets, categorical grants, Mitigation Grants**				
Lead Agency	**County Office of Emergency Preparedness**				
Timetable (pick one and delete others)	within 1 year	within 1-3 years	within 5 years	**continuous**	

Measure: (describe measure)	**#3. Review Utility Service & restoration plans.**				
Priority Rank (pick one and delete others)	**High**, Medium or Low				
Cost Estimate (pick one and delete others)	under $1,000	**$1,001 – 4,999**	$5,000 – 9,999	$10,000 – 19,999	over $20,000
Source of Funds	**local municipal annual operating budgets, private-sector funds, Mitigation Grants**				
Lead Agency	**utility**				
Timetable (pick one and delete others)	within 1 year	within 1-3 years	within 5 years	**continuous**	

Measure: (describe measure)	**#4. Identify and utilize a "Speakers Bureau"**				
Priority Rank (pick one and delete others)	**High**, Medium or Low				
Cost Estimate (pick one and delete others)	under $1,000	**$1,001 – 4,999**	$5,000 – 9,999	$10,000 – 19,999	over $20,000
Source of Funds	**local municipal annual operating budgets, categorical grants, Mitigation Grants**				
Lead Agency	**local municipal officials and employees**				
Timetable (pick one and delete others)	within 1 year	within 1-3 years	within 5 years	**continuous**	

Measure: (describe measure)	**#5. Participate in annual "Weather Awareness Campaigns"**				
Priority Rank (pick one and delete others)	**High**, Medium or Low				
Cost Estimate (pick one and delete others)	under $1,000	**$1,001 – 4,999**	$5,000 – 9,999	$10,000 – 19,999	over $20,000
Source of Funds	**local municipal annual operating budgets, categorical grants, Mitigation Grants, National Weather Service budget, state funds**				
Lead Agency	**County Office of Emergency Preparedness**				
Timetable (pick one and delete others)	within 1 year	within 1-3 years	within 5 years	**continuous**	

Measure: (describe measure)	**#6. <u>County Project</u>. Continue accreditation as a NOAA/NWS, *StormReady* community**				
Priority Rank (pick one and delete others)	**High**, Medium or Low				
Cost Estimate (pick one and delete others)	**under $1,000**	$1,001 – 4,999	$5,000 – 9,999	$10,000 – 19,999	over $20,000
Source of Funds	**County operating budget**				
Lead Agency	**County Office of Emergency Preparedness**				
Timetable (pick one and delete others)	within 1 year	**within 1-3 years**	within 5 years	continuous	

D. **Natural Resource Protection.**

Measure: (describe measure)	**#1. Ensure proper disposal of Hazardous Waste**				
Priority Rank (pick one and delete others)	**High**, Medium or Low				
Cost Estimate (pick one and delete others)	under $1,000	$1,001 – 4,999	$5,000 – 9,999	$10,000 – 19,999	**over $20,000**
Source of Funds	**local municipal annual operating budgets and capital improvement budgets, categorical grants, private-sector funding, user fees, Mitigation Grants**				
Lead Agency	**various government authorities**				
Timetable (pick one and delete others)	within 1 year	within 1-3 years	within 5 years	**continuous**	

Measure: (describe measure)	**#2. Enforce government permit processes**				
Priority Rank (pick one and delete others)	**High**, Medium or Low				
Cost Estimate (pick one and delete others)	under $1,000	$1,001 – 4,999	$5,000 – 9,999	$10,000 – 19,999	**over $20,000**
Source of Funds	**local municipal annual operating budgets, categorical grants, state/federal operating funds**				
Lead Agency	**local municipal authority**				
Timetable (pick one and delete others)	within 1 year	within 1-3 years	within 5 years	**continuous**	

Measure: (describe measure)	**#3. Provide comprehensive inspection services**				
Priority Rank (pick one and delete others)	**High**, Medium or Low				
Cost Estimate (pick one and delete others)	under $1,000	$1,001 – 4,999	$5,000 – 9,999	**$10,000 – 19,999**	over $20,000
Source of Funds	**local municipal annual operating budgets**				
Lead Agency	**local authority**				
Timetable (pick one and delete others)	within 1 year	within 1-3 years	within 5 years	**continuous**	

Measure: (describe measure)	**#4. Administer a Floodplain Management Program**				
Priority Rank (pick one and delete others)	**High**, Medium or Low				
Cost Estimate (pick one and delete others)	under $1,000	$1,001 – 4,999	**$5,000 – 9,999**	$10,000 – 19,999	over $20,000
Source of Funds	**local municipal annual operating budgets, categorical grants, Mitigation Grants**				
Lead Agency	**local municipal authority**				
Timetable (pick one and delete others)	within 1 year	within 1-3 years	within 5 years	**continuous**	

Measure: (describe measure)	**#5. Maintain "Urban Forests"**				
Priority Rank (pick one and delete others)	**High**, Medium or Low				
Cost Estimate (pick one and delete others)	under $1,000	$1,001 – 4,999	$5,000 – 9,999	**$10,000 – 19,999**	over $20,000
Source of Funds	**local municipal annual operating budgets and capital improvement budgets, categorical grants, Mitigation Grants, private-sector funds**				
Lead Agency	**local municipal officials and/or private utilities**				
Timetable (pick one and delete others)	within 1 year	within 1-3 years	within 5 years	**continuous**	

E. **Emergency Services.**

Measure: (describe measure)	**#1. Continue County systems and services through the Public Safety Communications Division**				
Priority Rank (pick one and delete others)	**High**, Medium or Low				
Cost Estimate (pick one and delete others)	under $1,000	$1,001 – 4,999	$5,000 – 9,999	$10,000 – 19,999	**over $20,000**
Source of Funds	**County annual operating budget and Capital Improvement Program, categorical grants, Mitigation Grants**				
Lead Agency	**County government**				
Timetable (pick one and delete others)	within 1 year	within 1-3 years	within 5 years	**continuous**	

Measure: (describe measure)	**#2. Maintain inventory of community resources**				
Priority Rank (pick one and delete others)	**High**, Medium or Low				
Cost Estimate (pick one and delete others)	under $1,000	**$1,001 – 4,999**	$5,000 – 9,999	$10,000 – 19,999	over $20,000
Source of Funds	**local municipal annual operating budgets, categorical grants**				
Lead Agency	**911/ECD**				
Timetable (pick one and delete others)	within 1 year	within 1-3 years	within 5 years	**continuous**	

Measure: (describe measure)	**#3. Establish an active Recruitment and Retention (of providers) Program**				
Priority Rank (pick one and delete others)	**High**, Medium or Low				
Cost Estimate (pick one and delete others)	under $1,000	$1,001 – 4,999	$5,000 – 9,999	$10,000 – 19,999	**over $20,000**
Source of Funds	**local municipal annual operating budgets, private-sector funding, categorical grants, Mitigation Grants**				
Lead Agency	**local jurisdiction authority**				
Timetable (pick one and delete others)	within 1 year	within 1-3 years	within 5 years	**continuous**	

Measure: (describe measure)	**#4. Stockpile emergency supplies**				
Priority Rank (pick one and delete others)	**High**, Medium or Low				
Cost Estimate (pick one and delete others)	under $1,000	$1,001 – 4,999	$5,000 – 9,999	$10,000 – 19,999	**over $20,000**
Source of Funds	**local municipal annual operating budgets, categorical grants, private-sector funds, Mitigation Grants**				
Lead Agency	**local municipal officials**				
Timetable (pick one and delete others)	within 1 year	within 1-3 years	within 5 years	**continuous**	

Measure: (describe measure)	**#5. Solicit "Mutual Aid" agreements**				
Priority Rank (pick one and delete others)	**High**, Medium or Low				
Cost Estimate (pick one and delete others)	under $1,000	**$1,001 – 4,999**	$5,000 – 9,999	$10,000 – 19,999	over $20,000
Source of Funds	**Local municipal annual operating budgets, categorical grants, Mitigation Grants**				
Lead Agency	**Local municipal authorities**				
Timetable (pick one and delete others)	within 1 year	within 1-3 years	within 5 years	**continuous**	

Measure: (describe measure)	**#6. Engage emergency service jurisdictions in local municipal government processes**				
Priority Rank (pick one and delete others)	**High**, Medium or Low				
Cost Estimate (pick one and delete others)	**under $1,000**	$1,001 – 4,999	$5,000 – 9,999	$10,000 – 19,999	over $20,000
Source of Funds	**Local municipal annual operating budgets, categorical grants, Mitigation Grants**				
Lead Agency	**Local municipal officials**				
Timetable (pick one and delete others)	within 1 year	within 1-3 years	within 5 years	**continuous**	

Measure: (describe measure)	**#7. <u>County Project</u>. Continue recruitment and training for local residents in partnerships with NOAA/NWS for their SKYWARN Program**				
Priority Rank (pick one and delete others)	**High**, Medium or Low				
Cost Estimate (pick one and delete others)	**under $1,000**	$1,001 – 4,999	$5,000 – 9,999	$10,000 – 19,999	over $20,000
Source of Funds	**County operating budget, federal and state budgets, Mitigation Grants**				
Lead Agency	**County Office of Emergency Preparedness**				
Timetable (pick one and delete others)	within 1 year	within 1-3 years	within 5 years	**continuous**	

F. **Structural Projects.**

Measure: (describe measure)	**#1. Disaster "proof" public facilities**				
Priority Rank (pick one and delete others)	**High**, Medium or Low				
Cost Estimate (pick one and delete others)	under $1,000	$1,001 – 4,999	$5,000 – 9,999	$10,000 – 19,999	**over $20,000**
Source of Funds	**local municipal annual operating budgets and capital improvement budgets, categorical grants, Mitigation Grants**				
Lead Agency	**local municipal officials**				
Timetable (pick one and delete others)	within 1 year	within 1-3 years	**within 5 years**	continuous	

Measure: (describe measure)	**#2. Secure and provide redundant critical systems and facilities**				
Priority Rank (pick one and delete others)	**High**, Medium or Low				
Cost Estimate (pick one and delete others)	under $1,000	$1,001 – 4,999	$5,000 – 9,999	$10,000 – 19,999	**over $20,000**
Source of Funds	**local municipal annual operating budgets and capital improvement budgets, categorical grants, Mitigation Grants**				
Lead Agency	**local municipal officials**				
Timetable (pick one and delete others)	within 1 year	within 1-3 years	within 5 years	**continuous**	

Measure: (describe measure)	**#3. "Target Harden" facilities**				
Priority Rank (pick one and delete others)	**High**, Medium or Low				
Cost Estimate (pick one and delete others)	under $1,000	$1,001 – 4,999	$5,000 – 9,999	$10,000 – 19,999	**over $20,000**
Source of Funds	**local municipal annual operating budgets and capital improvement budgets, categorical grants, Mitigation Grants**				
Lead Agency	**local municipal officials**				
Timetable (pick one and delete others)	within 1 year	**within 1-3 years**	within 5 years	continuous	

Measure: (describe measure)	**#4. Expand fiber telecommunications networks**				
Priority Rank (pick one and delete others)	**High**, Medium or Low				
Cost Estimate (pick one and delete others)	under $1,000	$1,001 – 4,999	$5,000 – 9,999	$10,000 – 19,999	**over $20,000**
Source of Funds	**local municipal annual operating budgets and capital improvement budgets, private-sector funding, categorical grants, Mitigation Grants**				
Lead Agency	**local municipal officials (may be in conjunction with private-sector vendors)**				
Timetable (pick one and delete others)	within 1 year	within 1-3 years	**within 5 years**	continuous	

IMPLEMENTATION, MONITORING & EVALUATION

A. Documentation and Plan Adoption.

1. Public Involvement. Public participation is an integral component of the planning process. Participation in the development of this Plan includes:

   - The Planning Committee – through the meetings (2); through the local municipal meetings at the village and town levels; through their outreach to solicit local input intra and inter-agency.

   - Local Officials. Meetings with the Town and Village Boards, local emergency service providers.

   - Inclusion of Fairport Central School District and BOCES #1 on Planning Committee.

   - Solicitation of Public Input and Information to the Public through municipal newsletters, public official's local newspaper columns and local newspaper articles, local newspaper notices: of local committee meetings and meeting minutes availability; of draft plan availability; and, soliciting public input on draft plans.

2. Legislative Authorization. All villages (10), towns (19), and the City of Rochester joined the County in a multi-jurisdictional Plan, with the understanding that their local Legislative body would need to formally adopt the Plan before November 1, 2004.

   Both municipalities, department representatives, and the community partner agencies have engaged in the planning process to achieve this document for our community.

   This document, and any local companion documents, are submitted to SEMO before the Planning Grant deadline of August 31, 2003. SEMO will submit them to FEMA for review and comment. We understand that FEMA's comments will be received by us in early 2004, so we have the opportunity to consider FEMA's comments, revise the draft Plan, submit it to local Legislative bodies for adoption (prior to November 1, 2004), and then file the adopted Plans with SEMO and FEMA.

   All local Legislative bodies will follow statutes and local policy with regard to the Plan adoption process.

B. Plan Review and Approval.

1. Plan Review. The Plan will be reviewed annually by the Town of Perinton and Village of Fairport, to keep Appendix B current for occurrences and to document the impact of these hazards.

   A committee representing all initial Planning Committee municipalities and agencies will be designated to convene in Year-4 following the Plan's adoption, and in subsequent cycles during Year-4, to evaluate the Plan: to review and re-evaluate its stated risks and hazards; to evaluate the relevance of its goals and objectives; to evaluate the effectiveness and

appropriateness of its mitigation action plan and measures; and, to document the community's progress in accomplishing the Plan's stated goals and objectives.

2. Plan Approval. Subsequent Plan revisions will be submitted to their respective local legislative bodies for approval. This approval will be subject to statutes and local policies regarding legislative authorization, i.e. Legal Notice, Public Hearing. Activities leading to Legislative consideration should include the same measure of public participation that was engaged in the initial development stages of the Plan.

3. State and Federal Review. After local legislative review and revision, this local plan, will be compiled by the County Office of Emergency Preparedness, and submitted to the New York State Emergency Management Office, and the Federal Emergency Management Agency for their review. This action will obtain local compliance with the requirement for state and federal review of Plan revisions on a 5-year cycle.

REFERENCES

Association of State Floodplain Managers, Inc. & Federal Interagency Floodplain Management Task Force, 1996. "Addressing Your Community's Flood Problems: A Guide for Elected Officials." 1996-97.

Barron's Law Dictionary (Third Edition). Barron's Education Services, Hauppage, NY. 1991.

Bogue, Gary. Letter-to-the-Editor. Democrat & Chronicle. August 9, 2003.

Center for Civil Force Protection, National Institute of Justice. "Community Vulnerability Assessment Methodology," participant training manuals. Rochester, NY. November 12-15, 2002.

Contingency Planning and Management (CPM). Witter Publishing Corporation, Flemington, NJ. May/June 2003.

Dorland's Pocket Medical Dictionary (21st Edition). W.B. Saunders Company, Philadelphia, PA. 1968.

FEMA. "Civil Preparedness Guide: National Dam Safety Program for State & Local Officials." September, 1988.

FEMA. *State and Local Mitigation Planning how-to Guides*. August 2001.

FEMA and the Federal Insurance Administration, "The Application of Geographic Information Systems Technology to The National Flood Insurance Program." September 30, 1987.

FEMA, et. al. "Winter Storms: The Deceptive Killers." December 2001.

FEMA, Region 2. "New York Waterways Guide: Helping our Waterways Recover after a Disaster." September 2002.

FEMA and SEMO. Site Visit to Town of Perinton. June 23, 2003.

Federal Register, February 26, 2002.

Federal Register: (Volume 68, Number 130). "Cost-Sharing for Animal and Plant Health Emergency Programs." Pages 40541-40553.

Fox, Maggie. "Better U.S. Policies Urged on Animal-Borne Diseases." Reuters News Service. August 5, 2003.

HAZNY software.

Hydrology Subcommittee of the Federal Interagency Advisory Committee on Water Data. "Guidelines on Community Local Flood Warning and Response Systems." August 1985.

Johnson, Glenn. Meteorologist. Democrat & Chronicle newspaper. Rochester, NY.

Johnston, Eric. SUNY Geneseo, Geology Department. Case Study for the American Red Cross. February, 1986.

Levan, Judy. National Weather Service, Buffalo Office. SKYWARN E-NEWSLETTER, July 2003.

Monroe County Comprehensive Emergency Plan. "Hazard Analysis." 1993.

Monroe County Local Emergency Planning Committee. *Monroe County Hazardous Materials Response Plan: November 2002 Revision*. November, 2002.

Monroe County "911 Procedure Manual." Rochester, NY. 2003 (Revision).

Monroe County Office of Emergency Preparedness. "April 2003 Ice Storm: Disaster Response File."

Monroe County Office of Emergency Preparedness. "Disaster Response File: Blackout 2003."

Monroe County Office of Emergency Preparedness. "Disaster Response File: Earthquakes."

Monroe County Office of Emergency Preparedness. "January, 1998 Flooding: Disaster Response File."

Monroe County Office of Emergency Preparedness. *Monroe County Aircraft Emergency Disaster Plan: Off-Site of the Greater Rochester International Airport*. June 28, 1995.

Monroe County Office of Emergency Preparedness. *Monroe County Marine Emergency Plan*. July 24, 1996.

Monroe County Office of Emergency Preparedness. *Monroe County NYS Thruway Exit 46 Emergency Plan*. October 25, 1999.

Monroe County Office of Emergency Preparedness. *Monroe County Radiological Emergency Preparedness Plan*. December 2002.

Monroe County Office of Emergency Preparedness. *Monroe County Railroad Emergency Plan*. March 29, 1996.

Monroe County Office of Emergency Preparedness. *Responding to the Threat of Foot & Mouth Disease*. October 12, 2001.

Monroe County Office of Emergency Preparedness. "1993 Flooding: Disaster Response File."

Monroe County Office of Emergency Preparedness. "1994 Canal Break: Disaster Response File."

Monroe County Office of Emergency Preparedness. 1993, 1997, 1998 "Lake Ontario Flooding: Disaster Response Files."

Monroe County Office of Emergency Preparedness. 1986 Water Emergency: Disaster Response File.

Monroe County Office of Emergency Preparedness. *Post Disaster Assessment Report – Ice Storm '91*. 1991.

Monroe County Office of Emergency Preparedness Response File: *1992 Windstorm*.

Monroe County Office of Emergency Preparedness Response File: *July 1995 North Country Wind Burst*.

Monroe County Office of Emergency Preparedness Response File: *1998 Labor Day Windstorm*.

Moore, L. Grady. USGS District Chief letter to Monroe County. February 23, 1995.

National Academy of Public Administration. "Seismic Safety" Workshop. Albany, NY. July 16-18, 1997.

National Fire Protection Association. Fire Protection Handbook (17th Edition). Quincy, MA. 1991.

National Flood Insurance Program/Community Rating System (NFIP/CRS). "CRS Credit for Flood Warning Programs," by ISO Commercial Risk Services, Inc. July 1992.

National Flood Insurance Program/Community Rating System (NFIP/CRS). "Example Plans." January 1999.

National Weather Service. Buffalo Office. Storm Data Report for Monroe County. May 28, 2003.

NYS Canal Corporation. *Emergency Action Plan: Bushnells Basin Waste Gate on the Erie Canal in the County of Monroe and the Town of Perinton*. April 29, 2003.

NYS Canal Corporation, Buffalo, NY. GIS map of system within Monroe County. 2003.

NYS Department of Environmental Conservation (NYSDEC). "Background Materials on Local Flood Warning and Preparedness Programs." September 1984.

NYS Department of Environmental Conservation (NSYDEC). "An Owners Guidance Manual For the Inspection and Maintenance of Dams in New York State." June, 1987.

NYS Department of Environmental Conservation (NYSDEC). "Prototype Local Flood Warning and Preparedness Program." September 1984.

NYS Department of Environmental Conservation (NYSDEC). "Prototype Local Flood Warning Plan." September 1984.

NYS Department of Environmental Conservation (NYSDEC). "Technical Guidance Manual for Local Flood Warning and Preparedness Programs." September 1984.

NYS Department of Environmental Conservation (NYSDEC). "Ice Jams: Preventing Ice Damage in New York State." 1986.

NYS Department of Environmental Conservation/U.S. Army Corps of Engineers. "Dam Safety Regulations: 6 NYCRR 673, Statutory Authority Environmental Conservation Law Article 15." January 1986.

NYS Department of Environmental Conservation/U.S. Army Corps of Engineers. "Routine Stream Maintenance: Cost Effective & Environmentally Sound." 2001.

NYS Department of Environmental Conservation (NYSDEC) website. "Drought Facts." June 20, 2003.

NYS Disaster Preparedness Commission. *After Action Report: Ice Storm in Western, Lake and Central New York State, March 3, 1991*. 1991.

NYS Drought Management Task Force. "New York State Drought Plan." December, 1988.

NYS Insurance Department. "Consumers Shopping Guide for Homeowners & Tenants Insurance: Upstate." 1996-97.

NYS Office of Fire Prevention & Control. "Fire Investigation Training Manual." Montour Falls, NY. 1993.

The Perinton-Fairport Post, Wolfe Publications. November 2, 1994.

Phillips, Russ & Associates. "The Greater Rochester Mutual Aid Plan (for Nursing Homes)." June 2003.

RG&E. "2003 Ginna Calendar."

RG&E. *Electric Emergency Plan*. March, 1997.

RG&E. *Gas Emergency Plan*. January, 1997.

RG&E Presentation to Elected Officials. "Electric Load Shedding: The Last Resort." May 4, 2000.

Rochester Regional Healthcare Association (RRHA). *RRHA Regional Hospital Mutual Aid Evacuation & Supply Plan*. May 2003.

SEMO. GIS map. July 2003.

SEMO. *Hazard Analysis Report for Monroe County*. January, 1999.

SEMO. "HARPP-2000 Flood Damage Reduction Measures: Monroe County, NY." March 2000.

SEMO. "HARPP-2000, Monroe County Flood Loss Reduction Measures." 2001.

SEMO Mitigation Branch. "FEMA State PAAS Report 5.5: Public Assistance Summary By Disaster" for FEMA-0898-DR (March, 1991 Ice Storm).

SEMO Mitigation Chief's Presentation at NYSEMA, February, 2003.

SEMO. *New York State 406 Hazard Mitigation Plan*. September 1986.

SEMO. *New York State Off-Site Air Disaster Plan*. May, 2001.

SEMO Recovery Section. *Table 3-2. Historical Disaster Declarations*. NY State Mitigation Plan.

SEMO Region V. USDA "News Release, No. 0329.99." August 10, 1999.

SEMO Region V. "West Nile Virus Emergency Declaration Payments" (e-mail). August 16, 2001.

SEMO Workshop material, August, 2002.

Stedman's Medical Dictionary (27th Edition). Lippincott Williams & Wilkins. 2000.

The Times-Union, a Rochester evening newspaper. Gannett Co., Inc. NOTE: no longer published.

U.S. Army Corps of Engineers. *After Action Report for the Flood of 1993*. Buffalo, NY.

U.S. Army Corps of Engineers. "Community Handbook on Flood Warning and Preparedness Programs: Research Report 81-R06." August 1981.

U.S. Army Corps of Engineers, Buffalo District. "Genesee River Flood Emergency Exercise Manual, February 1992."

U.S. Army Corps of Engineers. *Flood Emergency Plan, Mount Morris Dam: Genesee River Watershed, New York* (Vol. 1). Buffalo, NY. October 1985.

U.S. Army Corps of Engineers. "Flood Plain Information" (studies): Irondequoit Creek (February 1975), Little Black Creek (August 1975).

U.S. Army Corps of Engineers. "Implementation Aspects of Flood Warning and Preparedness Planning Alternatives: Research Report 81-R07." August 1981.

U.S. Army Corps of Engineers. "Natural Disaster Response." 1991.

U.S. Army Corps of Engineers. "Report of Flood: Tropical Storm Agnes, June 1972, Summary Report." August, 1973.

U.S. Coast Guard and the Eastern Great Lakes Area Committee. *Eastern Great Lakes Area Contingency Plan: Volume3, Rochester/Oswego*. June 1996.

U.S. Department of Commerce/NOAA. "Natural Disaster Survey Report: July 1995 Heat Wave." December 1995.

U.S. Department of Commerce, NOAA/NWS. "Automated Local Flood Warning Systems Handbook: Weather Service Hydrology Handbook No. 2." February 1997.

U.S. Department of Housing & Urban Development and the Federal Insurance Administration. (Multiple) "Flood Insurance Studies" (for municipalities within Monroe County).

U.S. Dept. of Justice. *Senior Officials' Workshop*, Participant Manual. September 1, 1999.

U.S. Environmental Protection Agency (EPA). "Guidance for Water Utility Response, Recovery & Remediation Actions for Man-Made and/or Technological Emergencies: EPA 810-R-02-001." April 2002.

U.S. Environmental Protection Agency (EPA) website. "Toxic Release Inventory (TRI) Report." June 30, 2003.

U.S. Geological Survey. West Nile Virus Maps. On-line at website. 2003.

Wege, Russell E. Report for NYSDEC, "Ice Jam Flooding – Evolution of New York State's Involvement." July 1986.

Yost, Debora. "Your Best Shot At Staying Healthy," Better Homes & Gardens. August 2003.

APPENDICES

APPENDIX A

Hazard Analysis Worksheet

Hazard Analysis Worksheet

HAZARDS	HAZNY Score	Characteristics
HAZNY Score compiled from computer based hazard simulation program. Aggregate Rank categorized by priority of all hazards (technological and natural). Class Rank categorized by hazard priority within each class (technological vs. natural).		
Natural Hazards		
High Hazards		
Based on computed data	N/A	N/A
High Hazards are unlikely		
Moderately High Hazards		
Ice Storm		The highest priority hazard within the Town of Perinton and the Village of Fairport, ice storms have great potential to incorporate large land areas, cause severe property damage, and to effect power failures, restrict transportation and communication, and other events. Ice storms are likely be sustained events.
	287.8	
Flood		The regional area has experienced federally declared major flood disasters in 1972, 1976, and 1998. Due to the large number of flood plains within Monroe County, flooding has a large potential impact causing power failures, travel restrictions, water supply failures, landslides, property damage, and road and bridge damage.
	282.8	
Blizzard (Severe Winter Storm)		A frequent event in the region, with high potential for taxing existing resources. These storms can impact a large area, with a number of cascade effects, including flooding, transportation accidents and power failures.
	264.8	

Note: Information gathered from Monroe County Comprehensive Emergency Plan and 1999 HAZNY Survey

HAZARDS	HAZNY Score	Characteristics
HAZNY Score compiled from computer based hazard simulation program. Aggregate Rank categorized by priority of all hazards (technological and natural). Class Rank categorized by hazard priority within each class (technological vs. natural).		
Moderately High Hazards		
Tornado	250.8	An infrequent event in the region, however, the projected impact from such an event can range from moderate to severe damage to public and private property and infrastructure, and result in a significant number of deaths or serious injury.
Landslide	237.8	Infrequent landslides have slight potential for property damage or injury, but do occur frequently, primarily in the steep slope areas.
Windstorm	216.2	Defined as winds exceeding 55 mph, this is a regular event in the region, and may result in cascade hazards, such as power failure and transportation events. This event can also cause death, serious injury, and property damage.
Moderately Low Hazards		
Earthquake	187.5	
Drought	187.5	
Extreme Temperatures	167.2	Manageable with current resources and public education
Disease	166.5	
Ice Jam	165.8	
Infestation	143.8	
Blight	129.8	
Low Hazards		
Based on computed data	N/A	N/A
Low Hazards are unlikely		

HAZARDS	HAZNY Score	Characteristics
HAZNY Score compiled from computer based hazard simulation program. Aggregate Rank categorized by priority of all hazards (technological and natural). Class Rank categorized by hazard priority within each class (technological vs. natural).		
Technological Hazards		
High Hazards		
Based on computed data	N/A	N/A
High Hazards are unlikely		
Moderately High Hazards		
Utility Failure	274.5	A frequent and widespread event, power failure generally occurs as a result of another event, such as flooding or ice storm. Power failure can affect a significant area, occur without warning, and result in injury and economic loss. Critical facilities should be aware of the complications of power failure, and communities should be aware of high risk residents (i.e. persons requiring electrically operated medical equipment). This section includes both gas & electric power sources.
Water Supply Failure	271.2	The area receives much of its water supply from Lake Ontario. Contamination of this water body, or failure of the water treatment plant, could result in a critical shortage of water supply in the region. In addition, these events could cause illness and even death among members of the population.
Hazardous Materials (Fixed Site)	269.8	The area has a frequent number of hazardous materials releases from fixed sites or mobile sites each year, making this a frequent event. While most of these incidents are well managed by the region's HAZMAT teams, the shear number of these sites, as well as the potential for serious injury, death, explosion, and fire, make this a considerable hazard within the county.

HAZARDS	HAZNY Score	Characteristics
HAZNY Score compiled from computer based hazard simulation program. Aggregate Rank categorized by priority of all hazards (technological and natural). Class Rank categorized by hazard priority within each class (technological vs. natural).		
Moderately High Hazards		
Fire	269.5	A frequent event within the area, fires require emergency response many times each year. Fires have great potential for injury, disability, and death, but generally not in large numbers.
Hazardous Materials (In Transit)	268.8	Hazardous Materials Transit accidents are frequent within Monroe County due to the proliferation of fixed HAZMAT sites, major highways, and commercial traffic, including the Erie Canal. A major HAZMAT Transit accident could result in serious injury, death, property damage, and/or explosion or fire.
Explosion	254.5	A frequent occurrence usually resulting as a cascade event in conjunction with another hazard emergency such as fire or a HAZMAT incident. This event can happen without warning, cause moderate to severe damage to property and public infrastructure, and result in death or serious injury.
Structural Collapse	262.8	An infrequent event due to maintained structures in the area.
Civil Unrest	262.8	Civil unrest is rated a moderately high event because of the frequency of these events within Monroe County's past, and because of the potential for significant structural and property damage, loss of life, injury, and economic loss.
Dam Failure	246.5	A rare event in Monroe County. This event has severe implications. Failure of the most critical dam structure, the Mt. Morris Dam in Livingston County, could result in a water surge affecting a large area surrounding the borders of the Genesee River. This event can also cause damage to property, as well as power failure, water shortages, sewer system failure, hazardous materials release, and transportation accidents.

HAZARDS	HAZNY Score	Characteristics
HAZNY Score compiled from computer based hazard simulation program. Aggregate Rank categorized by priority of all hazards (technological and natural). Class Rank categorized by hazard priority within each class (technological vs. natural).		
Moderately High Hazards		
Transportation Incident	238.8	A regular event requiring emergency providers to respond to serious multiple casualty vehicular accidents, air traffic accidents, or other vehicle related accidents, and may result in moderate to significant death, injury, property loss, or other damage. Interstate 490, the railroad corridors and State highways pose the greatest individual threats.
Radiological Incident (Fixed Site)	236.2	An infrequent event that potentially could include a large, multi-jurisdictional area, and result in moderate property damage, contamination of farm and water supplies, and economic damage.
Terrorism	177.5	Due to worldwide events involving September 11th, new priority may be considered regarding this event.
Energy Crisis	169.8	An event creating a sustained critical fuel shortage.
Moderately Low Hazards		
Air Contamination	150.8	
Radiological Accident (In Transit)	123.8	
Food Shortage	101.8	
Low Hazards		
Based on computed data	N/A	N/A
Low Hazards are unlikely		

APPENDIX B

Hazard-Specific Analyses

Appendix B-1

Hazard Specific Analysis: Ice Storm

Definition:

"Freezing rain which accumulates in a substantial glaze layer of ice on stationary objects such as trees and power lines."[1]

Description:

Winter storms are frequent, widespread, and potentially life threatening events within the area. The most dangerous manifestation of this event is the Ice Storm. Ice Storms are the number one identifiable hazard in Monroe County with a hazard rating of 287.8.[2] They can significantly affect life, property, communications, and emergency response capabilities. In addition, Ice Storms are likely to be prolonged events, further adding to their danger and inconvenience.

"A credible worst case event would be expected to cover a large region and be highly likely to trigger cascade effects, such as power failures and transportation accidents. Severe damage to private property, such as utility transmission wires and poles, would be expected, with more than two weeks required for recovery before emergency operations returned to normal."[3]

Overview of specific hazard locations and the extent of the hazard:

While ice storms may affect any part or all of the area, these areas have been selected for their high potential for hazard:

- Roads and highways, particularly route 490, and State highways
- Trees, utility poles, and wires.
- These events may also cause ice jams and floods as cascade events.
- These events may further cause harm and personal injury due to increased falls, motor vehicle accidents, and falling ice.

Previous occurrences of the hazard:

The area experiences icing on some level almost annually. The most significant ice storm events in recent history are:

- March 2-7, 1976. This event prompted a Disaster Declaration by President Ford on March 19, 1976. This storm identity is FDAA-494-DR.

- March 3, 1991. This event prompted an activation of the County's Emergency

1 HAZNY
2 Monroe County Hazard Analysis Report by SEMO, January 1999
3 Monroe County Hazard Analysis Report by SEMO, January 1999

Operations Center (EOC) that lasted for 14 days. This storm resulted in a Disaster Declaration by President George Bush on March 21, 1991. This storm identity is FEMA-0898-DR. Additional information is available at County OEP: Monroe County's "Post Disaster Assessment Report – Ice Storm '91"; NYS Disaster Preparedness Commission "After Action Report: Ice Storm in Western, Lake and Central New York State, March 3, 1991."

- January 13, 1993. Freezing rain combined with 2-4 inch snowfall on the South shore of Lake Ontario categorized this as an ice/snow storm. Most schools were closed throughout the Finger Lakes region. There were numerous power outages and downed phone lines.[4]

- January 27, 1994. "Significant icing occurred across Western New York. No unnecessary travel was recommended as roads iced up and numerous accidents resulted."[5] There were also numerous power outages across the area.

- January 1998. Northern New York and Canada experienced severe icing which caused severe flooding in our area.

- January 31, 2002. "A 3-5 inch snowfall overnight on the 30th-31st turned to freezing rain during the morning hours. Ice accumulation of ½ - ¾ inches occurred. Hundreds of thousands were without power for up to 72 hours. Winds increased with gusts to 55 mph. States of Emergency were declared across the Niagara Frontier Counties. This event caused approximately $500,000.00 in damage."[6]

- April 3, 2003. This event prompted an activation of the County's Emergency Operations Center that lasted 6 days. This storm resulted in a Disaster Declaration by President George W. Bush on May 12, 2003. The storm identity is FEMA-1467-DR-NY. Additional information is available in County OEP's "April 2003 Ice Storm: Disaster Response File."

Probability of future occurrences and potential magnitude:

Due to the widespread geographic area and the probability for cascade events, the probability of future occurrences and potential event magnitude is very high.

Maps of hazard areas:

Map is not required due to widespread geographic potential.

Analysis of the impact on business, infrastructure & critical facilities:

4 National Weather Service, Storm Data Report, May 28, 2003
5 National Weather Service, Storm Data Report, May 28, 2003
6 National Weather Service, Storm Data Report, May 28, 2003

This event may:

- Cause failure of utility systems.
- Delay or restrict transportation.
- Cause damage to buildings, utility poles, and other structures.
- Restrict emergency response, and hamper emergency communications.

Specific information concerning estimated value ($) of potential loss, damage to structures, casualties, etc:

FEMA & State Recovery Assistance (Stafford Act)

March 1991	Public Assistance - $58M
April 2003	Public Assistance (estimate) - $19M Individual Assistance (as of 7-31-03) - $20+M

Additional information is available at County OEP:

- Monroe County Office of Emergency Preparedness, "Post Disaster Assessment Report – Ice Storm '91"

- NYS Disaster Preparedness Commission, "After Action Report: Ice Storm in Western, Lake and Central New York State, March 3, 1991"

- SEMO Mitigation Branch, "FEMA State PAAS Report 5.5: Public Assistance Summary By Disaster, for FEMA-0898-DR"

- Monroe County Office of Emergency Preparedness, "April 2003 Ice Storm: Disaster Response File."

Notes on data limitations: local, state or federal information on March 1976 Storm, FDAA-494-DR.

Appendix B-2

Hazard Specific Analysis: Flood

Definition:

"Usually a cyclic occurrence in existing waterbodies. When a waterbody overflows its normal banks, a potentially violent and/or destructive waterway can form. A flash flood is a sudden transformation of a small stream into a violent waterway after heavy rain and/or rapid snowmelt.[1] Additionally, a floodplain is defined as an area adjoining a watercourse, which is expected to be flooded as a result of severe combinations of meteorological and hydrological conditions."[2]

Description:

Flood was the second highest rated hazard at 282.8. Floods are New York State's most consistently damaging natural hazard. Due to the numerous flood plains throughout the area, a credible worst case flood could impact a large region and cause cascade effects, such as power failures, water supply failures, and landslides. Such a flood could cause severe damage to private property in the forms of structural damage to foundations, and loss of personal property. Moderate damage to public infrastructure, such as damage to roads and bridges, could be expected.[3]

Overview of specific hazard locations and the extent of the hazard:

The National Weather Service reports Monroe County's Flash Flood potential as: low risk in the northern half of the County, while moderate risk in the southern half of the County (HAZNY).

Floods affect these areas:

- Residential property in the areas of Irondequoit Creek, Whitebrook, Thomas Creek and the Erie Canal
- Agricultural property throughout the area

"While hurricanes and tornadoes often make more headlines than any other weather event, flooding can take the blame for the most weather related fatalities. On average, nearly 125 people in the United States lose their lives each year due to floods while lightning is a distant second with about 75 deaths. Flood damage averages more than $2 billion annually. We have been lucky in recent years across Western New York in that flooding has been more of a problem for property rather than lives, but nonetheless that threat will always be present.

"Flooding for Western New York can occur at any time of year. During the Spring and Summer

1 HAZNY
2 County of Monroe, Department of Planning, Floodplain Management, Rochester, NY, January 1974
3 Monroe County Hazard Analysis Report by SEMO, January 1999

months, all areas experience the threat of heavy rain from thunderstorms. Slow moving thunderstorms, and thunderstorms that "train" (repeatedly move across the same area), often produce flooding. The "training" of thunderstorms is most common along stationary fronts and is also often observed along Lake Breeze Fronts sagging south from Lake Ontario.

“One to three inches of rain in a short span of time can raise smaller creeks and streams to near bank-full, with urban areas experiencing flooding from poor drainage. In urban areas where land has been converted from fields and woodlands to roads and parking lots, the surface loses its ability to absorb rainfall. During periods of urban flooding, streets can become swift moving rivers, while basements can become death traps as they fill with water. Urbanization increases runoff some 2 to 6 times over what would occur on natural terrain.

“The Summer and early Fall months are also favorable months for excessive rain from the remains of tropical systems. Some of the worst flooding in recent times have come from such events. Devastating floods wracked the Southern Tier, Eastern Finger Lakes and east of Lake Ontario regions during Hurricane Agnes in June 1972, with serious flooding in the Buffalo area after Tropical Storms David and Frederic in September 1979. Tropical Storm Opal brought very strong winds and flooding rains to parts of western New York in October of 1995.

“Possibly the largest contributors to flooding in Western New York is from excessive winter snowmelt, combined with heavy Spring rains. One of the most classic cases of this type of flooding took place in the Genesee Valley and Finger Lakes region in 1993. The area most affected from this kind of flooding is the Black River Basin east of Lake Ontario where lowland flooding from snowmelt and Spring rains is a yearly ritual.

“The winter of 1997-98 will conjure up memories of the historic ice storm which struck the North Country in January, but what some us don't realize is that an all-time flood event took place at the same time for the Black and Salmon Rivers. El Nino dumped 3 to 4 inches of rain and freezing rain on the area with snow melt helping to send rivers to all time crests.

“True Flash Flooding is rare in western New York, but as mentioned urban drainage and small stream flooding can occur at virtually anytime of year. This type of flooding is usually short lived, but can cause serious problems in the metropolitan areas of Buffalo and Rochester as the terrain is relatively flat with a lot of bridges and viaducts. A rough guide of an inch of rain in an hour can be used to predict significant problems in urban areas.”[4]

“The U.S. Geological Survey operates a streamflow monitoring network of 264 gages throughout the state of New York. The New York State Department of Environmental Conservation (DEC) for many years has supported data collection totally or in conjunction with other agencies at 133 gages. The data from this network are used for flood and drought forecasting; water-supply, water-quality, and environmental studies; reservoir-release monitoring for legal and wildlife purposes; and determination of the general availability and variability of the surface waters of the state.”[5]

Previous occurrences of the hazard:

Historical information on these record storm events is available at the County Office of Emergency Preparedness. The following storms are referenced on pages H-1 to H-3 in the U.S. Army Corps of

4 Levan, Judy. National Weather Service (Buffalo Office) SKYWARN E-NEWSLETTER, July 2003
5 Moore, L. Grady, US Geological Survey District Chief, Letter to Monroe County, February 23, 1995

Engineers, "Genesee River Flood Emergency Exercise Manual, February 1992: March 1865, March 1875, June 1889, May 1894, April 1896, March 1902, July 1902, March 1913, March 1916, May 1916, December 1927, July 1935, July 1942, March-April 1950, November 1950 (NOTE: Downstream flooding was influenced by the Mt. Morris Dam beginning with this flood.), March 1956, March-April 1960, April 1961.

The most significant floods beginning with Hurricane Agnes are:

- June 23 – June 26, 1972. These dates signify Monroe County flooding that occurred as a residual effect of Hurricane Agnes. A Federal Disaster Declaration was issued on June 23, 1972, and is identified as 338-DR. In the Flood History section of the State's, "406 Hazard Mitigation Plan, September 1986," this Tropical Storm is cited as, "The worst flood disaster in the Northeast U.S. Areas received 18.8 inches of rain. 100,000 people were evacuated. 600 homes were destroyed. 25 deaths" (p.4-25).

  "Tropical Storm Agnes and associated weather systems produced the most destructive widespread flooding of record over eastern United States. In the Genesee Basin, the predominant portion of the rainfall occurred from 9 p.m. 20 June, to 6 a.m. on 23 June. The maximum total storm rainfall, 13.72 inches, and maximum daily rainfall, 6.57 inches, were recorded at the Wellsville gage. A "bucket survey" of the Genesee Basin made by the Corps personnel indicated a maximum of about 16 inches of rainfall in the upper reaches of Dyke Creek near Andover, New York. The average total basin rainfall for the period 20-25 June was 7.1 inches while the average for the same period on the upper basin (above Mount Morris dam) was 10.20 inches.

  "Regulation during a portion of this flood required the controlled release of dam outflows in excess of downstream channel capacity to prevent overtopping the spillway with debris laden flows. The reservoir pool reached a maximum elevation of 755.8 feet, thus occupying approximately 96 percent of total reservoir storage. This was the highest pool elevation ever attained in the Mount Morris Reservoir. Detailed information on this flood is contained in Buffalo District's "Report of Flood, Tropical Storm Agnes, 21-23 June 1972, Genesee River Basin," dated August 1973" (U.S. Army Corps of Engineers, "Genesee River Flood Emergency Exercise Manual, February 1992," p. H-4).

- October 29, 1974. "A sewer tunnel being constructed under the Barge Canal in Bushnell's Basin cracked and gave way, sending over 200 million gallons of water down Tributary 21 and into Brook Hollow Rd. Because the flood was so localized it was not designated a disaster area."[6]
  - 41 homes damaged, 2 demolished
  - power outages in 165 homes
  - 100 homes without gas
  - displaced residents
  - roads destroyed
  - millions of dollars in property damage
  - 1 minor injury

- February & July 1976. Severe storms, heavy rains, flooding and thunderstorms.

"During the period 16-23 February, approximately 2.6 inches of rain fell over the upper basin. This rainfall augmented by about two inches of snowmelt runoff resulted in a peak reservoir elevation on 23 February of 727.6, or about 71 percent of available storage. During the remainder of February, every effort was made to discharge as much water as possible consistent with downstream conditions. At the end of the month, the pool elevation was 709, or about 56 percent of capacity. During the period 1-6 March, about 2.5 in. of rain, including some snowmelt, caused the pool to again rise.

"On 6 March, the reservoir pool peaked at 744.1 feet, thus utilizing 85% of the total storage. Peak inflows to Mount Morris Reservoir during the February and March runoff events reached 32,500 cfs and 28,000 cfs, respectively. Although the peak inflows were not particularly impressive, the volume of water received caused the pool elevation to be the second highest of record, exceeded only by that of Tropical Storm Agnes" (U.S. Army Corps of Engineers, "Genesee River Flood Emergency Exercise Manual, February 1992," p. H-4).

The National Weather Service (NWS) issued 30 flood/flash flood warnings between 1993 and 2002. The following information was compiled from NWS record data and office files:

- April 1-5, 1993. Flooding continued as a result of additional rain and snowmelt. It was the worst flooding since Hurricane Agnes in 1972. The County EOC was activated on April 1st for 39.5 hours. Additional information is available at County OEP: U.S. Army Corps of Engineer's, "After Action Report for the Flood of 1993;" National Oceanic and Atmospheric Administration's, "Natural Disaster Survey Report: The Great Flood of 1993," and the County's Disaster Response File.

- (beginning) April 1993. High levels, Lake Ontario. County response file available at the Office of Emergency Preparedness.

- April 14, 1994. Spring rains together with saturated ground, raised the level of the Genesee River about a foot and a half above flood stage. A few roads had minor flooding.

- August 3, 1995. Flash flooding in Monroe County caused $35,000.00 in damages.

- June 12, 1996. Thunderstorms moving across the southern portion of the county produced torrential rains and caused flash flooding on the west side. Several roads were flooded and had to be closed until sewers could handle the storm runoff. Estimated property damage was $20,000.00.

- July 30, 1996. Thunderstorms during the late afternoon hours dropped over two inches of rain in four hours resulting in flash floods.

- October 19 & 20, 1996. Flash flooding occurred causing an estimated $100,000.00 in damages.

- January 8 & 11, 1998. Western (and Central) New York was drenched with

unprecedented January rainfalls over a 36-hour period. A general three to four inches of rain fell on bare, saturated ground across the Genesee basin. The Genesee River crested at 36.4 feet at Avon (the highest since 1972) and at 16.8 feet in Rochester (the highest since 1984). Local fire fighting and public works departments were called to pump water from flooded basements. The County EOC was activated for 30 minutes on January 8th. This event prompted a Disaster Declaration by President Clinton, FEMA-1196-DR-NY.

- June 13, 1998. Thunderstorms crossed the western Finger Lakes during the early evening hours dropping several inches of rain in less than an hour. The heavy rains flooded roads forcing closures throughout Monroe County.

- June 30, 1998. Thunderstorms throughout the day dropped several inches of rain over the same area. The heavy rains resulted in urban and drainage flooding in the Rochester metro area.

- July 8, 1998. Nearly three inches of rain fell at the Rochester airport with slightly higher amounts reported over the southern suburbs. Urban flooding resulted in Rochester, Pittsford and Penfield and Perinton.

- August 25, 1998. Slow moving thunderstorms moved across the Rochester metro area producing two to four inches of rain in just a few hours. Widespread urban flooding occurred. The Sheriff reported numerous roads closed across the south and southeast areas of the County. Estimated damages were $35,000.00.

- January 23 & 24, 1999. Warm temperatures melted the snowpack from record snowfall in late December and early January. Nearly two feet of ripe snowpack dissolved to just a few inches. The runoff caused flooding in poor drainage and low lying regions across the area with roads closed in some locations for a couple of days.

- May 12 & 13, 2000. Thunderstorms rolled across the Niagara Peninsula and then along the Lake Ontario south shore counties. Only small hail was reported with the storms, however the storms produced hurricane-force winds. A second round of thunderstorms crossed the area during the early afternoon hours. The heavy rains that fell on already saturated ground resulted in flash flooding in Monroe and Wayne Counties. In Webster, for example, four to six inches of water covered Schlegel Road. Road closures were common in the area for several hours. The Town of Webster had estimated damages of $135,000.00.

- July 16, 2000. Thunderstorms brought heavy rains to the area dropping two to three inches of rain.

NOTE: More specific information on the above referenced events, and others, is contained in municipal Flood Insurance Studies, and "Flood Plain Information" reports as referenced on the Flood Insurance chart and the Flood Plain Study charts in later pages of this section.

"River Stage Data" (National Weather Service, Storm Data Report, May 28, 2003) for Oatka Creek at the Garbutt Gage, Black Creek at the Churchville Gage, and the Genesee River at the Rochester and Avon Gages is on file at County OEP. The information: defines categories of flood types and correlates their elevation, and provides stream crests exceeding the flood stage together with the date of the flood event (from 1947 on the creeks, and 1865 on the River). It also describes the flood impact on the areas affected with each category – Bankfull, Flood Stage, Moderate Flood, and Major Flood.

Probability of future occurrences and potential magnitude:

Probability of future occurrences is high. The area experiences floods and/or flash floods of varying magnitude nearly every year. Due to the localized geographic area, ability to forecast occurrences, and mitigable features of this hazard (i.e. acquisition and relocation, building codes, floodwalls, etc.), the potential magnitude of this event is mild to severe.

"In New York State, flood damage is often the result of development within flood zones, dam failures, inadequate urban drainage, construction of river channels, tropical storms, and a limited ability to obtain accurate river level and local precipitation data. The State has no specific flood season, however, hurricanes tend to occur during late summer and fall and the early spring snowmelt contributes to flooding during storms which occur in that season."[7]

Maps of hazard areas:

Map #1, "FEMA-regulated Flood Hazard Zones" including Floodways and Floodplains for 100 and 500-year floods.

Map #2, Waterways

Monroe County has many natural and artificial waterways. Some are navigable, many are used for recreational purposes. Sources for the map we created include the U.S. Geological Survey, the National Wetlands Inventory, and the NYS Department of Environmental Conservation (NYSDEC). Features include: name of waterway, stream gage locations, NYSDEC stream classification, flood mitigation ponds, watersheds, and federal and state-regulated wetlands. Dams are not identified for security purposes, nor are the flood protection structures on the Erie Canal.

Flood Insurance Data on Record at OEP (6-18-03)

7 SEMO, New York State 406 Hazard Mitigation Plan, September 1986, p 4-1

Locale	Flood Insurance Study by HUD or FEMA	Flood Insurance Rate Maps	Flood Boundary & Floodway Maps
City of Rochester	May 1978	November 1978	November 1978
Brockport		April 1982	
Churchville	February 1981		August 1981
East Rochester		August 1982	
Fairport	March 1984	September 1984	September 1984
Hilton	February 1981	March 1988	
Honeoye Falls	September 1977	April 1982	April 1982
Scottsville	March 1980	September 1980	September 1980
Spencerport	February 1978	August 1978	
Webster		November 1991	
Brighton	December 1978	June 1980	June 1980
Chili	August 1978	February 1979	February 1979
Clarkson	July 1981	January 1982	January 1982
Gates	February 1982	August 1993	August 1982
Greece	August 1987	September 1992	November 1993
Hamlin		February 1978	
Henrietta	May 1980	June 1998	November 1980
Irondequoit	May 1978	November 1978	November 1978
Mendon	October 1981	April 1982	April 1982
Ogden	October 1978	April 1979	April 1979
Parma	February 1978	May 1992	August 1978
Penfield	August 1980	February 1981	February 1981
Perinton	May 1984	May 1992	May 1984
Pittsford	March 1978	September 1992	September 1992
Riga	December 1980	June 1981	June 1981
Rush	November 1981	May 1982	May 1982
Sweden		April 1982	
Webster	April 1979	June 1987	October 1979
Wheatland	March 1978	July 1980	July 1980

Flood Plain Information (Studies) on Record at OEP

Waterway	Date
Irondequoit Creek	February 1975
Little Black Creek	August 1975

NOTE: Studies "Prepared for New York State Department of Environmental Conservation by the Department of the Army, Buffalo District, Corps of Engineers, Buffalo, NY."

Monroe County also has "The Oatka Creek Watershed: State of the Basin Report," prepared in December 2002, by a Professor at Monroe Community College with guidance from the Oatka Creek Watershed Committee that included representation from Monroe County.

Analysis of the impact on business, infrastructure & critical facilities:

This event may:

- Cause failure of utility systems and/or sewage and drainage systems.
- Delay or restrict transportation.
- Cause damage to structures including basement flooding, and other water damage.
- Cause soil degradation, crop destruction, and other agricultural damage.
- Lead to loss of business: production/ manufacturing, and retail losses to closed businesses.

1. Regarding critical infrastructure and flooding of Roads and Bridges:

   "Flood damage to highways and associated structures is a significant problem in New York State. New York State's development patterns have caused many highways and associated structures to be located in floodplains.

   "In many cases, highways are needed to connect localities within floodplains. In others, the cost-effective construction of highways requires their location in low-lying, flood prone areas. Bridges, of course, are by their nature required to be located in floodplains."[8]

   Flooded road rights-of-way cause numerous problems for residents, commercial traffic, school buses, utility and service vehicles, and impede the delivery of Public Safety services

2. Regarding Business and Agricultural interests:

   " . . . With respect to agriculture . . . one area of concern is farmsteads including farm homes, farm buildings, and other structures. The second is farmlands which includes cropland, pastures, and other land.

   "A very small percentage of farmsteads are located in floodplains. The ones that are in floodplains were built there in order to be close to a water source for homes, buildings and animals. When flooding occurs, homes and buildings could be damaged, animals in holding pens could be injured or killed and other structures such as fences and silos can be destroyed.

   "The flooding of farmland constitutes a more serious problem than flooding of farmsteads. There are thousands of acres of cropland and pastures located in floodplains. The reason for this is that most of this land contains very productive soils that are easy to work due to the levelness of the fields. Many pastures are in floodplains to provide a water source for grazing animals. Most of the landowners who work these fields realize the potential for flooding.

   "There are cases where flooding does cause a great deal of damage. The type of damage depends upon the intensity of the flood, location of the fields, type of soils, ground cover, and condition of streambanks."[9] Typical problems within Monroe County include: debris and gravel left on fields after flooding; streambank erosion; loss of topsoil; loss of crops; and, damage to

8 SEMO, New York State 406 Hazard Mitigation Plan, September 1986, p. 4-17
9 SEMO, New York State 406 Hazard Mitigation Plan, September 1986, p. 4-13

existing conservation practices.

Agricultural flooding is persistent and predictable. It first presents in low-lying areas adjacent to natural and artificial waterways, and it has exacerbated agricultural interests for both Farmsteads and Farmlands. The most prominent local example is damage and disruption to the Rodney Horse Farms with frontage on the west bank of the Genesee River and its confluence with Oatka Creek in the Town of Wheatland. Flooding here in 1993 and January 1998, severely impacted operations by flooding housing, animal barns and other structures, and pasture. Media attention to this situation raised public concern for the welfare of several hundred horses leading to Veterinary monitoring via boat, and offers of assistance to the owners from equestrian interests around the region.

4. Regarding infrastructure and Flood Warning & Dissemination:

   Federal and state agencies and professional organizations are all proponents of local Flood Warning and Dissemination Plans/Systems. Their information includes:

   - National Flood Insurance Program/Community Rating System (NFIP/CRS), "CRS Credit for Flood Warning Programs," by ISO Commercial Risk Services, Inc., July 1992.

   - U.S. Army Corps of Engineers, "Community Handbook on Flood Warning and Preparedness Programs: Research Report 81-R06," August 1981.

   - U.S. Army Corps of Engineers, "Implementation Aspects of Flood Warning and Preparedness Planning Alternatives: Research Report 81-R07," August 1981.

   - Hydrology Subcommittee of the Federal Interagency Advisory Committee on Water Data, "Guidelines on Community Local Flood Warning and Response Systems," August 1985.

   - FEMA and the Federal Insurance Administration, "The Application of Geographic Information Systems Technology to The National Flood Insurance Program," September 30, 1987.

   - U.S. Department of Commerce, NOAA/NWS, "Automated Local Flood Warning Systems Handbook: Weather Service Hydrology Handbook No. 2," February 1997.

   - NYS Department of Environmental Conservation (NYSDEC): "Background Materials on Local Flood Warning and Preparedness Programs; Prototype Local Flood Warning Plan; Prototype Local Flood Warning and Preparedness Program; and, Technical Guidance Manual for Local Flood Warning and Preparedness Programs," September 1984.

   - The Association of State Floodplain Managers, Inc.

     NOTE: All mentioned references are available at the County Office of Emergency Preparedness.

Monroe County endorses the "Seven-Step, Integrated System" (Hydrology Subcommittee

Guidelines . . . p. 49) for Flood Warning and Dissemination Plans. We:

Step 1. Collect Data . . . from the U.S. Corps of Engineers, USGS and NYSDEC gages, the National Weather Service, NAWAS, NYSPIN, and local intelligence/surveillance

Step 2. Assess Data . . . using historical perspective, local experience, local databases and maps employing Geographical Information Systems (GIS) technology

Step 3. Inform Local Officials . . . via: the County's "Severe Weather Group," and "Flood Group" on our proprietary paging system; local government and emergency agency fax network; specific local fax network for flood-prone towns/villages and lakeshore towns/City of Rochester; and 911 broadcast on emergency services radio frequencies

Step 4. Warn Local Residents . . . through a menu of options that includes the Emergency Alert System (EAS), re-activation of the National Weather Radio (by the National Weather Service, or by Monroe County), media outlets, and the County's public calling system (a "Reverse 911" concept)

Additional information is available at County OEP:

- U.S. Army Corps of Engineers, "After Action Report for the Flood of 1993"
- NOAA, "Natural Disaster Survey Report: The Great Flood of 1993"
- County "1993 Flooding: Disaster Response File"
- County "January, 1998 Flooding: Disaster Response File"
- County "Lake Ontario Flooding: Disaster Response File"

Notes on data limitations: Limited local, federal and state data on pre-1980 floods.

Appendix B-3

Hazard Specific Analysis: Water Supply Failure

Definition:

"Disruption in delivery or flow of water to users in publicly maintained water supply system."[1]

Description:

The area receives water supply from Monroe County Water Authority from Lake Ontario, two of the local Finger Lakes (Canadice and Hemlock), municipal wells, and private wells. Contamination of these water bodies, or failure of water treatment plants, could result in a critical shortage of water supply in the region. In addition, pollution or contamination of the water supply could result in significant illness or death. Water is an obvious vital resource and appropriately has a hazard rating of 274.5.[2]

Overview of specific hazard locations and the extent of the hazard:

Water Supply Failure may affect all or part of the area.

Previous occurrences of the hazard:

The area has not experienced water supply failure for any critical duration in the past, however, if such an event were to occur, much of the population could be adversely affected. This event could also present as a cascade event due to weather conditions, flooding, and/or contamination. Water supply failure can also result from terrorist activities.

Probability of future occurrences and potential magnitude:

The fluctuation in alert status by the U.S. Department of Homeland Security since 9/11/01 has prompted additional security measures at local reservoirs and water treatment plants. While the probability of an event is not necessarily high, the hazard rating indicates that the potential magnitude of this event would be significant.

Maps of hazard areas:

Map #3, Water Supply in Monroe County

The area's public water supply comes from Lake Ontario, two of the Finger Lakes – Hemlock Lake, and Canadice Lake, and from private wells. The accompanying map identifies the public supplies, the supplier, and the areas served by public supply and private wells. Water treatment facilities and distribution systems are not identified for security purposes. Many of the rural areas are dependent on private wells. Several large industries have their own supply source and treatment

1 HAZNY
2 Monroe County Hazard Analysis Report by SEMO, January 1999

facilities.

Analysis of the impact on business, infrastructure & critical facilities:

This event may:

- Restrict business activities.
- Cause significant illness or death.
- Restrict adequate fire control measures and fire suppression.

Specific information concerning estimated value ($) of potential loss, damage to structures, casualties, etc:

Specific information regarding past damage value estimates is not applicable.

Notes on data limitations: None

Appendix B-4

Hazard Specific Analysis: Civil Disturbance

Definition:

"An individual or collective action causing serious interference with the peace, security, and/or normal functioning of a community (e.g., riot)."[1]

Also defined by law as: Any public disturbance involving acts of violence by a group of 3 or more persons causing immediate danger, damage or injury to the property or person of another individual.[2]

Description:

Civil Disturbance presents a serious threat to communities within Monroe County. While racial tension was identified as the "trigger event" leading to the Rochester Riots of 1964, a civil disturbance can erupt because of politics, religion or a crime that is particularly disturbing to a specific group of people.

Overview of specific hazard locations and the extent of the hazard:

It would be easy to classify impoverished neighborhoods as specific hazard locations in part due to the 1964 riots that occurred in the City of Rochester. However, a ripple effect could have resulted in problems spreading to other areas within Monroe County. The extent of damage and violence was contained to the urban area. Since a disturbance can occur anywhere, it would not be practical to target any particular geographic location.

Previous occurrences of the hazard:

The July 1964 riots erupted in the 3rd Ward of the City of Rochester. Although Joseph Avenue was the most noteworthy location in the local press, adjacent areas were also involved. There were also disturbances in Rochester, related to the Rodney King Case.

Probability of future occurrences and potential magnitude:

It is nearly impossible to predict the probability of future occurrences, but the possibility certainly exists as indicated by the hazard rating. Data from the 1964 riots supports the case that the potential magnitude of Civil Disturbance could be substantial if an event occurred.

Maps of hazard areas:

1 HAZNY
2 Barron's Law Dictionary (Third Ed.), p. 73

Map is not required due to widespread geographic potential.

Analysis of the impact on business, infrastructure & critical facilities:

A credible worst case event could result in severe damage to private property, especially in terms of economic loss. The impact of such an event on the population could be serious injury or death. The year 2000 date change (Y2K) issue also had the potential for civil unrest depending upon its manifestation.[3]

Specific information concerning estimated value ($) of potential loss, damage to structures, casualties, etc:

Specific information regarding potential loss is still pending.

Notes on data limitations: Time and record access

3 Monroe County Hazard Analysis Report by SEMO, January 1999

Appendix B-5

Hazard Specific Analysis: Utility Failure

Definition:

"Loss of electric and/or natural gas power, generally but not necessarily a secondary effect of another disaster agent."[1]

Description:

Utility failure is described as the failure of primary sources of electricity, water, or sewage disposal. These events can significantly impact businesses, and create hazardous health conditions. Utility failure has a moderately high hazard rating of 269.8.[2]

Overview of specific hazard locations and the extent of the hazard:

Utility failure may affect all of the area, or may be specific to certain areas within the area. These hazards are most likely to disrupt:

- Business and industry with high dependency on electric, gas, water supply, and/or sewage disposal.
- Critical facilities that may be especially susceptible to power failure, or that may not possess significant backup power or sustainable operations, such as hospitals, water supply, sewage systems.
- Highly populated areas.
- Transportation patterns frustrated by traffic signal outages, fueling disruptions, and street lighting failures.

Power outages can be cascading events unto themselves. Although the grid has fail-safe mechanisms built-in to prevent escalation and cascading, a failure in one area can have a domino affect and begin a chain of events that leads to a blackout like the events in 1959, 1961, 1965, 1977, and now 2003. Other hazards can cascade from a power failure: fires, looting, explosions, water-supply failures, water-quality concerns, mass transit failure, transportation incidents, sewage overflows, and economic loss are all high-probability events when the power fails. All of these occurred during the August 2003 Blackout, but not all occurred in the area.

Previous occurrences of the hazard:

1 HAZNY
2 Monroe County Hazard Analysis Report by SEMO, January 1999

RE: Electric Power

- 1959, 1961. Major blackouts in the Northeast from an, "avalanche of failure. In 1959, 1961 and 1965, anywhere from one to a few cables failed in isolated places, causing overloads in a few more cables, and then a larger cascade of failures. The cascade gained momentum and produced catastrophe through the medium of the grid – which let those electrons flow where they pleased – and finally produced a shutdown of the whole system" (Democrat & Chronicle, 8-17-03).

- November 9, 1965. Monroe County was "in the dark" with most of the east coast during the 1965 blackout.

  "Power was out for more than four hours in Rochester that day after a faulty relay broke in an Ontario Hydro power plant in Queenston, Ontario, near Niagara Falls, triggering a cascade of power surges that shut down electrical systems throughout the Northeast. The Great Northeast Blackout, as it came to be known, struck Rochester at 5:23 p.m., during evening rush hour.

  "Intersections became snarled when traffic signals tripped off, service stations couldn't pump gasoline, people became stuck in elevators, television stations were knocked off the air, and seven aircraft had to circle above what then was called Rochester-Monroe County Airport when landing strip lights blinked out. Civil defense officials mobilized and off-duty police officers and firefighters were called to work in case of unrest. None occurred.

  "While stumped crews at Rochester Gas and Electric Corp. struggled to isolate the problem, customers of Niagara Mohawk Corp. in Riga, Wheatland, Rush and parts of Henrietta and Mendon still had power. RG&E's power-generating system, which normally could produce enough power to cover its service area, was connected with other power companies in upstate New York that provided power through an eight-county area. When the relay broke in Ontario, power demands from the other utilities caused a power drain that overtaxed RG&E's generators and shut them down.

  "After RG&E engineers disconnected their system from the other companies, they fired up their own generators again. By 7:15 p.m., power began being restored to hospitals and other priority users. By 9:45 p.m., power was fully restored" (Democrat & Chronicle,
  8-15-03).

- 1977. A blackout in New York City was caused, " . . . by a series of lightening strikes" (Democrat & Chronicle, 8-17-03). "This blackout affected 9 million people" (Democrat & Chronicle, 8-15-03).

- August 11, 1996. "Blackouts in the West affected 4 million electric customers . . ." (Democrat & Chronicle, 8-15-03).

- August 14, 2003. "The blackout began shortly after the 4:00 p.m. closing bell on Wall Street. It is probably the biggest blackout in North America history. It covered an area of 50 million people throughout the Northeast, affecting cities in New York, New Jersey, Ohio, Connecticut, Michigan, Massachusetts, as well as several major cities in Canada, including Toronto and Ottawa" (Democrat & Chronicle, 8-15-03). About 50 million people were without power. Ten million of them were in Canada, about 9.5 million were in New York State (Democrat & Chronicle, 8-15-03).

  "Locally, the emergency management teams took stock of the situation. Officials fed what information they had to the media. People coped as they always cope with an electrical failure – they made do, helped their neighbors and waited for the lights to pop back on" (Democrat & Chronicle, 8-15-03). Data from Monroe County:

  The Emergency Operations Center was activated for 16.5 hours beginning at 1630 hours on August 14th.

  County Executive Jack Doyle declared a State of Emergency for all of Monroe County at 1700 hours on August 14th, and ordered "No unnecessary travel." The declaration and order were rescinded at 0600 hours on August 15th.

  Approximately 67-80 percent of RG&E customers (about 400,000) in the County were without power. Niagara Mohawk customers within the County were also affected.

  Kodak Park shifted electric load back to company generation for mission-critical areas. No employees sent home: no shifts cancelled (Democrat & Chronicle, 8-16-03).

  "Frontier officials said fewer than 1,000 telephone customers lost land-line service during Thursday's power outage" (Democrat & Chronicle, 8-16-03). Frontier operated some central offices and loop stations on batteries/back-up generators (EOC representative, 8-14-03).

  City of Rochester, "Fire Chief Floyd Madison said there were 12 minor fires Thursday night and Friday morning." Six were blackout-related. "Three fire stations lost power and were not able to get back-up power" (Democrat & Chronicle, 8-16-03).

  Ginna Station shut-down. Ginna is one of six in the state, and nine nationally, that were shut-down.

  575 traffic lights out

  Hospitals operated on back-up generators. The generator at Park Ridge Hospital failed. County Pure Waters deployed a generator. Their electricians and RG&E crews worked to repair the hospital's generator. Commercial power was restored in under two hours.

  "The outage didn't disrupt play at the 85th PGA Championship at Pittsford's Oak Hill Country Club" (Democrat & Chronicle, 8-15-03).

  "At (the airport) several hundred passengers sweated out the power interruption Thursday

afternoon. The airport lost outside power, and one of its two back-up generators failed, leaving passengers unable to board flights for nearly three hours. (By 7:00 p.m.) most passengers had cleared security and were preparing to board flights. Airport security officials said planes headed to cities without major outages could leave . . ." (Democrat & Chronicle, 8-15-03).

Monroe County Water Authority and the Pure Waters District (sewage) both had pump stations on generated power.

Red Cross and County Health Department opened two venues for people with medical appliances who needed power access.

On the morning of the 15th, RG&E and Niagara Mohawk both announced that "rolling blackouts" were ordered by the ISO to stabilize the restoration effort.

Governor Pataki swept the state for local media conferences: Monroe County Office Building, 8-15-03, 1700 hours.

Governor Pataki asks for federal emergency declaration to provide federal money for relief efforts (Democrat & Chronicle, 8-17-03).

Rolling blackouts that began affecting California and became routine for months in several major cities in the late 1990's-2000, have not adversely impacted us, although "Electric Load Shedding" has been addressed by at least one of the area's distributors.[3]

RE: Water Supply. In July 1986, the City of Rochester announced that their public water source, Hemlock Lake, was contaminated by insects that had washed into the lake. To accommodate requests for water at critical facilities, the Genesee Brewery and Anderson Coca Cola Bottling Corporation, both bottled water for distribution: Genesee – 200 cases, quart bottles; Anderson – 100 cases, 2-liter bottles (County OEP Response File: *1986 Water Emergency*).

Probability of future occurrences and potential magnitude:

There is one private and one municipal electric supplier within the area. Some areas are dependent on residential propane tanks for gas service. RG&E has separate Electric and Gas Emergency Plans, and the County Office of Emergency Preparedness participates in their annual exercises on both plans. Fairport Municipal Commission has an electric emergency plan.

The hazard rating for utility failure is relatively high in rank, but the probability of future occurrences is directly related to the demand increases due to technology use and real estate development that have not been offset with additional generation capacity and transmission system up-grades. This hazard should be considered as a cascade event from terrorism and has appropriately resulted in
additional facility security measures as well as advanced mitigation practices. Power failure can also be a cascade event from flooding, ice storms, windstorms, and other severe weather. A credible worst case event, either as a cascade event or a supply failure, would cover a large region and occur

3 RG&E Presentation to Elected Officials, "Electric Load Shedding: The Last Resort." May 4, 2000

without warning,[4] as happens with blackouts, e.g. August 14, 2003.

Maps of hazard areas:

A hazard map of the electric and gas affected areas are not required due to widespread geographic potential.

Analysis of the impact on business, infrastructure & critical facilities:

This event may:

- Cause failure of utility delivery systems, affecting critical facilities such as hospitals, nursing homes, emergency services, water supply, sewage disposal, traffic signals, and mass transit.
- Result in significant health related concerns.
- May restrict emergency response, and hamper emergency communications.

Specific information concerning estimated value ($) of potential loss, damage to structures, casualties, etc:

In addition to information provided in previous sections, data on the August 14, 2003 blackout:

- 50 million people without power in (an incident that took) nine seconds
- more than 100 power plants shut-down
- attributed deaths: New York (1), Connecticut (1), Canada (2)
- 656 miles of New York City subway closed
- water failure – Cleveland severe
- New York City police officers – 10,000 on-duty overnight 8-14-03

- New York City Council estimated revenue losses: $10 M overtime pay for first 24 hours; $40 M tax revenue; $750 M general revenue
- more than 50 assembly and other automotive plants affected

Notes on data limitations: Time and record access

4 Monroe County Hazard Analysis Report by SEMO, January 1999

Appendix B-6

Hazard Specific Analysis: Structural Collapse

Definition:

"Sudden structural failing, partial or fully, of buildings, bridges or tunnels, threatening human life and health."[1]

Description:

Structural collapse can occur for many reasons. For example, a fire can lead to collapse as a cascade event because of compromised structural integrity due to heat from the fire or from the weight of water used in fire suppression. Other cascade events to be considered are terrorist attacks using explosive devices, weather-related events such as weight from an extremely heavy snowfall or wind storms. The hazard rating for structural collapse is 269.5 due to potential severity.[2]

Overview of specific hazard locations and the extent of the hazard:

The potential exists throughout the area in both urban and rural settings, and on the transportation systems that criss-cross the geography. Local community Building Inspectors and Code Enforcement Officials will be most familiar with this hazard.

Previous occurrences of the hazard:

No occurrences in recent history have prompted emergency services:

- April 1, 1982. NYS Rt. 65 Bridge over Honeoye Creek at the four corners in the Village of Honeoye Falls.
- Numerous structures at fire scenes throughout the community

Probability of future occurrences and potential magnitude:

Hazard analysis suggests the worst case scenario as full or partial collapse of bridges or the embankment area of the Erie Canal.

Maps of hazard areas:

Map is not required due to widespread geographic potential.

1 HAZNY
2 Monroe County Hazard Analysis Report by SEMO, January 1999

Analysis of the impact on business, infrastructure & critical facilities:

Disruption to traffic & supply lines.

Specific information concerning estimated value ($) of potential loss, damage to structures, casualties, etc:

The monetary loss can be on property owners, the private-sector and/or the public (taxpayers). Estimates can range from insurance deductibles associated with insured losses to millions of dollars that may burden taxpayers if property owners are unable to cover the debris removal and disposal. Monetary losses may or may not be recoverable from insurance or federal disaster resources.

Notes on data limitations:

County data is limited by the extent that local sources share it.

Appendix B-7

Hazard Specific Analysis: Hazardous Materials (at Fixed Facilities)

Definition:

"Release of materials from a stationary facility which when released can result in injury/death to people, and/or damage to property and the environment through product flammability, toxicity, corrosiveness, chemical instability and/or combustibility."[1]

Description:

There are several facilities throughout the area that use and store hazardous materials as they are defined by the federal Environmental Protection Agency (EPA). In compliance with the Congressional SARA Title III Act of 1986, more than 900 facilities have filed reports with the Monroe County Local Emergency Planning Committee (LEPC) at some point over the past 17 years. Therefore, the risk of an incident at a "fixed facility" is substantial and has a hazard rating of 268.8.[2]

Overview of specific hazard locations and the extent of the hazard:

Facility types range from local gasoline service stations to multi-chemical storage and use facilities. The extent of the hazard depends on the chemical products involved, the number of employees on site, and the location of the facility and its proximity to residential communities.

Previous occurrences of the hazard in Monroe County:

Level*	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002
0							25	30	19	34	23
1	6	4	8	4	6	6	9	9	5	6	1

*Definitions:

" Level 0 - A hazardous materials incident that is not likely to adversely impact or threaten life, health, property or the environment; where control of the incident is within the capabilities of resources available to the local response jurisdictions.

" Level 1 - A hazardous materials incident that may adversely impact or threaten life, health, property or the environment within an area immediately surrounding the point of release or potential release; where control of the incident is within the capabilities of the resources locally available to responders in Monroe County."[3]

Probability of future occurrences and potential magnitude:

1 HAZNY
2 Monroe County Hazard Analysis Report by SEMO, January 1999
3 Definitions are from the Monroe County Hazardous Materials Response Plan, November 2002 Revision, p. 9

Regulations for use and storage, together with employee training should help reduce the number of incidents, however there is significant probability that events will continue to occur. Potential magnitude is site-related. A credible worst case event has the potential to cause cascade effects, such as an explosion or fire, and could result in serious injury or death to people.[4]

Maps of hazard areas:

Map #4, Hazardous Facilities (at Fixed Sites) – intentionally left blank

Monroe County's map of industrial/business sites that file Tier II Reports in compliance with SARA Title III, is not included for security purposes.

Analysis of the impact on business, infrastructure & critical facilities:

Analysis of impact is difficult to predict based on the wide range of facilities and locations.

Specific information concerning estimated value ($) of potential loss, damage to structures, casualties, etc:

The economic impact can be huge. Incidents have cost the private-sector losses in facility, product manufacturing, jobs, clean-up, and damages in adjacent neighborhoods. Real estate and property damages have even led to buy-out by the company owner.

Notes on data limitations: None

4 Monroe County Hazard Analysis Report by SEMO, January 1999

Appendix B-8

Hazard Specific Analysis: Blizzard

Definition:

"Snow with winds greater than 35 mph and limited visibility. Additionally, a severe blizzard is snow with wind over 45 mph and near zero visibility."[1]

Description:

Blizzards are frequent, widespread, and potentially life threatening events within the area. Blizzards are likely to be prolonged events, and are capable of limiting transportation, delaying emergency response, and inhibiting communication. Blizzards may cause cascade events, such as flooding, power failure, and transportation accidents. The annual likelihood of this event occurring is reflected in the hazard rating of 264.8.[2]

Overview of specific hazard locations and the extent of the hazard:

While blizzards may affect any part or all of the area, these areas have been selected for their high potential for hazard:

- Roads and highways, particularly route 490, and State highways.
- Buildings and other structures that are prone to collapse from excessive weight.
- This event may also cause ice jams, power failures, transportation accidents, or floods as cascade events.
- This event can limit emergency response and communications.

Previous occurrences of the hazard:

We experience winter storms annually. The most significant of these events in the recent past were the Blizzards of 1966, 1977, 1993 and 1999. The blizzards of 1993 and 1999 prompted activation of the County's Emergency Operations Center (EOC), for 40 hours and 89.5 hours respectively.

The Blizzard of 1977 (January 28 – February 2) prompted a Presidential Disaster Declaration and is identified as, FDAA 527. The Blizzard of March 1993, prompted a Presidential Disaster Declaration on March 17, 1993 and is identified as, FEMA-3107-EM-NY. The Blizzard of March 1999, prompted a Presidential Disaster Declaration on March 9, 1999, and is identified as, FEMA-3138-EM-NY.

The following data is noted because of its significance throughout the area over the ten-year period, 1993 to 2003:

1 HAZNY
2 Monroe County Hazard Analysis Report by SEMO, January 1999

March 13, 1993. "A major winter storm system which produced blizzard conditions from the Southeastern United States to Quebec also left its mark on Western and Central New York. Snow began across the Western and Central Southern Tier on Saturday the 13th and quickly overspread the entire area. The snow continued through Sunday the 14th. A northwest flow of cold air following the storm produced lake effect squalls on the 14th Sunday afternoon and night, which only added to the snowfall amounts. The heavy snow combined with high winds of 20-40 mph and gusts to 60 mph to produce extensive blowing and drifting snow with zero visibilities. The blowing and drifting was so bad highway superintendents pulled the snowplows off the road. Snow and drifts of 5-10 feet were reported. Trees and wires were also downed by the high winds. Minor power outages were scattered across the area. For those airports which remained officially open, most commercial airlines cancelled all flights in and out of the area. The New York State Thruway was closed from Buffalo east. Driving bans and restrictions were in place in all counties in the area with the exception of Erie and parts of Erie and parts of Chautauqua Counties. Driving in those areas however was still treacherous. Most bans were being lifted Monday morning the 15th. Several persons died in auto accidents related to the storm. The impact of the storm on the region is believed to have been lessened by advance warnings with allowed early preparation for the storm. Snowfall amounts were around 2 feet across the Western Finger Lakes and in excess of 3 feet across the Eastern Finger Lakes" (National Weather Service, Storm Data Report, May 28, 2003). FEMA Public Assistance to all declared counties was $8.5M. Monroe County's portion was $260,562.

January 4, 1996. "A major winter storm brought record snowfall to the area. Enhancement off Lake Ontario due to northeast winds brought snowfall amounts of 18-24 inches to the Rochester metro area. A 24-hour snowfall record was set at the Rochester airport. At Rochester 23 inches fell and at Webster the snow totaled 18 inches. School closings were the rule and there were numerous delays in airline flights at the Rochester airport. The winter road conditions were blamed for many automobile accidents, some with injuries. Damages were estimated at $300,000.00.

November 26 & 27, 1996. "Low pressure moving across the Great Lakes brought snow to the area. The snow became enhanced by the lake producing amounts of 8-12 inches. The heavy snow resulted in school closings. Numerous traffic accidents were blamed on the whiteout conditions. Damage estimates were $10,000.00.

November 14, 1997. "An early season winter storm brought heavy snow to the area as low pressure moved north along the Atlantic coast. Snowfall amounts ranged from six to twelve inches across the region with the highest amounts over the Genesee Valley and western Finger Lakes. The snow was wet and heavy and snarled traffic badly. Countless accidents were reported, many with injuries. Several school districts were forced to close. At Rochester, the 10.6 inches that fell also established a record for the date. Damage estimates were $20,000.00.

December 30, 1997. "A strong storm moved up the East Coast of the U.S. and dropped up to a foot and a half of snow across the Finger Lakes and eastern Lake Ontario regions. The heavy snow downed power lines and trees east of Rochester. Numerous auto accidents, several with injures, were a result of the snow. Strong winds combined with the snowfall to produce blowing and drifting snow resulting in significantly reduced visibilities. Damages were estimated at $15,000.00.

March 21, 1998. "Deep low pressure tracked from Kentucky to New England and brought heavy snow to the entire region. The storm began as a period of freezing rain and sleet Friday evening the 20th and changed over to snow early Saturday morning. The heaviest snow from the storm fell over

the northern counties from the Buffalo-Niagara Falls area to Rochester and Oswego County. The snow made roadways extremely slick and innumerable accidents resulted. The heavy ice and snow on power lines and trees resulted in scattered power outages throughout the area. Specific snowfall reports included: 12 inches in Rochester. Damages were estimated at $20,000.00.

March 4, 1999. "Deep low pressure moved from West Virginia north across New York to Quebec, Canada. Heavy rain changed to heavy snow as cold air circulated into the region. Snow fell at the rate of two to three inches per hour. Across Monroe and Wayne counties snowfall amounts were greatest with over two feet falling. The strong winds off Lake Ontario resulted in Blizzard conditions over Monroe and Wayne counties for nearly six hours. Drifts reached four to five feet in places. The New York State Thruway (I-90) was closed from Depew to Syracuse. Several hundred cars were stranded in the closed section. The Governor declared Monroe, Wayne, Oswego, Wyoming, Livingston, and Cayuga Counties State Disaster Areas. Orleans, Ontario, Wyoming, Livingston, Monroe and Wayne Counties were also declared Federal Disaster Areas. The National Guard was called on to help remove cars, rescue stranded motorists and deliver food and medical supplies. Schools and businesses were closed throughout the area. Nearly 10,000 customers lost power during the storm. Specific snowfall reports included: Hamlin 28", Perinton and Fairport 26", Penfield 25", Rochester Airport 24", Victor 22", Greece and Webster 20". First estimates of damage were $250,000.00 with actual Blizzard damage estimates of $1,500,000.00

March 6, 1999. "A strong storm moved from Ohio to New England and dropped a general six to twelve inches of snow across the entire region. The snow fell just two days after much of the area was recovering from another major winter storm. The heavy snow was blamed for numerous auto accidents- some with injuries. Specific snowfall reports included: Rochester 19", Fairport and Penfield 18", Pittsford 17", Webster and Greece 16. Damages were estimated at $500,000.00" (National Weather Service, Storm Data Report, May 28, 2003). FEMA Public Assistance for Monroe County was $1.99M.

January 26, 2000. "Low pressure moved up the East Coast with western New York on the fringe of the system. The north-northeast flow across Lake Ontario resulted in enhanced snowfalls downwind of the lake. Snowfalls included: Rochester metro area – 12" in the city, 16" in the eastern suburbs, and 6-10" west and south. Damages were estimated at $35,000.00.

December 31, 2000. "Low pressure developed off the mid-Atlantic coast then moved north along the coast bringing a general snowfall to the area. Between 6 and 12 inches of snow fell across the area with higher amounts downwind from Lakes Erie and Ontario due to lake enhancement. The heavy snowfall was accompanied by brisk northwest winds that resulted in blowing and drifting snow and wind chills of ten to twenty degrees below zero. Visibilities were near zero at times in intense snow and blowing snow. Specific snowfall reports included: Perinton 10", Greece, Fairport and Western Monroe 8," and Rochester 7". Damages were estimated at $100,000.00.

March 5, 2001. "A complex low pressure system that plagued the Northeast brought significant snowfall to western and central New York. The snow in western New York came in two phases from Sunday night to early Monday morning (4th-5th) and again Monday night to Tuesday morning (5th-6th). The heaviest snow fell during the first period and was associated with upper level energy, while the second snow period resulted from the western fringe of a large coastal storm south of New England. East of Lake Ontario, the snow was nearly continuous from late Monday night through Tuesday morning (4th-6th). Snowfall totals for the 48-hour event were generally between 12-18" from the Genesee Valley eastward and 8-12" across far western New York. Specific storm totals

reported: Mendon 19", Greece16", Webster 15", Honeoye Falls 14", Penfield, Perinton and Rochester 10". Damages were estimated at $200,000.00.

December 25, 2002. "Low Pressure moved northeast along the Appalachians and brought a general heavy snow to much of the region on Christmas Eve and Christmas day. An 8-12" blanket of snow covered the area with high amounts generally over the Finger Lakes Region. The heavy snow slowed holiday travelers and caused limited delays at the Rochester airport" (National Weather Service, Storm Data Report, May 28, 2003).

Probability of future occurrences and potential magnitude:

Probability of future occurrences is very high. Monroe County experiences blizzards of varying magnitude. Due to the wide spread geographic area and probability for cascade effects, the potential magnitude of this event is very high.

Maps of hazard areas:

Map is not required due to widespread geographic potential.

Analysis of the impact on business, infrastructure & critical facilities:

This event may:

- Cause failure of utility systems.
- Delay or restrict transportation.
- Cause damage to buildings, and other structures.
- Restrict emergency response, and hamper emergency communications.

Specific information concerning estimated value ($) of potential loss, damage to structures, casualties, etc:

Loss information is included with dates of occurrence.

Notes on data limitations: Time and record access

Appendix B-9

Hazard Specific Analysis: Hazardous Materials (Transportation)

Definition:

"Release of materials during transit which when released can result in injury/death to people and/or damage to property and the environment through product flammability, toxicity, corrosiveness, chemical instability and/or combustibility."[1]

Description:

Transportation corridors within the area that carry hazardous materials include: highways, railroads, air/flight paths, pipelines, and navigable waterways.

Major highways are more likely to experience this type of hazard because of interstate and local commercial transport of hazardous materials. Transport vehicles do not typically travel through residential areas unless enroute to destinations such as a gasoline service station or storage facility. Local experience with these incidents is shown on the chart below. Because this hazard is likely to occur at any time it is rated at 262.8.[2]

Overview of specific hazard locations and the extent of the hazard:

A hazardous material incident of this type is most likely to occur on:

- Interstate Route 490 and State Routes 31, 250, 96, 31F abd 253.
- Potential also exists on routes destined for industry/business purposes
- CSX (railroad) east-west corridor
- Rochester Southern (railroad) north-south corridor
- flight paths over the community and those serving the Greater Rochester International Airport
- underground petroleum and gas (natural and propane) pipelines
- navigable waterways including the Erie Canal and Lake Ontario

Previous occurrences of the hazard:

Level*	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002
0							9	14	17	15	18
1	3	1	1	2	1	1	1	3	1	4	2
2				1							

*Definitions:

1 HAZNY
2 Monroe County Hazard Analysis Report by SEMO, January 1999

" Level 0 - A hazardous materials incident that is not likely to adversely impact or threaten life, health, property or the environment; where control of the incident is within the capabilities of resources available to the local response jurisdictions.

" Level 1 - A hazardous materials incident that may adversely impact or threaten life, health, property or the environment within an area immediately surrounding the point of release or potential release; where control of the incident is within the capabilities of the resources locally available to responders in Monroe County.

" Level 2 - A hazardous materials incident that may adversely impact or threaten life, health, property or the environment beyond the point of release; may be across municipal jurisdictions; where control of the incident is within the capabilities of the resources based within Monroe County."[3]

Probability of future occurrences and potential magnitude:

Numerous hazardous materials are transported to and through our community every day leading to a high probability that there may be future occurrences. The magnitude of an event will be determined by the mode of transport, the product, flow of other traffic, weather conditions and a number of other factors.

Due to the potential magnitude of transportation incidents involving hazardous materials, the County has emergency response plans related to transportation:

- *Monroe County Hazardous Materials Response Plan: November 2002 Revision*
- *Monroe County NYS Thruway Exit 46 Emergency Plan*
- *Monroe County Railroad Emergency Plan*
- *Greater Rochester International Airport Emergency Plan*
- *Monroe County Aircraft Emergency Disaster Plan: Off-Site of the Greater Rochester International Airport*
- *Monroe County Marine Emergency Plan*

And, other levels of government have plans:

- New York State Canal Corporation
- U.S. Coast Guard *Eastern Great Lakes Area Contingency Plan: Volume 3, Rochester/Oswego*

Maps of hazard areas:

Map #2, Waterways

Monroe County has many natural and artificial waterways. Some are navigable, many are used for recreational purposes. Sources for the map we created include the U.S. Geological Survey, the National Wetlands Inventory, and the NYS Department of Environmental Conservation (NYSDEC). Features include: name of waterway, stream gage locations, NYSDEC stream classification, flood

3 Monroe County Local Emergency Planning Committee, *Monroe County Hazardous Materials Response Plan, November 2002 Revision*, pp. 9-10

mitigation ponds, watersheds, and federal and state-regulated wetlands. Dams are not identified for security purposes, nor are the flood protection structures on the Erie Canal.

Map #7, Transportation Corridors

Monroe County's natural landscape is criss-crossed by multiple transportation corridors for rail, highway, marine, and air traffic. The active rail lines, inter-state, state and local highways, the navigable waterways, the outer boundary markers of the commercial airport, and several private landing strips are mapped.

Analysis of the impact on business, infrastructure & critical facilities:

Transportation incidents have disrupted traffic flow on highways, caused damage to the environment and critical infrastructure, disrupted routine operations at schools, hospitals and government facilities and destroyed private property. As with every transportation incident, there are immediate and unexpected financial losses even with insurance protection. Transportation incidents of this nature generally involve significant emergency response resources, and community resources for Environmental Assessment, the Human Needs requirements of people within the incident radius, and recovery operations.

Specific information concerning estimated value ($) of potential loss, damage to structures, casualties, etc:

A summary of several events conveys the impact these incidents can have on the community:

- December 23, 2001 – CSX derailment in Charlotte neighborhood within the City of Rochester. "CSX has publicly taken responsibility, blaming a worker who failed to properly set the train's brakes" (Democrat & Chronicle, 7-10-03).

  Loss of Life. None

  Personal Injuries. Some residents and emergency services providers

  Property Damage: destroyed private home (partial settlement, $200,000)
  destroyed privately owned boats and cards
  damaged structures by fire, explosion
  railroad track and cars

  Business Loss: shut down a year-round Marina (Democrat & Chronicle, 7-26-03)
  delayed Spring opening of seasonal businesses
  disrupted product shipment by rail

  Transportation System: severed highway pattern, and destroyed section of highway
  required reconstruction and new pattern design
  required rail reconstruction

  Environmental Damage: soil and Genesee River received spill of diesel fuel, acetone, and methylene chloride; air emission from fire and smoke

Legal Activity: residents, businesses, City, CSX, Kodak

Claims: property damage, business loss, medical expenses, mental anguish

- April 29, 2003 – Tanker Fire at Lake Avenue and West Ridge Road in the City of Rochester. "On April 29, the tanker truck carrying more than 12,000 gallons of gasoline flipped onto its side on West Ridge Road just east of Lake Avenue. The spilled fuel sparked a blaze that killed one woman, injured 11 people and damaged 23 houses" (Democrat & Chronicle, 6-28-03).

  Loss of Life. One in the fire. One about five weeks later from a heart attack that may be related to the incident.

  Personal injuries. Eleven people.

  Property Damage: 23 houses
  automobiles, vehicles, and other personal property

  Transportation System: highways closed for emergency response
  highways closed and lanes reduced for recovery phase
  highway design and maintenance investigated

  Environmental Damage: soil infiltration (from gasoline)
  air emission from fire and smoke
  natural landscape from fire and intense heat

  Legal Activity: residents, trucking company, truck driver, City

  Claims: property damage, faulty highway design and maintenance, wrongful death, personal expenses

- March 12, 2003 – "An underground gasoline leak was discovered at the Buckeye Terminal, 754 Brooks Avenue (Rochester). An estimated 50,000 gallons spilled, seeping gasoline and gasoline-related chemicals into the Erie Canal and – more than two months later – into the basements of some nearby houses. Residents were informed of the incident in June . . ." (Democrat & Chronicle, 7-16-03).

  Loss of Life. None.

  Personal Injuries. None reported.

  Property Damage. No fire hazard in impacted homes

  Business Loss: from lost product
  cost of remediation

Transportation System. Cost of repair to and relocation of infrastructure

Environmental Damage. Soil and ground water infiltration (14,000+ gallons fuel extracted from soil as of 7-6-03)

Legal Activity (pending): residents, business

Claims (pending): " . . . for compensation and medical testing and to assure that property values don't tank" (Democrat & Chronicle, 7-16-03)

Notes on data limitations: Time and record access

Appendix B-10

Hazard Specific Analysis: Explosion

Definition:

"Sudden and rapid escape of gases from a confined space, accompanied by high temperatures, violent shock, and loud noise."[1]

"The threat or actual detonation of an explosive device or material with the potential of inflicting serious injury to people or damage to property."[2]

Description:

Explosions are usually a cascade effect of a primary event such as a structure fire or transportation accident. Natural Gas explosions have been headline news. There have also been other incidents of explosions with gasoline tanker incidents on the highway. Though unlikely, the possibility of an explosion as a result of a terrorist attack exists. The hazard rating for this hazard is 262.8.[3]

Overview of specific hazard locations and the extent of the hazard:

It is reasonable to assume that industrial areas and chemical storage facilities are the most likely to experience an explosion. However, our local incidents with natural gas distribution indicate that the possibility exists wherever explosive materials are present.

Previous occurrences of the hazard:

- September 21, 1951. Natural Gas explosions in the Town of Brighton impacted several residential streets.[4]

- August 1988. A natural gas explosion on Jersey Street in the City of Rochester was caused by a male resident using natural gas as a means to commit suicide. This particular incident caused total devastation of the house and substantial damage to a number of structures in the immediate vicinity.

- February 3, 1991. The explosion at 110 Delmar Street, Rochester caused the private residence to collapse "as it was blown off its foundation." The male occupant received only singed hair. The female occupant was burned over 40 percent of her body. She received a $5.85M award from a Supreme Court jury. (Democrat & Chronicle, 12-14-94).

1 NYS Office of Fire Prevention & Control, "Fire Investigation Training Manual," p. P-2
2 HAZNY
3 Monroe County Hazard Analysis Report by SEMO, January 1999
4 Peter Polfleit, RG&E, August 14, 2003

- September, 1998. Two people were killed in their home on Turpin Street, Rochester from a natural gas explosion. The source was a leak on a flexible hose supply line to the kitchen stove. The homeowner went to the basement to investigate the problem and sparked the explosion when he switched-on the basement light providing an ignition source (Sam DeRosa, RG&E, August 5, 2003).

Probability of future occurrences and potential magnitude:

There is a high probability of future occurrences. Loss of life, personal injury and property damage are possible.

Maps of hazard areas:

Map is not required due to widespread geographic potential.

Analysis of the impact on business, infrastructure & critical facilities:

This is dependent on the nature of the explosion, the product(s) involved, the exposures to population, and the geographic ring of exposure.

Specific information concerning estimated value ($) of potential loss, damage to structures, casualties, etc:

Specific information on losses is included with the occurrence.

Notes on data limitations: Time and record access

Appendix B-11

Hazard Specific Analysis: Fire

Definition:

"Self-sustaining, rapid oxidation of material resulting in the release of energy in the form of heat and light."[1]

"The uncontrolled burning in residential, commercial, industrial, institutional, or other properties in developed areas."[2]

Description:

"For the purpose of calling a fire major, the incident should meet any or all of the following criteria:

- Multiple loss of life
- $1,000,000 of property damage
- Major community impact, such as destruction of a major industry or employer in the community."[3]

A credible worst case fire would likely occur without warning, and cause serious injury or death, but not in large numbers."[4]

Overview of specific hazard locations and the extent of the hazard:

Fires can occur anywhere, but increased hazard exists in locations that are industrial, and have substantial combustible material and/or hazardous materials on site. Transportation incidents involving gasoline tanker fires have caused severe injury, death and significant property damage. The extent of this hazard is largely dependent on structure, location, response and suppression capabilities.

Previous occurrences of the hazard:

Previous occurrences are too numerous to list in detail. Significant events have occurred in every fire fighting jurisdiction within the area.

Since the formalization of the County's Fire Mutual-Aid Plan, mutual aid calls average 75-100 per year.[5] Note: Additional data is available in the "Monroe County Fire Bureau's Annual Report."

Major fires have been the catalyst for significant cultural changes in the area's fire fighting community. Examples are:

---

1 Fire Protection Handbook (17th Ed.), p. 1-44
2 HAZNY
3 HAZNY
4 Monroe County Hazard Analysis Report by SEMO, January 1999
5 Crouch, Kevin, Monroe County Fire Bureau Assistant Fire Coordinator, June 11, 2003

- the initiation of a mutual-aid system that was institutionalized within Monroe County and subsequently adopted as statute by the New York State Legislature

- standardization of fire fighter training for volunteers and paid staff, with the inclusion of industrial departments/brigades

- initiation of special operations teams

- standardized public safety communication system

- centralization of alarm calls and dispatch even before the inception of 911

- a fire prevention program that became a model for a state-wide program

- support for an increase in the Volunteer Firefighter's Benefit Law

- the Juvenile Fire Intervention Program

Probability of future occurrences and potential magnitude:

Fires will continue to occur on some level on a consistent basis. The magnitude potential depends on a number of different factors in residential and commercial structures such as, but not limited to:

- Structural age, architectural design, type of construction and building materials
- Building code compliance and safety inspections
- Use or non-use of fire detection, e.g. smoke detectors, and/or fire suppression features, e.g. sprinkler/standpipe systems
- Building safety and evacuation plans
- Fire prevention and public education
- Arson arrests, prosecution and conviction

Maps of hazard areas:

Map of fires is not required due to widespread geographic potential.

Map #5, Monroe County Fire District Map

Monroe County is served by career and volunteer fire fighters. A map of the fire jurisdictions is attached.

Analysis of the impact on business, infrastructure & critical facilities:

Fire adversely impacts business, infrastructure, and critical facilities. A worse case scenario can lead to property damage, losses of business due to closings and water supply if it is contaminated, environmental contamination, loss of life and personal injury to emergency service providers and the public. Significant property loss also leads to loss of assessed property value on the municipal tax roll. The Village of Honeoye Falls lost its public water supply when it was contaminated with run-

off from a fire. Critical facilities, like hospital Emergency Departments, may be overwhelmed from an influx of fire victims.

Specific information concerning estimated value ($) of potential loss, damage to structures, casualties, etc:

- May 3, 1867. At the Pendry Drug Store, 142 Main Street, Rochester, and then seven hours later at Washington Hall across the street. This fire was apparently ignited from a cinder on the roof that was deposited from the drug store fire. Three firefighters were killed when the ceiling and roof timbers fell (Democrat & Chronicle, 1-10-00).

- November 9, 1888. At the Steam Gage & Lantern Co., in Rochester, "was one of the deadliest in Rochester's history, killing 38 workers, many of whom leaped to their deaths from the upper floors of the Gorsline Building on Commercial Street" (Democrat & Chronicle, 1-10-00).

- January 7, 1901. At Kodak Park, Lake Avenue, Rochester. The fire started when nitric acid was released in an acid storage building. Kodak's apparatus was called and City firefighters responded. "More companies were called in, and for an hour the firefighters had a 'fierce fight' with the flames, retreating frequently when the acrid smoke became too much" (Democrat & Chronicle, 1-10-00). Three firefighters later died, their deaths attributed to inhalation of nitric acid fumes.

- February 26, 1904. At the Sibley, Lindsay & Curr retail store, in Rochester, "was one of the most destructive, raging for 40 hours and destroying several downtown buildings" (Democrat & Chronicle, 1-10-00).

- June 20, 2003. A seven-alarm fire (Democrat & Chronicle, 7-26-03) at the vacant site at Lyell Avenue and Whitney Street, Rochester. "The city marshaled all of its firefighting units except one to the blaze and also received help from some suburban fire departments" (Democrat & Chronicle, 6-22-03). Flames shot six-seven stories in the air and the glow was seen for miles. Firefighters fought the blaze and doused the roofs of 12 homes to make sure the fire didn't spread.

  Deaths & Injuries. None

  Cause. Arson ($2,000 award offered by *CrimeStoppers* and the U.S. Bureau of Alcohol, Tobacco, Firearms and Explosives)

  Property Damage. Destroyed part of the 5-block complex

  Clean-up Cost. Estimated at $750,000. This cost may fall to the City, as Corporation Counsel, " . . . Doesn't believe the property was insured and . . . is pessimistic about the assets behind the property owners" (Democrat & Chronicle, 7-2-03).

Fifty-two firefighters with the City of Rochester Fire Department have died in the line of duty. Firefighters in departments outside the City have also died in line-of-duty deaths at the fire scene, in response to an alarm, and post-event after answering an alarm.

Fire jurisdictions work closely with I.S.O. to credit equipment, training, response time, alerting and dispatch procedures, response protocols, and water supply to meet standards that translate to a reduction in fire insurance premiums for their communities.

"The U.S. Consumer Product Safety Commission reported 18,300 chimney-related fires in the U.S. in 1998, the last year for which the commission had statistics. These fires resulted in 160 injuries, 40 deaths and $158 million in property damage. Almost all of these could have been prevented through inspection and cleaning" (Democrat & Chronicle, 8-9-03).

Notes on data limitations: Time and record access

Appendix B-12

Hazard Specific Analysis: Tornado

Definition:

"Local atmospheric storm, generally of short duration, formed by winds rotating at very high speeds, usually in a counterclockwise direction. The vortex, up to several hundred yards wide, is visible to the observer as a whirlpool-like column of winds rotating about a hollow cavity or funnel. Winds have been estimated to be as high as 400 mph,"[1] and are measured in intensity by the Fujita Scale (F0-F5).

Description:

Tornado, rated at 250.8, is an infrequent event in the area requiring the activation of emergency forces between once every eight to fifty years. There has been two confirmed tornado touchdowns in the County since 1950, both of relatively low intensity. The violent path of destruction of a tornado can trigger other hazards, such as structural collapse, power failures, fires, and explosions. A credible worst case tornado could strike a gathering of people in various settings, causing severe injury or death to large numbers. The number of casualties from such an event would require the full or nearly full activation of the County's medical facilities' disaster plans. Such a tornado could be expected to cause severe damage to private property, and moderate damage to public buildings and infrastructure."[2]

Overview of specific hazard locations and the extent of the hazard:

A tornado may affect any local area of Monroe County and would be particularly damaging in densely populated areas, and in areas of limited-sustainability construction, such as mobile home parks.

Previous occurrences of the hazard:

July 1, 1932. A tornado touched-down on Lyell Avenue in the City of Rochester. Dozens were injured but no one was killed (Democrat & Chronicle, 5-12-03).

April 6, 1979. Greece is reported to have had an F0 (40-72 mph) Tornado.

September 9, 1987. Honeoye Falls is reported to have had an F1 (73-112 mph) Tornado.

Probability of future occurrences and potential magnitude:

Probability of future occurrences is unlikely. However, recent events coupled with the realization that it is the 12th ranked local hazard should recognize tornadoes as a respectable threat.

1 HAZNY
2 Monroe County Hazard Analysis Report by SEMO, January 1999

Maps of hazard areas:

Map is not required due to widespread geographic potential.

Analysis of the impact on business, infrastructure & critical facilities:

This event may cause:

- Injury or death, generally in limited numbers, but this is dependent on the population in the path of destruction
- Damage to roads and highways, buildings and other structures
- Power failures, transportation accidents, utility failure, or other cascade events.
- And, tornadoes can hamper emergency response and communications.

Specific information concerning estimated value ($) of potential loss, damage to structures, casualties, etc:

Specific information is not available. However:

- "A tornado can strike a gathering of people in various settings for a credible worst case event could cause severe injury or death to large numbers.

- "Tornadoes are very powerful and, historically in New York State, they cause extensive damage to private property.

- "Structural damage to public facilities is not as substantial as private property since public facilities are usually made of stronger building materials.

- "Even though tornadoes are short lived, their effects can be felt for a long period of time. Extreme damage caused by a worst credible event will need ample time to rebuild. A worst credible event case should be more than two weeks.

- "Because of the advancements of tracking equipment, such as Doppler Radar, warnings may be provided well before a credible worse case event strikes" (HAZNY).

Notes on data limitations: Time and record access

Appendix B-13

Hazard Specific Analysis: Dam Failure

Definition:

"Structural deterioration, either gradual or sudden, resulting in the facility's inability to control impounded water as designed, resulting in danger to people and/or property in the potential inundation area."[1]

Description:

"The majority of dams are normally constructed of earthfill or concrete. Other dams exist because of natural phenomena, such as landslides, glacial deposition or the work of beavers. There are approximately 6,000 dams throughout New York State, of which many are small and do not constitute a serious threat to the downstream area if they were to fail (HAZNY).

"Dam Failure, rated at 246.5, is a rare event in the area. The primary dam potentially impacting the County is the Mt. Morris Dam, upstream on the Genesee River, in Livingston County. A credible worst case event could inundate a large region of the County adjacent to the Genesee River, including a significant portion of the City of Rochester. The resulting water surge could cause water supply and sewer system failures, hazardous material releases, power failures, and transportation accidents. Such an event would likely cause severe damage to private property and the public infrastructure. However, because of the distance of the dam from Rochester, and the degree of emergency preparedness, there should be enough warning to evacuate most people from the more populated areas that would be affected. The number of casualties might require the full or near full activation of the County's medical facilities' disaster plans."[2] Other dams of less significant size and thus posing less potential for widespread destruction are located throughout the area.

Overview of specific hazard locations and the extent of the hazard:

"Dam failure can result from many factors such as natural disasters, structural deterioration, or actions caused by man, including terrorism. According to the International Commission of Large Dams (ICOLD), the three major causes of dam failure are overtopping by flood, foundation defects and piping (seepage). For concrete dams, the major reason for failure is associated with foundation defects. For earthen dams, piping (seepage) was the main reason for failure. Overtopping affects both concrete and earthfill dams which do not have adequate spillways to allow for high water levels. Dams are classified as follows:

- High hazard – where failure would probably cause loss of human life/NYSDEC, Class "C"

- Moderate hazard – where failure would cause extensive property damage/NYSDEC, Class "B"

1 HAZNY
2 Monroe County Hazard Analysis Report by SEMO, January 1999

- Low hazard – where failure would only cause damage to undeveloped lands/NYSDEC, Class 'A'" (HAZNY/NYSDEC, 6 NYCRR 673).

"For many dams, a dam failure computer analysis has been conducted, which delineates the inundation zone in the event of a credible worst case scenario. Depending upon the number of dams and size of the inundation zone(s), the impact area will range from a single location to a large region.

"In the event of a dam failure, the sudden release of enormous amounts of water would cause major flash flooding. The resulting water surge can cause water supply and sewer system failures, hazardous material releases, power outages and transportation accidents due to road and bridge wash out. The water surge may be powerful enough to destroy another downstream dam, compounding the disaster" (HAZNY).

Previous occurrences of the hazard:

"Since 1890, there have been at least 41 dam failures in the state, resulting in the loss of 10 lives" (HAZNY).

Dam Failures in Monroe County include:

"September 1912. A flood resulted from a break in the Barge Canal at the crossing over Irondequoit Creek. The escaping canal waters washed out about 500 feet of embankment and the Barge Canal was inoperable for over a month.

"Spring 1934. This flood was caused by a sudden thaw after a cold spell. Chunks of ice took out the Daisy Flour Mill dam in Penfield near Ellison Park and forced them to change to diesel power.

"October 29, 1974. A collapse in the bottom of the Barge Canal by the Interstate 490 overpass in the Bushnell's Basin area caused severe local flooding with great property damage. The flood profile at the nearby Interstate 490 and Pittsford-Palmyra Road bridges on Irondequoit Creek approximated that of the Intermediate Regional Flood."[3]

Additional information on this event:

- Two homes destroyed, 39 damaged
- No deaths, no major injuries
- Eight-day response by emergency service providers
- 100 million gallons of water (estimate) evacuated in the break
- event anticipated by construction workers, so guardgates were closed
- some door-to-door Public Alerting by construction workers
- canal repairs took several weeks for full operation to be restored
- third break on wall at "The Great Embankment" in 63 years (The Perinton-Fairport Post, November 2, 1994)
- 400 (estimate) evacuees in 20 minutes
- inundation area approximately 3 square miles (Office of Emergency Preparedness records)

3 U.S. Army Corps of Engineers, "Flood Plain Information on Irondequoit Creek," February 1975, p. 20.

Probability of future occurrences and potential magnitude:

While it is difficult to predict the probability of future occurrences in general, there is an ever-present threat of vulnerability. The worst case dam failure would be a sudden break, on a clear day, of the dam in the jurisdiction whose failure would imperil the largest number of people. Under these circumstances cascade effects would include the following:

- Potential for injury and death
- Property damage
- Power failure
- Water shortages
- Sewer system failure
- Hazardous materials release
- Transportation accidents[4]

In New York State, certain dam owners are required to prepare and maintain "Emergency Action Plans." NYSDEC may conduct investigations/inspections of dams and assign safety ratings to the structural integrity of the dam (NYSDEC, "Dam Safety Regulations: 6 NYCRR 673," January 1986).

The County Office of Emergency Preparedness maintains records of dam sites, owners, dam classifications, and "Emergency Action Plans" (that are shared). Guidance documents available for review include:

- NYSDEC, "An Owners Guidance Manual For the Inspection and Maintenance of Dams in New York State," June 1987.

- FEMA, "Civil Preparedness Guide: National Dam Safety Program for State and Local Officials," September 1988.

- SEMO, "New York State 406 Hazard Mitigation Plan" September 1986.

Maps of hazard areas:

Map #6, Dam Locations – intentionally left blank

The NYS Department of Environmental Conservation (NYSDEC) regulates dams. Monroe County's inventory of dams includes 79 dams in these classifications: 9 High Downstream Hazard, 3 Moderate Downstream Hazard, 28 Low Downstream Hazard, and 6 No Downstream Hazard. Thirty-three dams are not classified by NYSDEC.

These locations are not shown on the "Waterways" map for security purposes.

This information, together with inundation maps for the Mt. Morris Dam and the NYS Canal are on-file at the County Office of Emergency Preparedness.

4 HAZNY

Analysis of the impact on business, infrastructure & critical facilities:

There could be a significant impact overall due to the aforementioned factors in potential magnitude.

Specific information concerning estimated value ($) of potential loss, damage to structures, casualties, etc:

In the absence of specific event information, we consider that:

- "Dam failures are sudden events which often occur with little or no warning time. While monitoring/warning equipment and methods exist, they are not widely used.

- "The population within the inundation zone will determine the number of potential casualties. This number of potential casualties must be measured against the area's emergency medical system to determine the impact on people.

- "Direct impact on private (residential, commercial and industrial) property is certain for those properties located in the inundation zone, depending upon the level of development within the inundation zone.

- "Any government buildings, roads, bridges and water/sewer lines located in an inundation zone will most certainly be damaged in the credible, worst case dam failure.

- "The initial water surge will continue for a relatively short time after breach of the dam. After this initial surge, water will continue to flow through the downstream inundation area at a reduced flow and flood waters will likely remain up to several days.

- "The typical recovery period following a credible, worst case dam failure would last several weeks, before conditions would return to normal. However, the actual impact of any particular dam failure can vary widely depending on the inundation zone" (HAZNY).

County data on loss associated with the Canal Break in Bushnells Basin is limited, and it is available in documents with the "1994 Canal Break: Disaster Response File."

Notes on data limitations: Time and record access

Appendix B-14

Hazard Specific Analysis: Transportation Incident

Definition:

"Mishap involving one or more conveyances on land, sea, and/or in the air which results in mass casualties and/or substantial loss of property."[1]

Description:

"Transportation Incident, rated at 238.8, is a regular event wherein emergency forces respond to serious highway multi-casualty accidents between once a year and once every seven years. An incident, highway or other, resulting in mass casualties could occur in any of several individual locations. The presence of the Greater Rochester International Airport, the Thruway (I-90) and other Interstate arteries, the railroad, underground pipes, and navigable waters provide the potential for a credible worst case event."[2]

Overview of specific hazard locations and the extent of the hazard:

Locations are general with the exception of main routes and locations as follows:

- Greater Rochester International Airport
- private airstrips
- Erie Canal
- Amtrak and CSX
- Routes 490, 31, 250, 96, 31F & 353
- underground pipelines

Previous occurrences of the hazard:

All previous occurrences are too numerous to list in detail. Data on significant events includes:

RE: Air. The following chart reflects information from the records at the County Office of Emergency Preparedness (OEP).

ALERT *	1995	1996	1997	1998	1999	2000	2001	2002	2003 to date
II	4	9	10	14	13	25	19	17	9
III	1								
Off-Site Crash	1				1		2	1	

*Definitions

1 HAZNY
2 Monroe County Hazard Analysis Report by SEMO, January 1999

"ALERT II - A large aircraft landing experiencing any emergency that hinders normal flight operations to the extent that there may be potential for an accident. An Alert II may be upgraded at any time by the Airport Fire Chief or the Airport Fire Captain. During an Alert II the Incident Commander may close all or part of the Airport as needed.

"ALERT III - A major airport accident on or in the vicinity of the airport with the possibility of many casualties requiring full implementation of the Airport Emergency Plan and AIRDIP.

The Airport shall be CLOSED upon Alert III declaration.[3]

OEP files on these and other events, contain further detail than this summary:

- July 2, 1963. The newspaper headline read, "AIRLINER TOLL: 7 DEAD, 36 HURT, Mohawk Takeoff Fails in Violent Storm, 1st Liner Crash At Port Here" (Democrat & Chronicle, 7-3-63). "Not a seat was empty aboard Mohawk Airlines Flight 112 when it attempted to take off from the Rochester-Monroe County Airport in a severe thunderstorm 40 years ago this week. The twin-propeller Martin 404, bound for White Plains, Westchester County, cartwheeled wing-over-nose at the airport, broke apart and exploded at 4:49 p.m. on July 12, 1963. Of the 43 people aboard, seven were killed and 30 were seriously injured, including a man whose burned face had to be rebuilt, another who became paralyzed and another who lost a leg. It remains the Rochester area's worst aviation disaster" (Democrat & Chronicle, 6-29-03).

- July, 1964. A helicopter crashed in the City of Rochester. It was carrying the Civil Defense Director, Robert Abbott, on a survey of the area most severely impacted by the Civil Riots. Mr. Abbott later died of his injuries.

- May 19, 1973. An "American Airlines DC-10 jumbo jet skidded off the runway during a landing. None of the 213 persons aboard was injured, and the plane was pulled from axle-deep mud a few days later" (The Times-Union, 7-10-78).

- July 9, 1978. Allegheny Airlines Flight 453 (a BAC-111), from Boston "crashed into a ravine at the end of the runway. The Plane, carrying 73 passengers, swerved . . . crossed a ravine, and came to rest 150 yards beyond the runway, short of the railroad tracks. Thirteen persons were treated at three area hospitals for cuts, bruises, and scratches – all were released after treatment" (The Times-Union, 7-10-78).

- April 6, 1995. "American Eagle Flight 4905, bound for Rochester from Kennedy Airport . . . with 24 passengers and crew on board, landed at the airport about 7:28 p.m. without its nose landing gear, which was jammed in the up position. The Saab SF-340B skidded on its nose down the runway, but nobody was injured in the landing . . ." (The Times-Union, 4-7-95). The County's Emergency Operations Center was activated for forty minutes, per procedure for an ALERT III at the Airport.

3 Definitions are from the Greater Rochester International Airport, "Emergency Plan (1-1-02 Revision)," p. 10

- October 10, 1995. A private plane carrying two people catches a wheel in power/telephone lines while attempting to land at the Honeoye Falls Airport. The plane is flipped and lands on a car below that was traveling on West Main Street. One of the three victims later died of the injuries he sustained in the crash. The Airport Fire Department (Rescue 4) responded to the scene. The highway was closed until the plane and car were removed and NTSB finished its site investigation. Since this crash a "Notice to Pilots" restricts the direction of take-offs and landings.

- September 19, 1999. "On Sunday, Sept. 19, at about 10:30 a.m., Honeoye Falls resident Jeffrey Cooper of Cheese Factory Road tried to land his Cessna 172 on the air strip at the Ev Lewis Ford Garage on Main Street. A man walking his dog on the runway caused Cooper to swerve the plane, and in so doing, he crashed into the trees on the side of the runway. Cooper was taken to Strong Memorial Hospital but apparently suffered only minor injuries. The accident is still under investigation by the Federal Aviation Administration" (The Sentinel, 9-23-99).

- August 12, 2001. Plane crash, 2400 Colby Road in the Town of Sweden. The Brockport Fire Department responded to the site. There were two victims onboard the plane.

- September 11, 2001. "The Attack on America." Four commercial airplanes were hijacked by terrorists who used them as weapons of mass destruction. Two were deliberately crashed into the Twin Towers of the World Trade Center in New York City; one targeted the Pentagon in Washington, D.C.; and, one crashed in a field in Pennsylvania. All aboard were killed, along with hundreds of others at the crash sites.

- December 5, 2001. A small, single-engine plane crashed off West Ridge Road in the Town of Parma. The pilot was severely injured.

- November 14, 2002. A single engine plane crash landed on an athletic field near a parking lot for Strong Memorial Hospital, just off the intersection of Crittenden Blvd. and Kendrick Road. The pilot was killed. No other injuries.

RE: Marine Transport. Boating incidents of some type, i.e. fire, collision, medical emergency, mechanical failure, water infiltration, are frequent events addressed by the County Sheriff, the U.S. Coast Guard, and the boating public.
Several years ago there was a crash on the east bank of the Genesee River near the U.S. Coast Guard Station, involving a private boat. There were serious injuries that required victim transport to the hospital.

RE: Railroads.

- September 7, 2001. An eastbound CSX freight train derailed on its overpass with Ames Street in the City of Rochester. No fatalities. No injuries. "The train had about 80 cars, including 67 empty rail cars and 14 cars with cargo. About two-thirds of the train's cars had passed the bridge before the derailment. Among them were some loaded with an acidic compound that were not disturbed" (Democrat & Chronicle, 9-8-01). The street was closed until the overpass was inspected to verify its structural integrity and to facilitate clean-up. Rail traffic ceased until the line was cleared and repaired.

- December 23, 2001. CSX derailment in Charlotte neighborhood within the City of Rochester. "CSX has publicly taken responsibility, blaming a worker who failed to properly set the train's brakes" (Democrat & Chronicle, 7-10-03).

  Loss of Life. None

  Personal Injuries. Some residents and emergency services providers

  Property Damage: destroyed private home (partial settlement, $200,000)
  destroyed privately owned boats and cards
  damaged structures by fire, explosion
  railroad track and cars

  Business Loss: shut down a year-round Marina (Democrat & Chronicle, 7-26-03)
  delayed Spring opening of seasonal businesses
  disrupted product shipment by rail

  Transportation System: severed highway pattern, and destroyed section of highway
  required reconstruction and new pattern design
  required rail reconstruction

  Environmental Damage: soil and Genesee River received spill of diesel fuel, acetone, and methylene chloride; air emission from fire and smoke

  Legal Activity: residents, businesses, City, CSX, Kodak

  Claims: property damage, business loss, medical expenses, mental anguish

Rail/auto incidents have resulted from motorists trying "to beat" the train at grade crossings, from motorists who have stalled at crossings, and from suicide attempts. A Gates Police car was struck trying to slow an oncoming train.

Rail/pedestrian deaths have been the result of people trespassing on the railroad's private property. People walk and/or cross the tracks as "shortcuts," to access specific locations – like the Pittsford teenagers who used a trestle to jump into the Erie Canal – and to commit suicide. These personal encounters, by auto and as pedestrians are much too frequent occurrences. The most recent was a pedestrian in East Rochester, on August 3, 2003, with a CSX freight train (Democrat & Chronicle, 8-4-03).

RE: Highways

- March 31, 1995. A gasoline tanker left Route 390 southbound, just west of it's underpass with NYS Route 15A, in the Town of Brighton. The driver died of his injuries. Multiple emergency response services assisted, including an Airport Crash Truck for foam. Interstate Route 390 was closed in both directions, and then only southbound. Route 15A was closed until the structural integrity of the bridge could be assured. Several businesses and public facilities were advised to shelter-in-place until the fire could be suppressed – Monroe Community College and its Daycare facility, Monroe County

Correctional Facility, Rochester Operations Center for County Department of Environmental Services, the County's Fleet Garage, the County Children's Detention Facility, and the County Community Hospital (a skilled nursing facility). Gasoline and run-off entered the storm water drainage system and then the Erie Canal which accepts drainage from Route 390 as it runs parallel to the Canal. As burning gasoline entered catch basins and flowed downstream in this system, explosions blew-off manhole covers along its conveyance to the Canal. Remedial activities for environmental clean-up and repairs to the highway took months (County Office of Emergency Preparedness Response File).

- April 29, 2003. Tanker Fire at Lake Avenue and West Ridge Road in the City of Rochester. "On April 29, the tanker truck carrying more than 12,000 gallons of gasoline flipped onto its side on West Ridge Road just east of Lake Avenue. The spilled fuel sparked a blaze that killed one woman, injured 11 people and damaged 23 houses" (Democrat & Chronicle, 6-28-03).

  Loss of Life. One in the fire. One about five weeks later from a heart attack that may be related to the incident.

  Personal injuries. Eleven people.

  Property Damage: 23 houses
  automobiles, vehicles, and other personal property

  Transportation System: highways closed for emergency response
  highways closed and lanes reduced for recovery phase
  highway design and maintenance investigated

  Environmental Damage: soil infiltration (from gasoline)
  air emission from fire and smoke
  natural landscape from fire and intense heat

  Legal Activity: residents, trucking company, truck driver, City

  Claims: property damage, faulty highway design and maintenance, wrongful death, personal expenses

Monroe County experiences Motor Vehicle Accidents (MVAs) on a daily basis. There have been MVAs involving school buses, e.g.:

- October 30, 1992. School Bus and City Fire Truck at North Plymouth Avenue and Platt Street. Thirty children, two adults on the bus, and four firefighters on the truck all sustained non-life threatening injuries (Merklinger letter to Riley, 10-30-92).

There have been MVAs involving motorists going the wrong way, e.g.

- October 26, 1981. Route 390; Driver fatality in head-on crash. Other car driver seriously injured, but survived.

- January, 1992. Route 390; Driver survived; was convicted of DWI and manslaughter. Other car driver was killed.

- November, 2000. Inner Loop in the City of Rochester. Three people involved, injured, treated and released.

- Februrary, 2001. Route 390. Driver left highway and crashed. Driver injuries.

- August, 2001. Route 590. Driver treated and released after hitting an on-coming tractor-trailer truck. Truck driver not injured.

- July 13, 2003. Route 104. Three fatalities – driver and two people in the car she hit head-on (all incidents, Democrat & Chronicle, 7-15-03).

And, there have been local MVAs involving older people. The question of an aging population and driver licensing has been questioned across the nation since an 86-year old man sped through a crowded market in Santa Monica, California killing ten and injuring about fifty others (Gary Bogue, Letter-to the-Editor, Democrat & Chronicle, 8-9-03).

And, we have had some "unique" incidents. During the very early morning hours on October 20, 1994 a deer/truck "encounter" resulted in a break on the truck's hydraulic lines. This encounter was not realized by the driver and he continued onto his destination. By the time he traversed almost ten miles of local and interstate highways, he left a spill that created slippery surfaces for rush-hour traffic. These highways were closed as MVAs occurred, and they remained closed most of the day for clean-up and remediation (Bechle letter to White, 12-2-94).

We have also had MVAs involving trucks hitting overpasses and/or becoming stuck. Some become wedged when the clearance is not adequate to accommodate the vehicle height given the angle of the road with the overpass. Others are too high for the clearance. And, still others had equipment in tow that was improperly secured resulting in excess height for clearance.

Transportation incidents can cascade from other events. Examples are:

- October, 1974 – Canal break closed local roads
- Blizzards of 1966, 1977 – roads impassable, trains stopped, gasoline and heating fuel shortages
- Blizzard of 1999 – hundreds of stranded motorists. Thruway exits with Rochester area were closed to accommodate our local conditions
- September 11, 2001 – U.S. airspace closed for several days
- Ice Storms of 1991, 2003 – roads closed by downed power lines and tree debris
- December 2001 Train Derailment – portion of River Street obliterated
- Floods of 1993, 1998 – roads closed, utilities out

Conversely, transportation incidents can cause cascade events. MVAs can cause power failures if poles, lines and/or transformers are involved. Many incidents involve hazardous materials that are in transit. And MVAs cause damage to public and private properties.

Probability of future occurrences and potential magnitude:

Incidents involving personal vehicles will continue to occur on a daily basis. There is a high probability for future occurrences involving commercial vehicles. The potential magnitude of any event is dependent on the mode of transportation and the circumstances surrounding the incident.

Recognizing the potential of incidents given the various transport modes in our community, emergency plans include:

- *Monroe County Hazardous Materials Response Plan: November 2002 Revision*
- *Monroe County NYS Thruway Exit 46 Emergency Plan*
- *Monroe County Railroad Emergency Plan*
- *Greater Rochester International Airport Emergency Plan* (since June 15, 1965)
- *Monroe County Aircraft Emergency Disaster Plan: Off-Site of the Greater Rochester International Airport*
- *Monroe County Marine Emergency Plan*

And, other levels of government have plans:

- New York State Canal Corporation
- U.S. Coast Guard *Eastern Great Lakes Area Contingency Plan: Volume 3, Rochester/Oswego*
- SEMO *New York State Off-Site Air Disaster Plan*

The emergency plans set policy and procedures that are the focus of agency training and testing through drills and exercises. Some training and testing is mandated, e.g. the Airport's Plan, by the Federal Aviation Administration (FAA). By its own policy directive, a pipeline owner/operator hosts annual refresher training for emergency responders where the line crosses their jurisdictions.

This community is proactive. Government and the private-sector have, and continue to forge, partnerships that assist preventive measures, like emergency plans, and response activities. Examples include:

- <u>The Regional Transportation Operations Center (RTOC)</u> that opened in the summer of 2002. This Monroe County facility houses a NYS Police sub-station, Airport Operations, and County DOT Traffic Signals (for County, City of Rochester, and NYS).

- <u>Traffic Signal Pre-Emption</u> for City Fire Vehicles with the traffic signals, so the trucks can signal a red light at the signalized intersections with opposing traffic.

- <u>Traffic signal operations</u> that allow computerized interface at RTOC for instant recycling of the signal. This allows immediate access to signals on alternate routes to accommodate fluctuations in traffic volumes for posted detours and recommended alternate routes.

- <u>Participation with the federal "Smart Highway" program</u> to implement highway pavement detectors, highway variable message signs, traffic advisory radio frequencies, and highway cameras.

- Use of pre-construction meetings with all interested parties, public and private, to ensure understanding and coordination of resources, especially for emergency services.

- Extension of emergency communication services to state and federal agencies that maintain a local presence, like the NYS Department of Transportation, and the U.S. Coast Guard which has direct access to local emergency radio frequencies, local tone alert radios, and a Mobile Data Terminal (MDT) to receive a printed version of calls received at the County's 911 Center.

- County contract with NOAA/NWS to up-grade an existing NWS transmitter and purchase a second transmitter for a County site to enhance local reception for residents and marine interests. The County is gifting equipment and providing transmitter sites in return for direct access to the National Weather Radio system if we are unable to contact the Buffalo Station and request activation for a local emergency broadcast.

Maps of hazard areas:

Pertinent maps include:

Map #2, Waterways

Monroe County has many natural and artificial waterways. Some are navigable, many are used for recreational purposes. Sources for the map we created include the U.S. Geological Survey, the National Wetlands Inventory, and the NYS Department of Environmental Conservation (NYSDEC). Features include: name of waterway, stream gage locations, NYSDEC stream classification, flood mitigation ponds, watersheds, and federal and state-regulated wetlands. Dams are not identified for security purposes, nor are the flood protection structures on the Erie Canal.

Map #7, Transportation Corridors

Monroe County's natural landscape is criss-crossed by multiple transportation corridors for rail, highway, marine, and air traffic. The active rail lines, inter-state, state and local highways, the navigable waterways, the outer boundary markers of the commercial airport, and several private landing strips are mapped.

Analysis of the impact on business, infrastructure & critical facilities:

included in previous sections

Specific information concerning estimated value ($) of potential loss, damage to structures, casualties, etc:

included in previous sections

Notes on data limitations: Time and record access

Appendix B-15

Hazard Specific Analysis: Landslide

Definition:

"Downward and outward movement of slope-forming materials reacting to the force of gravity. Slide material may be composed of natural rock, soil, artificial fill, or combinations of these materials. The term landslide is generalized and includes rockfalls, rockslides, creep, block glides, debris slides, earth-flow, mud flow, slump and other similar terms."[1]

Description:

"Landslide, rated at 237.8, is a frequent event occurring more than once a year. Landslides usually happen as a result of flooding and erosion along a shoreline or streambank. A credible worst case event may not result in serious injury or death, nor would it necessarily cause significant damage to private or public property. The fact that it has been a frequent event places it in the Moderately High category."[2]

Overview of specific hazard locations and the extent of the hazard:

Landslides may affect any part of the area, where large earthen slopes may be found, however, these areas have been found to be most susceptible:

- Streambanks.
- Specific areas within Monroe County's parks.
- Open mine pits.

Previous occurrences of the hazard:

There have been a number of occurrences in the recent past, however, none have caused personal injury, and none have required EOC activation.

1993, 1997, 1998. High water levels on Lake Ontario exacerbate erosion. Erosion occurs as a result of high water and/or wave action against the shoreline. Erosion escalates when the Lake level reaches 246.3 feet. In these years, erosion swallowed land mass, trees and other vegetation, and artificial fill that property owners utilized as bank stabilization, some of which was placed through a U.S. Army Corps of Engineers "Advanced Measures Program" in the 1970's. Natural features have also been adversely affected by landslide. Cliffs along the shoreline in the Town of Webster, and along the Irondequoit Bay have been eroded. In 1998, severe erosion exposed a sanitary sewage transmission main near Sea Breeze, in the Town of Irondequoit, prompting emergency measures for repair and a call for immediate protective relief from the International Joint Commission that regulates lake level.

April 2, 1997. A house on the west side of Irondequoit Bay, in the Town of Irondequoit, slid off its

1 HAZNY
2 Monroe County Hazard Analysis Report by SEMO, January 1999

foundation into the Bay. No one was home at the time. No other properties were damaged. A mystery remains: did a water service break at the house site cause the slide, or did the slide rupture the water service? (Greg Merrick, Irondequoit Fire Marshal, telephone interview, 8-12-03)

January, 1998. In the Town of Webster, a basement wall on the uphill side of the house collapsed from the pressure of saturated soils and downhill drainage.

Landslides can cause cascading events such as utility failures, fires, explosions, and hazardous materials incidents. Or they can be a cascade event from other hazards e.g. flooding, earthquake, dam failure, and structural collapse.

Probability of future occurrences and potential magnitude:

Probability of future occurrences is likely. The magnitude of this event will be determined by its size and location, as well as the structures found within its path. Zoning and other land-use regulations attempt to restrict and/or prohibit development on steep slopes. And municipalities strive to enact Local Laws to compel mining operators to remediate steep slopes as part of the operational closing process.

Maps of hazard areas:

Map #2, Waterways

The area has many natural and artificial waterways. Some are navigable, many are used for recreational purposes. Sources for the map we created include the U.S. Geological Survey, the National Wetlands Inventory, and the NYS Department of Environmental Conservation (NYSDEC). Features include: name of waterway, stream gage locations, NYSDEC stream classification, flood mitigation ponds, watersheds, and federal and state-regulated wetlands. Dams are not identified for security purposes, nor are the flood protection structures on the Erie Canal.

Map #8, Steep Slopes

One of the areas at risk for landslides is ground with a 15% or greater slope. The area geography meeting this criteria is mapped.

Map #11, Geological Faults

U.S. Geological Service maps faults and other features that contribute to our vulnerability from an Earthquake. The map identifies the layers of aquifers, bedrock geology and surface geology. Seismographs are located in our area at the University of Rochester, Ginna Station, and the Mt. Morris Dam.

Analysis of the impact on business, infrastructure & critical facilities:

This event may cause:

- Injury or death, generally in limited numbers.
- Damage to roads and highways, buildings and other structures.
- This event may cause cascade events, such as power failures, fires, hazardous materials spills/leaks.
- This event can complicate emergency response (high angle or search and rescue capabilities may be required).

Specific information concerning estimated value ($) of potential loss, damage to structures, casualties, etc:

Known information is provided in other sections.

Notes on data limitations: Time and record access

Appendix B-16

Hazard Specific Analysis: Radiological (Fixed)

Definition:

"Release or threat of release of radioactive material from a nuclear power generating station or research reactor or other stationary source of radioactivity."[1]

Description:

"An infrequent event that potentially could include a large, multi-jurisdictional area, and result in property damage, contamination of farm and water supplies, and economic damage."[2] The threat of a radiological event at a fixed facility is always a possibility because of the proximity of the Ginna Nuclear Power Station. There are substantial safety features and security measures in place at this facility, however by its existence and operational proximity this hazard has a rating of 236.2.[3]

Overview of specific hazard locations and the extent of the hazard:

"Commercial nuclear power generating facilities have the greatest concentration of radioactive materials of any private source. There are three nuclear sites in New York State. The three nuclear power sites are Indian Point in Westchester County; Nine Mile Point in Oswego County; and Ginna in Wayne County. There are numerous small research reactors and other facilities that use radioactive materials in New York State.

"For commercial reactors the areas of risk from exposure to radiation releases are designated as (1) within the Plume Exposure Emergency Planning Zone (EPZ) of such sites (within a 10 mile radius of a site) for direct exposure or (2) within the Ingestion Pathway Emergency Planning Zone (within a 50 mile radius of a nuclear site) for exposure through the food chain. A credible worst case event of a radioactive release from a fixed site could affect a large region around the nuclear power site."[4]

The Ginna Nuclear Power Station is located on the South Shore of Lake Ontario in Wayne County. The federal Emergency Planning Zone (EPZ) and its 10-mile radius overlay portions of the towns of Webster and Penfield, and the Village of Webster. The 10-mile EPZ is sectored into Emergency Response Planning Areas (ERPA'S) for Emergency Management purposes. In coordination with New York State, and as tested by the Federal Emergency Management Agency, Monroe and Wayne County plans address public alerting and notification, emergency response, special need populations, evacuation routes, detection and monitoring, decontamination, and public health among other topics. The *Monroe County Radiological Emergency Preparedness Plan* and community Public Safety providers are annually tested on their readiness and response.

Previous occurrences of the hazard:

1 HAZNY
2 HAZNY
3 Monroe County Hazard Analysis Report by SEMO, January 1999
4 HAZNY

Classification Level*	1975	1982	1983	1984	1985	1986	1987	1988	1989	1991	1994	1995	1999	2003
NUE	**9**		**1**	**1**	**1**	**1**	**1**	**7**	**2**	**2**	**2**	**1**	**1**	**1**
SAE		**1**												

Source: Letter from Peter Polfleit, RG&E, 8-11-03; Monroe County Office of Emergency Preparedness records

*Definitions:

"Emergency Levels. Four classes of Emergency Action Levels have been established by the Nuclear Regulatory Commission (NRC) and incorporated into all Radiological Emergency Preparedness planning. Each class requires a different degree of response by the state, counties and RG&E. The four classes are:

"Notification of an Unusual Event (NUE) – (the lowest classification) Notification of an Unusual Event means a small problem has occurred. No radiation leak is expected. Federal, state and county officials will be told right away. No action on your part is necessary.

"Alert – Alert means a small problem has occurred and small amounts of radiation could leak inside the station. This will not affect you. Federal, state and county officials will stand by. You should not have to do anything.

"Site Area Emergency (SAE) – A Site Area Emergency is a more serious problem. Small amounts of radiation could leak from the station. If necessary, state and county officials will act to assure public safety. Area sirens may be sounded. Listen to the radio or television for detailed information.

"General Emergency – A General Emergency is the most serious classification. Radiation could leak outside the station and off site. The sirens will sound. Tune to an EAS radio or television station for reports. State and county officials will act to assure public safety. Be prepared to follow their instructions promptly" (RG&E, 2003 Calendar, p. 2).

Probability of future occurrences and potential magnitude:

Despite its safe operation and stringent facility security, nuclear facilities nationwide are potential targets for terrorist attack.

Maps of hazard areas:

Map #9, Radiological (Fixed)

Area geography within the 10-mile Emergency Planning Zone of Ginna Station is mapped to identify: the Emergency Response Planning Areas, special-population facilities, siren locations, and traffic control points.

Analysis of the impact on business, infrastructure & critical facilities:

Impact on business and infrastructure could be significant depending on the magnitude of the event. Critical facilities such as hospitals and nursing homes could be overwhelmed. Public Safety providers could be taxed to need Mutual Aid assistance.

"If an uncontrolled release of hazardous materials occurs from a fixed commercial site, its impact on people depends on the Emergency Planning Zone in which they are located. The Plume Exposure Pathway is the area within a 10-mile radius of a nuclear site. This Zone is where direct human exposure to radioactive material could occur. In the event of a credible worst case event, private property could be contaminated in the 10-mile Emergency Planning Zone with water, agriculture and livestock being contaminated in the up to 50-mile Emergency Planning Zone. There should be at least several hours warning in a credible worst case event for research facilities and commercial nuclear reactors. For a credible worst case event the radiation release hazard could remain in the environment for more than one week. This applies to the full 50 mile Emergency Planning Zone. For a research facility, the appropriate choice should be two or three days. It would likely take more than two weeks to recover from a credible worst case event. For a research facility the appropriate selection would be three days to one week" (HAZNY).

Specific information concerning estimated value ($) of potential loss, damage to structures, casualties, etc:

Detail included in other sections

Notes on data limitations: None

Appendix B-17

Hazard Specific Analysis: Windstorm

Definition:

"A storm with winds in excess of 55 mph accompanied by little or no precipitation."[1] Windstorms are also defined "as an event with sustained wind speeds of 40 mph or greater lasting for 1 hour or longer, or winds of 58 mph or greater for any duration."[2]

Description:

This is a regular event in the area, and may result in cascade hazards, such as power failure and transportation events. While these events generally pass without significant damage, there have been occurrences of loss of life, injury and structural damage. Roads and waterways have been blocked due to fallen trees and debris. The frequency of this event and its potential intensity are factors in this hazard's rating of 216.2.[3]

Windstorms have historically been associated with thunderstorms according to National Weather Service data.

"The damaging winds associated with some storm systems are called derechos. A derecho is a widespread convective windstorm made up of complex thunderstorm cells that usually develop into squall lines or even the more impressive Mesoscale Convective Complex. Although the destructive path of these winds can extend for hundreds of kilometers along the storm's path, they are not to be confused with tornadoes. Instead they are in the same family as downburst winds and move primarily from northwest to southeast" (Glenn Johnson, Meteorologist, Democrat & Chronicle, 7-5-03).

Overview of specific hazard locations and the extent of the hazard:

All or part of the area may be affected by Windstorms. Most susceptible are:

- Structures, especially those of less sustainable construction e.g. mobile homes, storage sheds
- Trees
- Utility lines and poles
- High-rise buildings in the urban environment

1 HAZNY
2 National Weather Service, Storm Data Report, May 28, 2003
3 Monroe County Hazard Analysis Report by SEMO, January 1999

According to National Weather Service data for Monroe County:

- Between 1993-2002, there were 14 occurrences of High Wind (synoptic), and
- In the same period, the Buffalo Office issued 13 High Wind Warnings. Ten were verified.[4]

Previous occurrences of the hazard:

NOTE: Unless otherwise noted, all information is from the National Weather Service, Storm Data Report, May 28, 2003.

Monroe County activated the EOC for wind related events in 1992, 1995, and 1998.

- November 12, 1992. The County EOC was activated for 13.25 hours for a severe wind storm that knocked-out power, downed trees and power lines (County Office of Emergency Preparedness, Disaster Response File: *1992 Wind Storm*).

- August 13, 1993. Thunderstorms developed in a moist flow ahead of a cold front. The thunderstorm winds downed trees and power lines. Hail up to an inch in diameter was reported with the storms. Some structural damage was reported from fallen trees and limbs. Damages were estimated at $4,000.00 for Fairport.

- August 28, 1994. Thunderstorms developed in a moist, southwest flow ahead of a cold front. The thunderstorm winds downed trees and power lines, resulting in power outages scattered across the region, including Webster and Spencerport. Damages were estimated at $4,000.00.

- June 26, 1995. Severe thunderstorms moved across portions of Western and Central New York. The thunderstorm winds downed trees and power lines. Power outages were scattered across the entire area. Damage estimates were estimated at $6,000.00 for Pittsford and $10,000.00 for Macedon Center.

- July 6, 1995. Severe thunderstorms moved across the area ahead of a cold front. There were numerous reports of downed trees and wires and power outages. Damages were estimated at $8,000.00 for Penfield.

- July 15, 1995. The County EOC was activated for 3 hours to assist coordination of resource identification and deployment to northern New York State after a "Wind Burst" (County Office of Emergency Preparedness, Disaster Response File: *July 1995 North Country Wind Burst*).

- July 17, 1995. Thunderstorms with wind caused damages estimated at $4,000.00 for Brockport.

4 National Weather Service, Storm Data Report, May 28, 2003

- August 3, 1995. Severe thunderstorms crossed the area resulting in fallen trees and power lines, nearly continuous lightning and record rainfall. In Monroe County, traffic was disrupted by flash flooding caused by over two inches of rain in a very short time. Numerous power outages were also reported. Damages were estimated at $25,000.00 for Rochester, $5,000.00 for Henrietta, and $35,000.00 for the County.

- August 31, 1995. A fast moving line of severe thunderstorms crossed the region causing widespread damage. There were countless reports of downed trees and power lines, many onto cars and houses. Several SKYWARN observers recorded wind gusts of 60-70 mph as the storms moved through. Damages were estimated at $8,000.00 for Irondequoit.

- January 27, 1996. Deep low pressure over the upper Great Lakes brought strong winds to the area. The high winds downed trees and power lines in Mendon. Damages were estimated at $15,000.00.

- March 25, 1996. Thunderstorms accompanying a cold front produced damaging winds, which downed trees and power lines. Damages were estimated at $20,000.00.

- April 20, 1996. Severe thunderstorms developed in the late afternoon. The thunderstorms dropped large hail across the region. Thunderstorm winds downed trees and power lines. Damages were estimated at $15,000.00 for Hamlin.

- May 20, 1996. A line of severe thunderstorms crossed the area producing damaging winds. The thunderstorm winds downed trees and power lines. In Riga, the winds damaged a large road sign. Damages were estimated at $35,000.00.

- June 22, 1996. Severe thunderstorms produced damaging winds, which downed trees and power lines. Damages were estimated at $8,000 for Irondequoit.

- October 30, 1996. Low pressure moving northeast across Lake Superior brought strong winds to the area. The winds brought down trees, tree limbs, and power lines. In Penfield, two persons were injured when a tree fell on the car they were driving. Winds gusted to 52 mph. Damages were estimated at $25,000.00.

- February 22, 1997. A strong cold front crossed the region during the morning hours. Temperatures dropped 40 to 45 degrees with the passage of the front. The funneling effect of the Great Lakes combined with rapid pressure rises behind the front combined to produce hazardous winds. Trees, power lines and poles were downed across the entire area. Hundreds of thousands were left without power. Reports of homes and autos damaged by the falling trees and limbs were numerous. The strong winds caused structural damage in some locations tearing off roofs and shingles, blowing-out windows, and collapsing walls. Air travel from the Buffalo and Rochester airports was interrupted. A 54-year-old volunteer fireman was killed in Spencerport while responding to an emergency call when a large tree fell on his car crushing him. His 15-year-old son also riding in the car suffered injuries. Reported gusts included: 61 knots at Rochester. Damages were estimated at $500,000.00.

- February 27, 1997. Deep low pressure moved from Indiana to Ontario bringing high winds to the area. The strong winds downed trees and telephone and power lines. Power outages were reported throughout the area. Several cities and towns declared States of Emergency because of the prolonged lack of power. Windows were blown-out of buildings. The strong winds caused structural damage in some locations tearing-off roofs and sidings and collapsing walls. Home and autos were damaged by falling limbs. An electric lineman was injured in Perinton, when he was knocked from a pole by a falling tree. Damages were estimated at $150,000.00.

- July 15, 1997. Strong thunderstorms crossed the region during the afternoon hours. The thunderstorm winds downed trees and power lines. Scattered power outages lasting several hours were reported. In Henrietta, a dozen utility poles were downed by the thunderstorm winds leaving nearly 24,000 customers in the Rochester area without power for several hours. Damages were estimated at $75,000.00 for Henrietta.

- September 29, 1997. Severe thunderstorms rolled across the area during the evening hours producing damaging winds estimated at sixty to seventy miles per hour. The winds downed trees and power lines and resulted in thousands being left without power. Damages were estimated at $15,000.00 for Penfield.

- March 28, 1998. A fast moving squall line crossed the area during the afternoon hours. Winds, gusting over 70 mph, downed numerous trees and wires. Power outages were reported throughout the area. Damages were estimated at $40,000.00.

- May 31, 1998. An outbreak of severe storms began across the region during the early morning hours. The storms were particularly dangerous because of their speed moving across the region – sometimes in excess of 60 mph. Most of the damage associated with these storms occurred from a combination of high winds and hail. There were reports of numerous trees and wires down as well as power outages. Tens of thousands were without power. Several flights were delayed or cancelled at the Buffalo and Rochester airports due to the storms. Damages were estimated at $18,000.00 for Gates Center, $17,000.00 for Hamlin, $15,000.00 for Scottsville, and $15,000.00 for Rochester. There was one reported injury – a person in Henrietta was struck by lightening.

  A second round of storms for the day moved across the region during the evening hours. Again the thunderstorms produced high winds, large hail and torrential rains. Trees and power lines were downed across western New York. In the Rochester area, the power company reported 30 poles snapped by the winds and 40,000 customers were without power. Lightning throughout the area shattered trees and set a number of fires. At Locust Hill Country Club, the nationally televised Ladies Pro Golf Association tournament was delayed four times by the storms. Damages were estimated at $30,000.00 for Rochester.

- June 16, 1998. Scattered thunderstorms crossed the area during the early evening hours. The thunderstorm winds downed trees and power lines. The heavy rains, which accompanied the thunderstorms, resulted in widespread poor drainage and urban flooding in the Rochester metro area. Damages were estimated at $40,000.00 for Rochester.

- June 25, 1998. Thunderstorms accompanied by almost continuous lightning, torrential rains, damaging winds and pea to marble-sized hail swept across the area. Over 15,000 were without power when thunderstorm winds downed power lines and poles. Damages were estimated at $10,000.00 for Webster.

- August 24, 1998. Thunderstorms moved across the southern Lake Ontario counties during the early morning hours. The thunderstorms produced damaging winds, which downed trees and power lines. Several thousand customers were left without power for several hours. Winds were estimated in some areas at 60-70 mph. Damages were estimated at $50,000.00 for Greece.

- September 6, 1998. Several thunderstorms moved onshore over northeast Niagara County shortly before midnight. The line of storms quickly moved across Orleans, Monroe, Wayne, Ontario and northern Cayuga counties. Across the area the damage path was nearly one hundred miles long and five to ten miles wide. Winds were estimated between 80 and 100 mph throughout the two-hour event. Along the entire path, damage and debris all laid in an easterly direction consistent with the damage from straight-line winds. Most of the damage consisted of downed trees and limbs. The falling trees and limbs in-turn downed power and telephone lines and resulted in damage to buildings and automobiles. Power outages, some lasting nearly a week, were widespread across parts of Orleans, Monroe and Wayne counties. Hundreds of thousands of customers were without power. The strong winds themselves also resulted in structural damage to homes, barns and buildings along the path including some in Brockport and Bushnells Basin among other locations. Several aircraft were damaged at the Rochester Airport where wind gusts were measured at 89 mph. States of Emergency were declared throughout Monroe and Wayne counties and sections of Orleans County. Monroe, Wayne, and Cayuga counties were declared federal disaster areas. The strong winds severely damaged apple crops and trees from Niagara across Orleans and Monroe through Wayne counties. Damages were estimated at $20 million for the Rochester Airport, $350,000.00 for Brockport, $1.2 million for Pittsford, and $2 million in crop damages.

  This storm, known locally as the "1998 Labor Day Windstorm," was later classified by the National Weather Service as a Derecho. Its associated straight line winds were predominant on a path that followed the Erie Canal, and NYS Route 31, from Orleans County stretching almost to Albany. The County EOC was open for 113.75 hours. The Presidential Disaster Declaration on September 22, 1998 for seven counties identified this storm as FEMA-1244-DR-NY. Reimbursement to all counties for Public Assistance was $36.1M. Of that amount, Monroe County communities received $4M (County Office of Emergency Preparedness, Disaster Response File: *1998 Labor Day Windstorm*).

- November 10, 1998. Low pressure over the Central Plains moved across the Great Lakes and brought high winds to western New York and the North Country. The strong winds, gusting to 62 mph, brought down tree limbs and power lines across the region. Several windows were blown-in. In East Rochester, several buildings were damaged as walls were blown-in. One cinderblock wall was over 30 feet high and 100 feet long. Thousands were without power as outages were scattered across the area. Power outages were reported in Victor and Rochester as well as other cities and towns in the region.

Damages were estimated at $150,000.00.

- July 3, 1999. Several thunderstorms crossed the region during the late afternoon hours. The thunderstorms produced heavy downpours, up to three inches in some spots, strong winds and large hail. The heavy downpours resulted in localized poor drainage flooding. The strong winds downed trees and power lines throughout the region. Structural damage was also reported. Greece reportedly had $25,000.00 in damages.

- July 24, 1999. Severe thunderstorms developed across the counties along the south shore of Lake Ontario. The thunderstorms produced downpours and strong winds. The damaging winds downed trees and power lines with scattered outages reported. Greece reportedly had $15,000.00 in damages.

- July 31, 1999. Violent thunderstorms ripped across western New York and the Finger Lakes Region during the evening hours. The strong thunderstorms downed trees and power lines and left hundreds of thousands without power. Several roads were blocked by fallen debris. Several of the falling trees caused damage to houses and automobiles. In Monroe County, at the Freeman Park in Mumford four people at a company picnic were injured when high winds picked up a tent and dragged it through the crowd. They were treated and released from an area hospital.

- August 4, 1999. Severe thunderstorms crossed the Finger Lakes during the late afternoon hours. The thunderstorms produced damaging winds, which downed trees and power lines. Damages were estimated at $8,000.00 for Rochester.

- October 13, 1999. A strong cold front crossed the area. The thunderstorms that accompanied the front produced damaging winds and large hail. The winds downed trees and power lines. About 10,000 customers lost their power. Falling trees damaged houses in Webster among other areas. Damages in Webster were estimated at $35,000.00.

- November 2, 1999. An intense storm, which moved from the eastern Gulf of Mexico to New Western New York, brought high winds to the region. Trees and lines were downed and power outages were scattered throughout the area. In Rochester, an overhead highway sign was blown into the path of a minivan. The driver of the vehicle, a 41-year-old male, died while his wife and daughter were not injured in the accident. Damages were estimated at $100,000.00.

- January 4, 2000. Strong winds accompanied the passage of a cold front across the area during the late morning and early afternoon hours. Trees and power lines were downed by the winds. In Rochester, a smokestack was blown over. Gusts of 55 mph at Rochester were recorded. Power outages were scattered throughout the area. Damages were estimated at $50,000.00.

- March 9, 2000. Spring thunderstorms rolled-in off Lake Ontario during the afternoon hours. The storms produced three-quarter inch hail and damaging winds that downed trees and power lines. Damages were estimated at $25,000.00.

- May 12, 2000. Thunderstorms rolled across the Niagara Peninsula and then along the Lake Ontario shore counties. Only small hail was reported with the storms, however the

storms produced hurricane-force winds. The high winds buffeted the area taking down trees and power lines. Various communities reported power outages of 12 hours or more. In Irondequoit, Kings Highway and Bayview Road caved-in as a result of erosion. Damages in Gates Center were estimated at $35,000.00.

- May 24, 2000. Thunderstorms roared across the Genesee Valley and the Finger Lakes Region during the late morning and early afternoon hours. In addition to producing hail up to one inch in diameter, the thunderstorms produced damaging winds. Damages were estimated at $8,000.00 for Henrietta.

- August 1, 2000. Thunderstorms developed along lake breezes during the afternoon hour. The thunderstorm winds downed trees and power lines. In addition to producing hail up to an inch and a quarter in diameter, the thunderstorms produced torrential rains, which resulted in localized poor drainage flooding. Damages were estimated at $25,000.00 for Brockport.

- December 12, 2000. Deep low pressure over Ohio tracked northeast across the region. The strong pressure gradient on the back side of the low combined with rapid pressure rises resulted in very strong northwest winds across the region. The damaging winds downed trees and lines throughout the area. Specific reports of damage were received from Spencerport along with many other areas outside of Monroe County. Nearly 100,000 customers were without power across the region. Flights on the morning of the 12th were either delayed or cancelled at both the Buffalo Niagara International Airport and the Rochester Airport. Damages were estimated at $200,000.00.

- February 10, 2001. Deep low pressure over the western Great Lakes moved across Ontario to Quebec and dragged a cold front across the area. Sustained winds of 20 to 30 mph were reported across the area with recorded gusts up to 76 mph. The strong winds downed trees and utility lines throughout the 14-county area. Several hundred thousand customers were without power. Roads were blocked by downed trees. There were numerous reports of property damage from the winds, mostly from trees falling on buildings and cars. Specifically, this was reported from Pittsford and Honeoye Falls along with many other areas outside of Monroe County. In Fairport, a winter carnival had to be cancelled because the high winds tore apart a large tent erected for the carnival. Damages were estimated at $300,000.00.

- February 25, 2001. Deep low pressure over the northern Great Lakes moved northeast to Quebec and pulled a strong cold front across the area. The strong winds that accompanied the system downed trees and power lines. Sustained winds of 51 mph were reported at the Rochester Airport. Damages were estimated at $100,000.00.

- May 27, 2001. Thunderstorms crossed the area during the afternoon hours producing hail up to ¾ inch in Gates Center and damaging winds estimated to 68 mph. Trees and power lines were downed by the strong winds in western Monroe County. Damages were estimated at $5,000.00 in Gates Center and $20,000.00 in Rochester.

- July 1, 2001. Thunderstorms ahead of a cold front crossed the western Finger Lakes Region and Eastern Lake Ontario counties during the morning hours. The storms produced damaging winds, which downed trees and power lines across the area. Damages were estimated at $10,000.00 in Webster.

- July 10, 2001. Strong thunderstorms moved across parts of the Finger Lakes Region during the late evening hours. The storms downed trees and power lines in Chili. Damages were estimated in Chili Center at $10,000.00.

- February 1, 2002. An intensifying storm moved across the Great Lakes and lifted northeast to the St. Lawrence Valley. Very strong winds behind the low blasted the region with wind gusts exceeding 55 mph. Trees and power lines were downed by the strong winds. Hundreds of thousands were without power…some for several days. Fallen trees and limbs littered the area and closed roads. Numerous reports of damage to homes and automobiles were received from throughout the area. Driving bans and States of Emergency were declared in several counties. Numerous school districts were forced to close on the first and several remained closed through the beginning of the following week. In Monroe County, two injuries resulted from the high winds. A man was briefly hospitalized after gusts blew apart the trailer he was working in at the Greater Rochester Airport. Also in Rochester, a woman was blown from the sidewalk into the street where she was hit by an oncoming car. Damages were estimated at $750,000.00.

- March 3, 2002. Low pressure over Indiana deepened as it moved northeast. Trees and power lines were downed. Damages were estimated at $100,000.00.

- March 9, 2002. Low pressure over Wisconsin deepened as it moved across Lake Superior and into northern Ontario. Strong winds accompanied and followed the passage of a cold front. The damaging winds affected the entire area, downing trees and power lines and causing some structural damage. Nearly 100,000 customers completely lost power with thousands of others experiencing brief power outages. In Rochester, a roof was blown-off a building supply store. In Mendon, a two-story, 100-year old barn was pushed over. Damages were estimated in Webster at $50,000 and overall at $500,000.00.

- April 28, 2002. Thunderstorms developed across the eastern Great Lakes Region during the afternoon hours. The thunderstorm's downburst winds ripped down trees and power lines. Scattered power outages were reported. Several structures and automobiles were damaged by falling trees. Wind damages were estimated at $10,000.00 in Henrietta.

- May 29, 2002. Thunderstorms developed in warm, moist, unstable air during the afternoon and evening hours downing trees and power lines. Up to 5,000 homes were without power at the peak of the storm. Damages were estimated at $25,000.00 for the Rochester Airport.

- May 31, 2002. Thunderstorms moved across the region ahead of a cold front. The thunderstorms produced damaging winds and hail up to ¾ inch in diameter. The winds downed trees and power lines and scattered power outages were reported. A home suffered damage in Bushnell's Basin. Damages were estimated at $50,000.00 in Bushnells Basin.
- June 26, 2002. Thunderstorms developed in a warm, moist, unstable flow during the late

morning and afternoon hours. Eight thousand customers lost power in the Rochester Metro area. Damages were estimated at $35,000.00 in Rochester, and $30,000.00 in Irondequoit.

- June 27, 2002. Thunderstorms developed ahead of an approaching cold front. The thunderstorms produced damaging winds which gusted to near 70 mph. Damages consisted mainly of downed trees and power lines, although some structural damage occurred. Damages were estimated in Greece at $20,000.00.

- May 11, 2003. Spencerport had straight-line winds (60-70 mph) with a localized microburst. A microburst is defined as a, "Highly localized downburst of air released from within a thunderstorm. Winds associated with microbursts can exceed 150 mph. That is equal to the force of an F-2 tornado" (Glenn Johnson, Meteorologist, Democrat & Chronicle, 5-14-03).

Probability of future occurrences and potential magnitude:

Probability of future occurrences is likely. The magnitude of this event will be determined by the duration, intensity, and location of the storm, as well as the structures found within its path.

Maps of hazard areas:

A Hazard Map is not required due to widespread geographic potential of windstorms.

Map #10, Woodlots

The NYS Department of Environmental Conservation "Woodlots" within the area are mapped and identified here because they are vulnerable to Windstorms. They are also at risk during Ice Storms, however the predominance is high winds, so we chose to catalog the Woodlot map with this hazard.

This map is useful in assisting responders in estimating the volume of debris from storms, the associated clean-up time, and the cost of clearance and disposal. When this map is overlaid with the Waterways Map (Map #2), it is a useful tool in calculating stream debris and its associated clearance costs.

Analysis of the impact on business, infrastructure & critical facilities:

This event may:

- Injure or kill, but in limited numbers.
- Damage roads and highways, buildings and other structures.
- Trigger cascade events such as power failures, transportation incidents.
- Complicate emergency response through damage to vehicles, road obstructions, compromised communication infrastructure.

Specific information concerning estimated value ($) of potential loss, damage to structures, casualties, etc:

Information referenced in other sections

Notes on data limitations: **None**

Appendix B-18

Hazard Specific Analysis: Earthquake

Definition:

"A sudden motion of the ground caused by release of subterranean strain energy, due to plate tectonics, resulting in surface faulting (ground rupture), ground shaking, and ground failure (collapse)."[1]

Description:

Earthquakes are also described as: "an infrequent and relatively minor event in the area. However, due to the presence of natural fault lines within New York State, and the resulting potential for greater magnitude earthquakes due to these geographical features, this event must be considered within the Hazard Plan."[2] Although rated moderately low at 187.5[3] the possibility and potential should not be minimized.

Overview of specific hazard locations and the extent of the hazard:

"An earthquake can occur anywhere in New York State. The most seismically active regions in the state lie in the Adirondacks and near the Canadian border along the St. Lawrence River (the Northern New York-Western Quebec Seismic Zone – Democrat & Chronicle, 4-22-02), followed by the New York City and Buffalo/Niagara/Attica regions" (HAZNY). "Between 20 and 30 faults traverse the Rochester area, but they seldom move. The Clarendon-Linden fault is one of the most significant in Western New York, running north-south from the Pennsylvania border through Allegany, Wyoming, Genesee and Orleans counties to Ontario, Canada" (Democrat & Chronicle, 9-26-98). "The possibility of a Richter magnitude 6 or greater earthquake exists. Large events have historically occurred along the Atlantic coast both north and south of New York and in adjacent Canada. The greater New York City area can expect, on average, one Richter magnitude 5 earthquake about once every 100 years (the last such event occurred in 1884).

"The ground motions associated with earthquakes in the eastern U.S. differ distinctly from ground motions in the western U.S. in several important ways. Eastern earthquakes tend to release higher rock stresses compared to their western counterparts, thereby causing the ground motions to contain more high-frequency energy. The ground motion shaking is felt more intensely in the eastern U.S. over larger distances because the Earth's crust and its rocks transmit seismic waves more efficiently, especially at high frequencies. This stronger shaking, especially at shorter periods and over larger distances is caused by the fact that the crustal rocks in the eastern U.S. tend to be older, more competent, and less riddled with seismically active faults.

"In 1993, the New York State Earthquake Code Advisory Committee recommended seismic provisions for building codes in New York State. The basis for their recommendations was an assessment of the earthquake risk in New York State. The Committee divided New York State into

1 HAZNY
2 National Weather Service, Storm Data Report, May 28, 2003
3 Monroe County Hazard Analysis Report by SEMO, January 1999

four earthquake zones. Each zone is assigned a Peak Ground Acceleration Value. This value is the basic determinant of the earthquake risk for each county in the State. It is a measure of the horizontal force on an earthquake in terms of a percentage of gravity. Thus it is expressed as "g" (e.g., 0.1g means 10% of gravity).

"The Peak Ground Acceleration Value earthquake has a 10% probability of occurring over a 50-year period or a 100% probability over 500 years. It becomes more probable of occurring than not occurring (51% probability) over a period of 255 years. For planning purposes it is believed to be the appropriate choice for a credible worst case event. The Peak Ground Acceleration Values range from 0.09g to 0.18g in New York State. The higher the value, the greater the risk. Monroe County's value is 0.15g.

"There are two other popular earthquake measuring methods, the Richter Scale and the Modified Mercalli Scale. The Modified Mercalli Scale shows the intensity of the resulting damage that an earthquake causes. The Peak Ground Acceleration approach depicts the ground motion that the earthquake produces. The Richter Scale measures the magnitude of the earthquake which is the actual energy released by an earthquake. Richter measures magnitude only at the epicenter of the earthquake, thus there is only one measurement for a particular seismic event. Both Mercalli and Ground Acceleration can be measured at varying distances from the epicenter and these measurements will differ depending on the distance" (HAZNY).

The extent of the Earthquake's hazard would be determined by the population and the number of structures affected and by the incident's design characteristics and its integrity. These areas have been determined to be most susceptible:

- Structures, especially residences of less sustainable construction (i.e. mobile homes).
- Dams, levees, and other structures that restrict water flow.
- Trees, utility poles, and lines.
- Roads, bridges, and elevated structures.

The County Office of Emergency Preparedness has access to seismographs and records at the University of Rochester, Ginna Station, and the Mt. Morris Dam.

Previous occurrences of the hazard:

Monroe County has not experienced an earthquake in the recent past, however, the County has experienced tremors resulting from minor to moderate earthquakes elsewhere in New York State, and Canada:

- October 23, 1857. Darien, in Genesee County. This quake was measured as a "VI" on the Modified Mercalli Scale: "Felt by all; many frightened and run outdoors. Some heavy furniture moved; a few instances of fallen plaster or damaged chimneys. Damage slight" (HAZNY).

- August 12, 1929. Attica, in Wyoming County. This quake measured 5.2 on the Richter

Scale, and "VII" on the Modified Mercalli Scale: "Everybody runs outdoors. Damage negligible in buildings of good design and construction; slight to moderate in well-built ordinary structures; considerable in poorly built or badly designed structures; some chimneys broken. Noticeable when driving car" (HAZNY).

- January 1, 1966. Attica, in Wyoming County. This quake measured 4.6 on the Richter Scale, and "VI" on the Modified Mercalli Scale (see 10-23-1857 event for definition).

- June 13, 1967. Attica, in Wyoming County. This quake measured 4.4 on the Richter Scale and "VI" on the Modified Mercalli Scale (see 10-23-1857 event for definition).

- October 7, 1983. A quake in the Adirondacks measured 5.2 on the Richter Scale (Democrat & Chronicle, 9-26-98). People here remember it by description as a "III" on the Modified Mercalli Scale: "Felt quite noticeably indoors, especially on upper floors of buildings, but many people do not recognize it as an earthquake. Standing automobiles may rock slightly. Vibration like passing of truck. Duration estimated" (HAZNY). This quake prompted RG&E to declare an "Unusual Event" Classification at Ginna Station (Peter Polfleit letter, 8-11-03).

- November 25, 1988. Epicenter was 95 miles west of Quebec City, in Canada. Measure was 6.0 on the Richter Scale (County Office of Emergency Preparedness file).

- October, 1990. Epicenter was 120 miles northwest of Montreal, Canada. It measured 4.7 on the Richter Scale (Democrat & Chronicle, 9-26-98).

- September 25, 1998. Epicenter was 15 miles north of Sharon, PA. According to USGS in Golden, CO it measured 5.2 on the Richter Scale. According to readings from the seismograph at the Mt. Morris Dam, and information obtained by the U.S. Army Corps of Engineers, the longitudinal direction ground acceleration was .015g, with an intensity between 4 and 5. This intensity translates as: felt inside by many, outside by a few; no broken dishes (Gene Lenhardt, U.S. Army Corps of Engineers, telephone interview, 1-6-99). The County 911 Center reported damage at two residences, one with ceiling damage and one with front porch damage (County Office of Emergency Preparedness Response File).

- January 1, 2000. Epicenter was North Bay, Ontario, Canada. It measured 4.5 on the Richter Scale. Tremors felt in Rochester area (Democrat & Chronicle, 4-2-02).

- April 20, 2002. Epicenter was 15 miles southwest of Plattsburgh in the Town of Black Brook, Clinton County, with a measure of 5.1 on the Richter Scale. The shaking lasted about 30 seconds, and there were two aftershocks reported. More than 300 people called Monroe County's 911 Center within thirty minutes of the quake. No reported injuries or damage in the County (Democrat & Chronicle, 4-21-02). The State EOC was activated (SEMO, "Emergency Management Times," Spring 2002, p. 1).

Probability of future occurrences and potential magnitude:

The probability of future occurrences is likely, but predominantly from occurrences outside Monroe County. The magnitude of an event will be determined by its duration, intensity, location, and the structures affected.

Maps of hazard areas:

Map #11, Geological Faults

U.S. Geological Service maps faults and other features that contribute to our vulnerability from an Earthquake. The map identifies the layers of aquifers, bedrock geology and surface geology. Seismographs are located in our area at the University of Rochester, Ginna Station, and the Mt. Morris Dam.

Analysis of the impact on business, infrastructure & critical facilities:

No warning is expected before an earthquake strikes. This event may cause:

- Serious injury or death ". . . Is unlikely for .16g quakes or less; is likely but not in large numbers for .17g to .27 g quakes; is likely in large numbers for .28g to .59g quakes; and, is likely in extremely large numbers for .6g or greater quakes" (HAZNY).

- Damage to private property: "Little or no damage for .16g or less; moderate damage for 0.17g to 0.27g; and, severe damage for .28g and greater" (HAZNY).

- Damage to roads and public facilities: "Little or no structural damage for .16g or less; moderate structural damage for 0.17g to .27g; and, severe structural damage for .28g and greater" (HAZNY).

- Cascade events such as utility failure, flooding, explosions, and fire: "An event of .45g or greater would likely trigger secondary hazards including fires, power outages, water supply failures, dam failures, and hazardous chemical releases. An event of between .17g and .44g has some potential for such cascade. For an event of .16g or less such cascade would be highly unlikely" (HAZNY).

- Emergency response may be complicated due to obstructions, damage to emergency vehicles, disruption of communications systems. The duration of an earthquake is expected to be "less than one day for .27g or less; one day for .28g to .44g due to the trigger of other hazards; two to three days for .45g to .59g due to the trigger of other hazards; and four days to one week for .60g or greater due to the trigger of other hazards and significant aftershocks" (HAZNY). Recovery from an earthquake can be expected to take "less than one day for 0.05g or less; one to two days for 0.06 to 0.16g; three days to one week for 0.17g to 0.27g; one week to two weeks for 0.28g to 0.44g; and more than two weeks for 0.45g or greater" (HAZNY).

Specific information concerning estimated value ($) of potential loss, damage to structures, casualties, etc:

Information shared in other sections

Notes on data limitations: Time and record access

Appendix B-19

Hazard Specific Analysis: Drought

Definition:

"A prolonged period of limited precipitation affecting the supply and quality of water. (A Drought) Is the result of climatological and hydrological events which affect a geographically significant area."[1]

Description:

Drought does not cause the immediate damage that might occur from a windstorm or other natural hazard but can have long term impact if there is no relief for a sustained period of time. Although drought can be experienced in the area, it is considered a moderately low hazard with a rank of 187.5.[2]

"Meteorologists and hydrologists have their own precise definitions of drought. Meteorologists compare deficiencies in precipitation to normal levels when they speak of drought. Hydrologists consider stream flow and water levels in aquifers, lakes, and reservoirs along with precipitation. New York uses elements of both disciplines to determine when a drought is occurring.

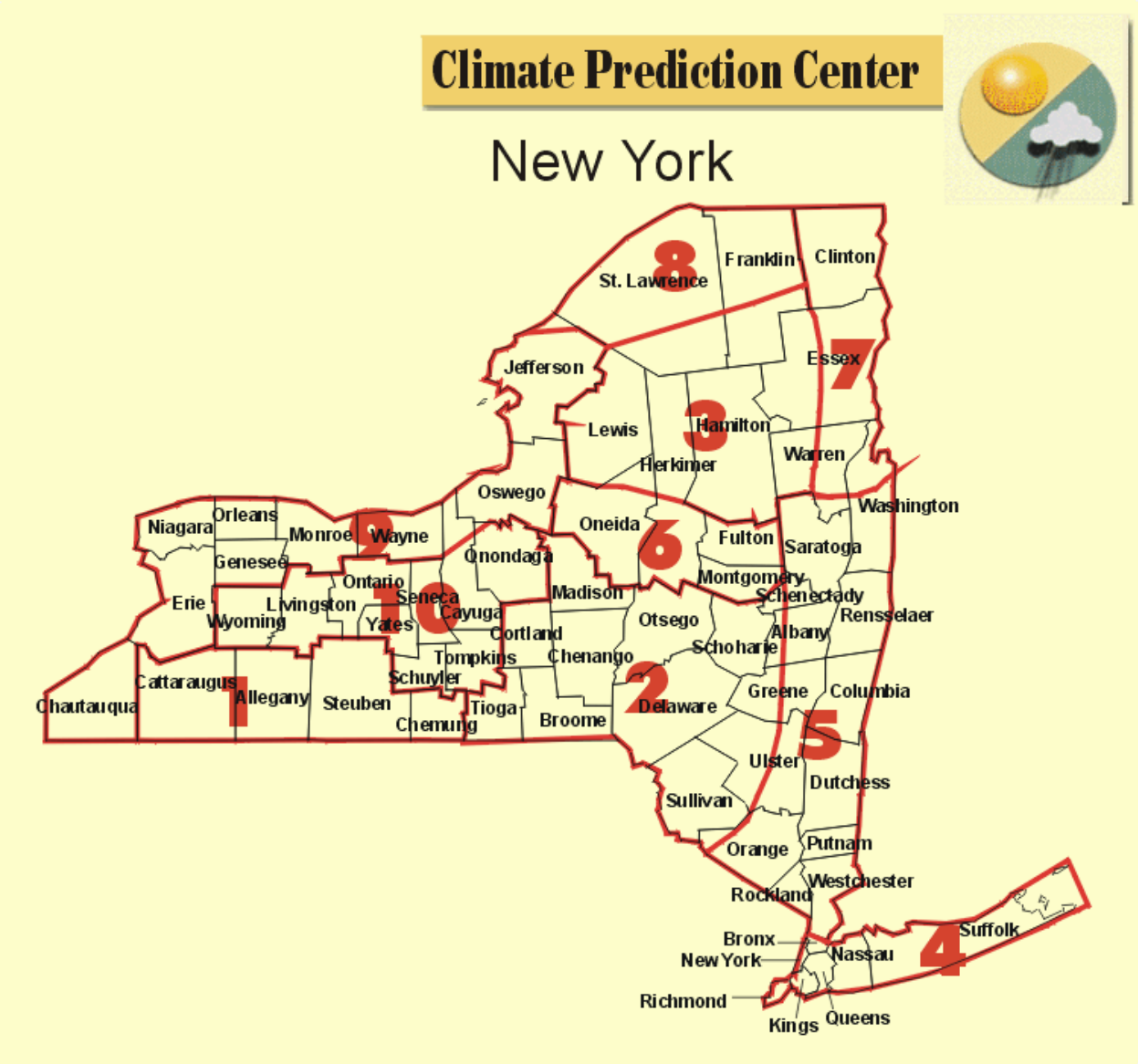
"The State Drought Index compares five parameters to historic or 'normal' values to evaluate drought conditions: stream flows, precipitation, lake and reservoir storage levels, and groundwater levels. New York's Drought Management Task Force uses those factors as well as water use, duration of the dry period, and season to assess drought in different parts of the state.

"New York also uses the Palmer Drought Index, a measure of soil moisture computed by the National Weather Service. The two indices reveal different aspects of drought. The Palmer Index, with its emphasis on soil moisture, is useful in exploring agricultural impacts. The State Index helps asses the impact on human welfare and the regional economy" (NYSDEC website, "Drought Facts," 6-20-03).

Overview of specific hazard locations and the extent of the hazard:

"New York is divided into nine drought management regions by the Climate Prediction Center (see map next page), based roughly on drainage basin (watershed) and county lines. DEC monitors precipitation, lake and reservoir levels, stream flow, and groundwater at least monthly in each region and more frequently during periods of drought. DEC uses this data to assess the condition of each region, which can range from 'normal' to 'drought disaster.'

1 HAZNY
2 Monroe County Hazard Analysis Report by SEMO, January 1999



"Developed and implemented by the New York Drought Management Task Force, the State Drought Plan focuses on research, monitoring and possible legislative actions to help prevent and mitigate impacts from droughts. The Task Force coordinates actions prior to declaration of drought emergency, at which time the Disaster Preparedness Commission takes over.

"The Drought Plan describes the actions to be taken during each drought stage by water purveyors, towns and villages, water authorities, and other agencies with water supply responsibilities.

- Drought Watch – The least severe of the stages, a drought watch is declared when a drought is developing. Public water suppliers begin to conserve water and urge customers to reduce water use.

- Drought Warning – Voluntary water conservation is intensified. Public water suppliers and industries update and implement local drought contingency plans. Local agencies make plans in case of emergency declaration.

- Drought Emergency – The Governor may declare emergency. The Disaster Preparedness Commission coordinates response. Mandatory local/county water restrictions may be imposed. Communities may need to tap alternative water sources to avoid depleting water supplies, protect public health and provide for essential uses.

- Drought Disaster – Disaster plans are implemented. Water use is further restricted. The Governor may declare disaster and request federal disaster assistance. Emergency legislation may be enacted. The state provides equipment and technical assistance to communities" (NYSDEC website, "Drought Facts," 6-20-03).

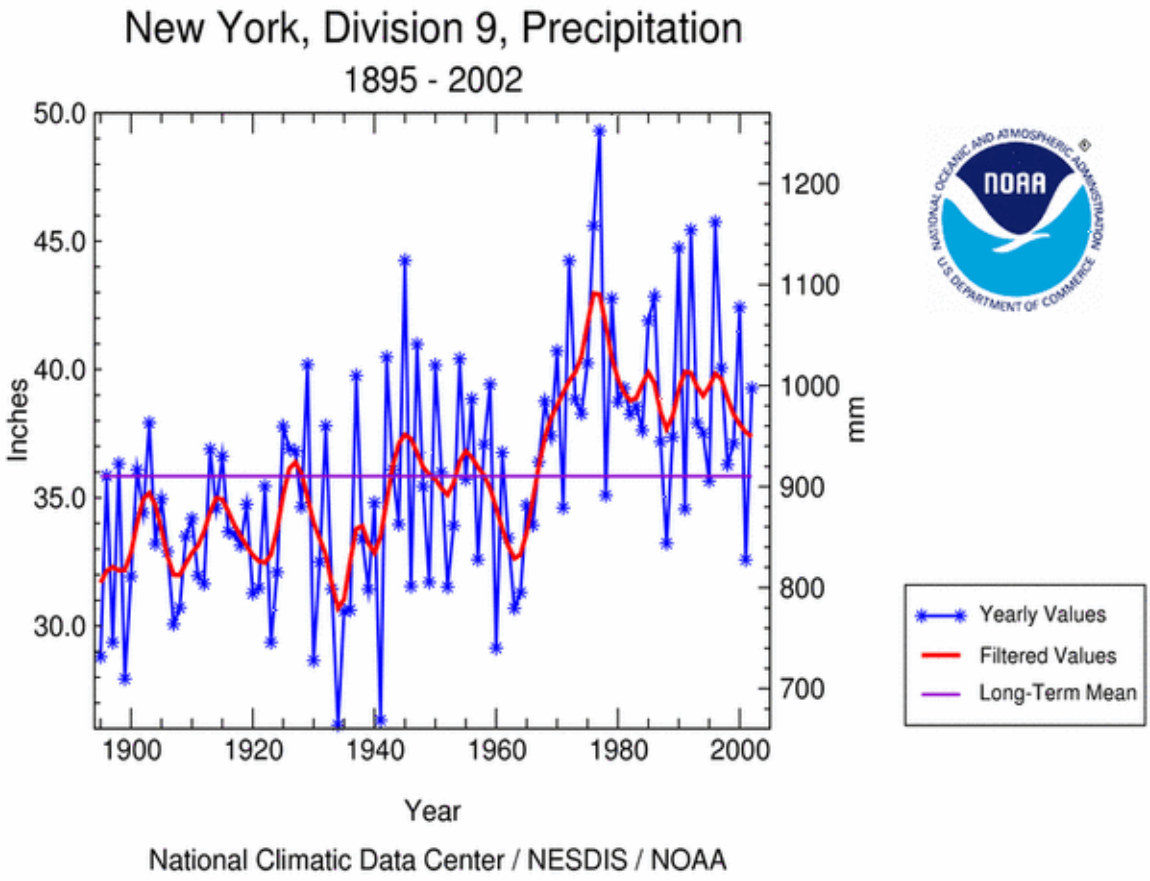
Previous occurrences of the hazard:

Monroe County is included in the "Great Lakes" Drought Management Region. Data on droughts in our area:

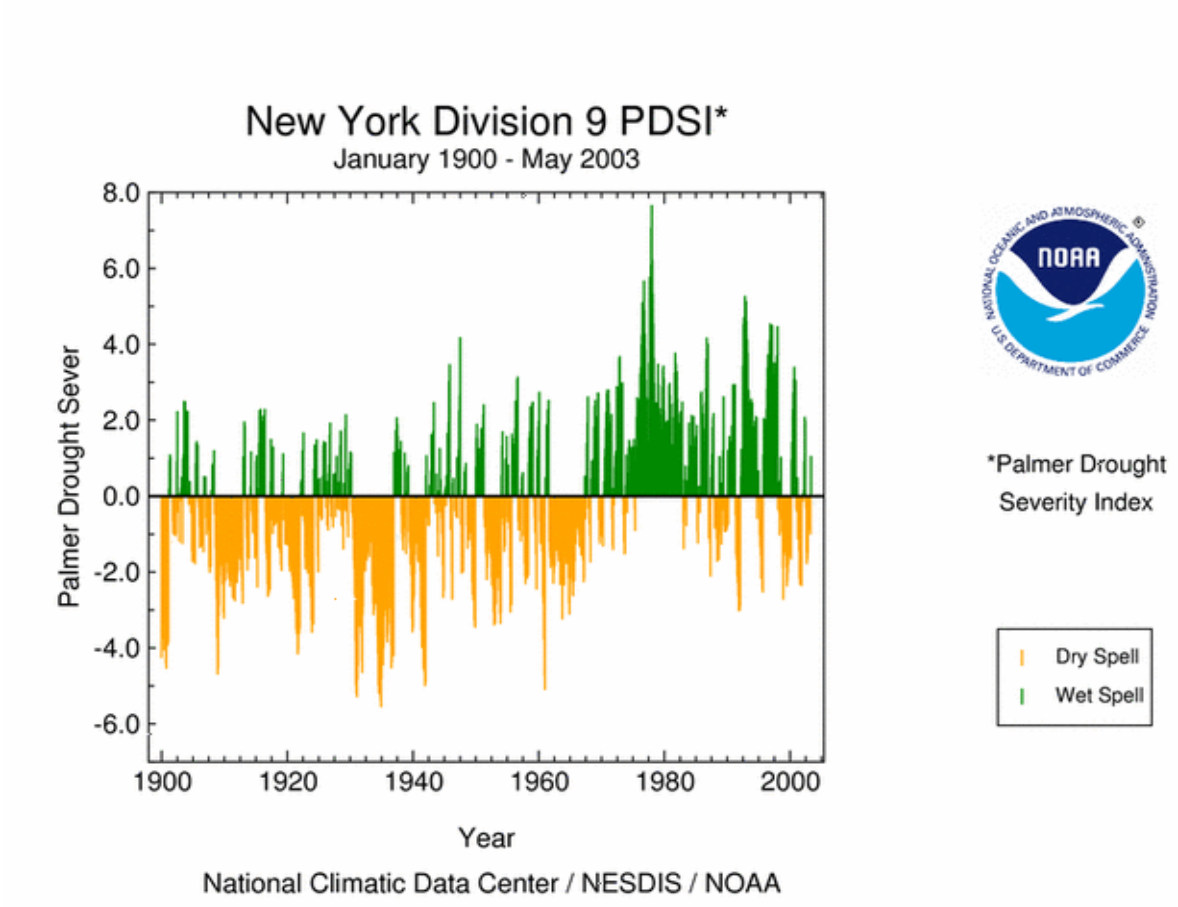
Source: HAZNY with data from NOAA

Years	Severe Drought	Extreme Drought
1895	Oct, Nov	none
1899	Aug thru Oct	Nov, Dec
1900	Jan, May thru Aug, Nov, Dec	Sep, Oct
1901	Jan, Feb	none
1908	Nov	Dec
1909	Feb	Jan
1921	Jun thru Dec	none
1922	Jan	none
1930	Nov	Dec
1931	May thru Oct	Jan thru Apr, Nov, Dec
1934	May	Jun thru Dec
1935	May, Nov, Dec	Jan thru Apr
1936	Jan, Feb, Jul, Oct thru Dec	Aug, Sep
1939	Nov, Dec	none
1940	Jan	none
1941	May thru Aug, Oct	Sep, Nov, Dec
1942	none	Jan
1949	Nov	none
1955	Jul	none
1960	Nov	Dec
1961	Jan	none

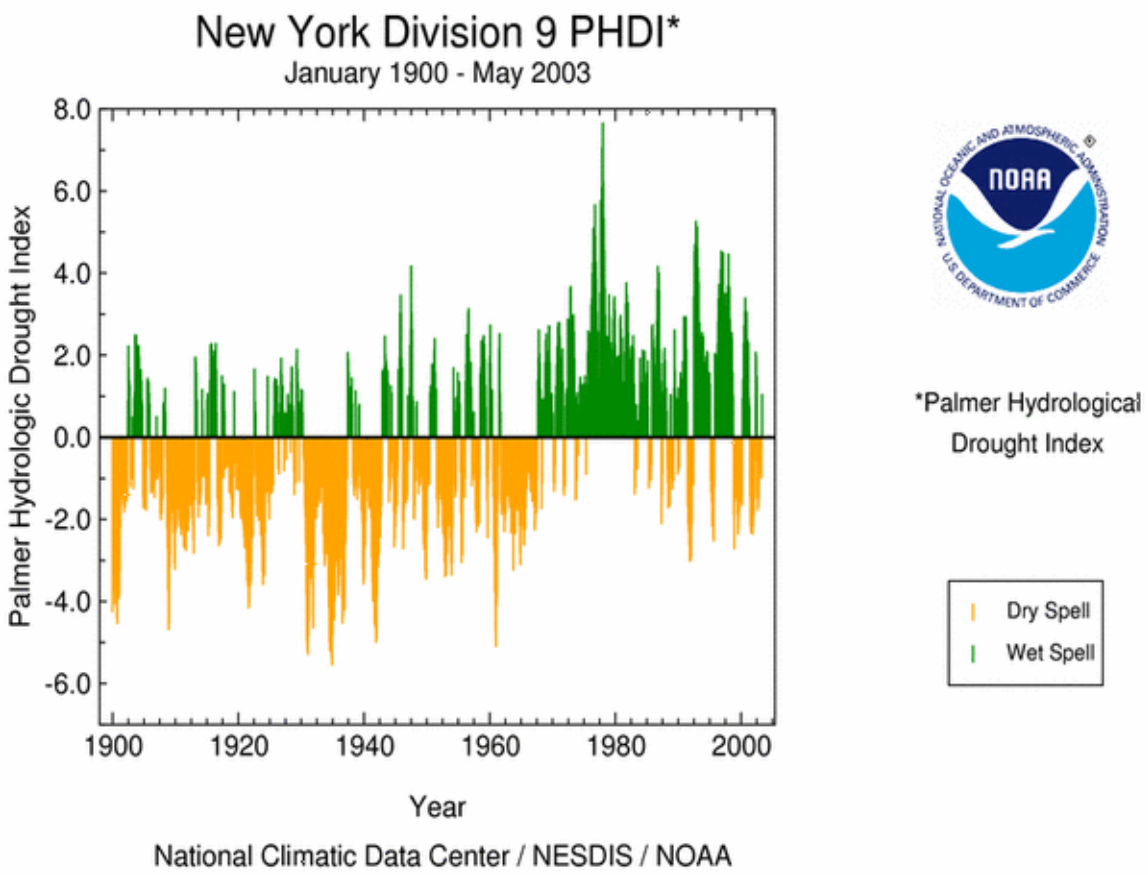
This chart is a graphic time series of annual precipitation for Division 9, which includes Monroe County:


New York, Division 9, Precipitation
1895 - 2002
50.0
45.0
40.0
35.0
30.0
Inches
1200
1100
1000
900
800
700
mm
1900
1920
1940
1960
1980
2000
Year
Yearly Values
Filtered Values
Long-Term Mean
National Climatic Data Center / NESDIS / NOAA

"The Palmer Drought Severity Index (PDSI) (known operationally as the Palmer Drought Index (PDI)) attempts to measure the duration and intensity of the long-term drought-inducing circulation patterns. Long-term drought is cumulative, so the intensity of drought during the current month is dependent on the current weather patterns plus the cumulative patterns of previous months. Since weather patterns can change almost literally overnight from a long-term drought pattern to a long-term wet pattern, the PDSI (PDI) can respond fairly rapidly" (Anne Waple, e-mail, 6-27-03).



"The hydrological impacts of drought (e.g., reservoir levels, groundwater levels, etc.) take longer to develop and it takes longer to recover from them. The Palmer Hydrological Drought Index (PDHI), another long-term drought index, was developed to quantify these hydrological effects. The PHDI responds more slowly to changing conditions than the PDSI (PDI)" (Anne Waple, e-mail, 6-27-03).



Information from the County Office of Emergency Preparedness files:

- August 10, 1999. "U.S. Department of Agriculture Secretary Dan Glickman declared all of New Jersey and 34 counties in New York as agricultural disaster areas. The declaration makes farmers in these areas eligible for emergency, low-interest loans because of losses due to excessive heat and drought" (USDA "News Release No. 0329.99" August 10, 1999). The declared counties in New York included Monroe for what President Clinton described as a "severe drought."

- July 18, 2003. "Typically we should have 17.41 inches (of precipitation) at this point in the year. Since late yesterday we are at only 15.13 inches, 2.28 below normal. This is no cause for concern, but without more consistent rainfall we will slowly move toward drought conditions" (Glenn Johnson, Meteorologist, Democrat & Chronicle, 7-18-03). Editorial Note: Precipitation prompting Flood Watches has since changed this condition!

Probability of future occurrences and potential magnitude:

It is difficult to predict future occurrences, but the potential magnitude could be significant if the predominant source of the drought is a diminished water supply. Concerns include:

- Drought in other countries and regions of our own country affect our local food supply and trade markets.

- A more localized drought can impact local food and crop production to a point where we lose market share and diminish our capacity to compete in the broader market place. This kind of loss has a ripple effect on the local economy that supports crop production, transport, and processing.

- Drought areas are high fire threats as dry fuel becomes an issue.

- Our public water supply is lakes, and although we've endured times of low water levels, we have not seen a loss of supply. However, private wells serve the more rural areas of the County, and we have seen this supply diminish to the detriment of people and farm animals reliant on this source.

- Recreational activities can also be adversely impacted, in-turn affecting the local economy. Year round recreation and tourism from snow skiing to boating, and other water-based activities, rely on water.

Maps of hazard areas:

A Hazard map is not required due to the event's widespread nature. Related areas of interest that are mapped include:

Map #3, Water Supply in Monroe County

Monroe County's public water supply comes from Lake Ontario, two of the Finger Lakes – Hemlock Lake, and Canadice Lake, and from private wells. The accompanying map identifies the public supplies, the supplier, and the areas served by public supply and private wells. Water treatment facilities and distribution systems are not identified for security purposes. Many of the rural areas are dependent on private wells. Several large industries have their own supply source and treatment facilities. Many fire departments have an alternate water source for fire fighting: the City of Rochester has a parallel supply for fire suppression within the downtown area called the "Holly System," and many suburban and rural departments have standpipes on natural waterways.

Map #14, Agricultural Districts

Monroe County maps established Agricultural Districts. Features on the map include the district boundaries, and the agricultural uses. Infestation and/or Agricultural Blight would most likely occur in these areas.

Analysis of the impact on business, infrastructure & critical facilities:

There could be significant impact on business with loss of revenue to farmers, higher consumer costs and other adverse economic cascading. Diminished water supply could impact critical facilities, sanitation, patient care and prompt other Public Health concerns.

Specific information concerning estimated value ($) of potential loss, damage to structures, casualties, etc.

"Shortages of potable water can cause serious threats to public health and sanitation. Direct impacts on private (residential, commercial and industrial) property can include land damage from lack of moisture and possible wildfires. Some businesses and industry may be affected by reduced revenues resulting from increasingly severe restrictions on nonessential water uses. Agriculture faces major losses when adequate soil moisture cannot be maintained and when sufficient water is not available for livestock. The historical record lacks instances of significant serious injury or death due to drought conditions" (HAZNY).

Notes on data limitations: Time and record access

Appendix B-20

Hazard Specific Analysis: Terrorism

Definition:

"Threat of use of violence to achieve political or social ends usually associated with community disruption and/or multiple injuries or deaths."[1]

Description:

"Due to widespread events involving September 11, 2001, new priority may be considered regarding this event."[2] Although the definition cites political or social motivation for violence, September 11, 2001 demonstrated various other factors that warrant consideration when looking at terrorism as a hazard. A hazard rating of 177.5[3] as a moderately low hazard can be misleading given current events worldwide.

"Every community in the United States is vulnerable to the growing threat from weapons of mass destruction (WMD). Terrorist related events – especially the threatened use of nuclear, biological, and chemical material – have increased dramatically since 1970, rising from a single incident in the 1970s to three in the 1980s, to an exponential increase in the 1990s. A terrorist attack can take several forms depending on the technological means available to the terrorist, the nature of the political issue motivating the attack, and the points of weakness of the terrorists' target."[4]

Overview of specific hazard locations and the extent of the hazard:

Local information not included for security purposes. Local Risk Assessments have been conducted with local, state, and federal law enforcement agencies.

Previous occurrences of the hazard:

World events, and terrorist activity within the United States include:

1984	Oregon – restaurant salad bars contaminated with salmonella
February 29, 1993	World Trade Center – parking garage bombing
March, 1995	Tokyo, Japan – sarin gas released in subway
April 19, 1995	Oklahoma City – Murrah Federal Building bombing
since 1997	U.S. – anthrax hoaxes
September 11, 2001	World Trade Center, Pentagon, PA air crash, "Attack on America"
October-November, 2001	Florida, New York City, Washington D.C. – anthrax mailed

Local information not included for security purposes.

Probability of future occurrences and potential magnitude:

1 HAZNY
2 HAZNY
3 Monroe County Hazard Analysis Report by SEMO, January, 1999
4 U.S. Dept. of Justice *Senior Officials' Workshop* Participant Manual, p. ES-2. September 1, 1999

Probability is impossible to predict, but current world events must be considered. The potential magnitude could be catastrophic depending on event factors.

These factors, coupled with world and national events, led County Executive Jack Doyle to request the Office of Emergency Preparedness to draft an emergency plan for his review and consideration. Locally-based federal and state stakeholders and local agencies collaborated to draft the *Monroe County Terrorism Response Plan*, which the Executive authorized on October 4, 1999 as an Annex to the County's "Comprehensive Emergency Plan."

The April 1999 shooting that killed thirteen students and staff members at Columbine High School, near Denver, prompted many states to review their school safety and security plans. New York State is among them. By July 1, 2001 public school districts were required to up-date their district-wide plans and to develop individual school building-level plans across their districts. These plans, " . . . Describe how school officials and local police would respond to a life-threatening situation in a school building. And, they must be on file with local law enforcement agencies" (Democrat & Chronicle, 11-24-00). This new mandate is one component of the NY "Safe Schools Against Violence and Education Act," referred to as Project SAVE.

Maps of hazard areas:

Local information not included for security purposes.

Analysis of the impact on business, infrastructure & critical facilities:

Local information not included for security purposes.

Specific information concerning estimated value ($) of potential loss, damage to structures, casualties, etc.

On September 11, 2001, County Executive Jack Doyle requested activation of the County's Emergency Operations Center (EOC). The EOC was activated from 1000-1830 hours. President George W. Bush declared a Disaster for the Attack on America. This Disaster's identity is FEMA-1391-DR-NY. Of the $6.1 Billion claimed, Monroe County recovered $40,897.02 in Public Assistance Funding for costs associated with: canceling the scheduled Primary Election, Emergency Medical Services (EMS) assistance at Ground Zero, and Emergency Management assistance at the state's EOC.

Other local information not included for security purposes.

Notes on data limitations: None

Appendix B-21

Hazard Specific Analysis: Energy Crisis

Definition:

"An event creating a sustained critical fuel shortage."[1]

Description:

An energy crisis can be caused by a natural weather event resulting in disruption of delivery and service as well as overtaxing energy sources due to increased sustained use. This hazard is not considered severe and is rated 169.8.[2]

Overview of specific hazard locations and the extent of the hazard:

Specific locations and extent would be determined by event factors, but may be widespread.

Previous occurrences of the hazard:

"When Lyndon Johnson was president in the 1960s, comics used to joke that he was such a penny pincher that he'd walk around the White House at night turning off light switches. And that was before the energy crisis of the 1970s. More Americans like Johnson are needed for the sake of this nation's future as energy users. We use too much. The day after the blackout, more Rochester-area residents than usual seemed sensitive to pleas to conserve. Some downtown offices turned off lighting deemed nonessential. In homes throughout the region, many appliances remained unplugged, though power had been regained. This kind of mindset, once common during the energy-crunched '70s, needs to take hold again" (Democrat & Chronicle, 8-17-03).

There was a petroleum products Energy Crisis in the late 1970's – early 1980's that spiked prices, created long lines at "the pump," and fueled energy conservation campaigns. Consumers and the industries that manufacture petroleum-burning products were advised to limit consumption and to produce products that are more fuel-efficient. During this timeframe, Emergency Management offices were advised to appoint someone on staff as the "Energy Coordinator" to serve as liaison with the NYS Emergency Management Office (SEMO) in matters with the U.S. Department of Energy and their state counterpart.

Monroe County's "Energy Coordinator" was requested to assess the local threat associated with a statewide propane shortage (December 21-22, 1989) and to coordinate any local response activities through SEMO.

1 HAZNY
2 Monroe County Hazard Analysis Report by SEMO, January, 1999

Probability of future occurrences and potential magnitude:

The probability of future occurrence is low. However, recent discussion about Energy East's desire to sell the area's two primary generating facilities – Russell Station and Ginna Station (nuclear power) – has caused concern about the potential loss of local generation and reliance on generation by other than a community-based operator. Media attention is also directed at a reported current natural gas shortage.[3]

Maps of hazard areas:

Map is not required due to widespread geographic potential.

Analysis of the impact on business, infrastructure & critical facilities:

The potential exists for severe impact on business because of an inability to conduct business as normal resulting in loss of revenue, and the potential to limit start-ups because of energy shortages. Infrastructure could be impacted by the inability to use computers for example, as well as the inability to function normally. Critical facilities such as hospitals could suffer because of limited power supply, rolling blackouts and/or lack of power. However, hospitals usually have generator backup for essential functions. Some other venues for health care do not have generators making the impact on these facilities more severe.

Specific information concerning estimated value ($) of potential loss, damage to structures, casualties, etc.

unavailable

Notes on data limitations: Time and record access.

3 Democrat & Chronicle newspaper, July 11, 2003, Associated Press reporting, and July 13, 2003 editorial by David Maillic (Guest Essayist)

Appendix B-22

Hazard Specific Analysis: Extreme Temperatures

Definition:

"Temperatures that hover 10 degrees above the average high temperature for the region and last for several weeks,"[1] constitutes one end of the scale. "Below zero" on the thermometer, and "Below zero" with the wind chill factor constitute the other end of the scale.[2]

"Wind Chill is not the actual temperature but rather how wind and cold feel on exposed skin. As the wind increases, heat is carried away from the body at an accelerated rate, driving down the body temperature. Animals are also affected by wind chill; however, cars, plants and other objects are not" (FEMA, "Winter Storms: The Deceptive Killers," p. 4).

Description:

Extreme high temperatures occur frequently during the summer months and extreme low temperatures occur frequently during the winter months. Public alerting with potential health hazards is generally facilitated by usual media outlets as part of routine broadcasts and news items. A specific population comprising senior citizens, children and those with chronic illness are more susceptible to the effects of extreme temperatures. Extreme Temperatures ranks relatively low with a rating of 167.2.[3]

Overview of specific hazard locations and the extent of the hazard:

There are no specific locations with this hazard. The hazard extent can be linked with the potential health hazards as listed above. The threat of this hazard can be mitigated with proper communication through media outlets about the dangers and what to do to minimize adverse effects.

Previous occurrences of the hazard:

Extreme temperatures by definition happen frequently in this area and by itself has not reached an emergency event for the community.

Probability of future occurrences and potential magnitude:

There is a high probability of future occurrence, and the potential magnitude would be exacerbated if coupled with utility failure, or severe weather such as a Blizzard, or Wind Storm.

Maps of hazard areas:

Map is not required due to widespread geographic potential.

---

1 HAZNY
2 Monroe County Hazard Analysis Report by SEMO, January, 1999
3 Monroe County Hazard Analysis Report by SEMO, January, 1999

Analysis of the impact on business, infrastructure & critical facilities:

Extreme Temperatures at both ends of the scale tax fuel supplies for heating and cooling. Extreme Temperatures also restrict community mobility in the out-of-doors, adversely impacting recreational activities, prompting school and workplace closings, and interrupting the daily routine with personal services in the retail sector.

Specific information concerning estimated value ($) of potential loss, damage to structures, casualties, etc.

Health Concerns:

- "Summer heat can lead to the formation of ground-level ozone, …which can lead to respiratory problems" (Democrat & Chronicle, June 26, 2003, Glenn Johnson, Meteorologist).

- "Heat stroke is a severe medical emergency and can occur when the body temperature rises above 106 degrees" (Democrat & Chronicle, June 27, 2003, Glenn Johnson, Meteorologist).

- Frostbite and exposure can result if skin and extremities are not protected from extremely cold temperatures.

- Statistics on injuries related to cold water: 50% happen to people over 60 years old; more than 75% happen to males; about 20% occur in the home (FEMA, "Winter Storms: The Deceptive Killers," p. 4).

Casualties

- "Since 1996, at least 175 children (nation-wide) have died of heat stroke after being trapped inside a parked car" (Democrat & Chronicle, July 10, 2003).

- Heat stroke casualties in Monroe County include participants in special events, especially long-distance races. The elderly are also at high risk.

- Several years ago a local resident died from exposure to the cold when they were locked-out of the house.

- Between July 11-27, 1995, there were 465 heat-related deaths in Chicago, IL (U.S. Department of Commerce/NOAA, "Natural Disaster Survey Report: July 1995 Heat Wave," p. 41).

- "About 2,600 heat-related deaths were recorded in India five years ago (1998) . . ." (Democrat & Chronicle, 8-17-03).

- The recent heat wave in Europe has claimed, "3,000 deaths in France . . . and 62 in Italy

. . .” (Democrat & Chronicle, 8-17-03).

Notes on data limitations: Time and record access.

Appendix B-23

Hazard Specific Analysis: Disease

Definition:

Disease: "A definite morbid process, often with a characteristic train of symptoms,"[1] i.e. "1. An interruption, cessation, or disorder of body function, system, or organ. 2. A morbid entity characterized usually by at least two of these criteria: recognized etiologic agent(s), identifiable group of signs an symptoms, or consistent anatomic alterations."[2]

Epidemic: "The occurrence or outbreak of disease to an unusual number of individuals or proportion of the population, human or animal."[3]

Description:

Historically the world has seen significant fatalities as a result of disease outbreak. Medical research and breakthroughs as well as immunizations, quarantine implementation, public education, and alerting capabilities have resulted in reduction of outbreak potential in recent history. Locally, this hazard is considered low with a rating of 166.5.[4] However, the recent SARS epidemic is an example of how new diseases can impact any community and this hazard should not be dismissed because of lack of events. Animal diseases like Foot & Mouth Disease, and Mad Cow Disease can also present emergency scenarios and require disaster-magnitude response from community resources.

Overview of specific hazard locations and the extent of the hazard:

Monroe County has been affected by national disease outbreaks, and those that occur in our natural environment. Our community is highly mobile – international business travel, university/college populations, personal travel – and we have national and international venues that range from transportation facilities to special events. In addition to human carriers, animal vectors are present in our community. Agricultural herds and native animals inhabit our area. Agriculture here also includes crop production, and food processing for plant and animal products.

We are also on an international border with multiple venues for ingress and egress that can elude the regulatory process of inspection at formal border crossings.

Diseases in our area include, but are not limited to: Flu, Tuberculosis, E-Coli, West Nile Virus, Lyme Disease, Rabies, Lead Poisoning, HIV/AIDS, Sexually Transmitted Diseases (STD's), and Heart Disease.

Prevention and Planning practices include:

1 Dorland's Pocket Medical Dictionary (21st Ed.), p. 190
2 Stedman's Medical Dictionary (27th Ed.), p. 509
3 HAZNY
4 Monroe County Hazard Analysis Report by SEMO, January 1999

- clinics for vaccination – Flu, Rabies, Pneumonia
- disease surveillance by the Public Health Department in partnership with the Health Care Community
- the "Health Alert Network (HAN)" – a secure, web-based communication network for EMS and other emergency responders, and the Health Care Community
- the "Metropolitan Medical Response System (MMRS)" – a national program to ensure emergency plans, training and exercises, and equipment resides in major metropolitan areas of the country
- Monroe County Public Health Department operations strategy to contact, mobilize, and coordinate emergency response to a Health crisis
- Monroe County emergency plan, "Responding to the Threat of Foot & Mouth Disease"
- Rochester Regional Healthcare Association (RRHA), "RRHA Regional Hospital Mutual Aid Evacuation & Supply Plan"
- "Greater Rochester Mutual Aid Plan," for regional area Nursing Homes
- Monroe County's "National Pharmaceutical Stockpile Plan"
- a multi-county/private-sector Health Care forum to discuss topics of mutual interest
- Monroe-Livingston Regional EMS Council
- Monroe County EMS Advisory Board
- Emergency Operations Center (EOC) – dedicated workstations for County and State Departments of Public Health, County EMS Coordinator, and the City of Rochester contract ambulance

Previous occurrences of the hazard:

RE: Flu. The "Spanish" influenza epidemic of 1918 is thought to have originated in China, and killed as many as 50 million people worldwide (Democrat & Chronicle, 7-14-03). "It levied its greatest toll among those 20 to 45, rather than the very young and very old. …In the fall of 1918, after the virus mutated, (it) began sweeping the country in an even deadlier second wave" (Democrat & Chronicle, 7-14-03). The epidemic overwhelmed local hospitals and extraordinary precautions were taken – no kissing or shaking hands; disinfecting telephone mouthpiece; "coughing or sneezing in a public place without covering nose and mouth was declared an offense punishable in New York State by a $500 fine and/or a year in prison;" schools, theater and other public gathering places like bars were closed; "political campaigns were waged exclusively through advertisements rather than rallies and meetings; and, industries and retail stores staggered their closing times so the trolley cars would be less crowded. Part of the tragedy was that doctors had little or no idea what caused the disease or how to treat it" (Democrat & Chronicle, 7-14-03). "By the end of December, in just three months, this flu killed a staggering 675,000 Americans, about 1,100 in Rochester" (Democrat & Chronicle, 7-7-03). Family survivors today relate stories of children orphaned by their parents' death, businesses that were lost and closed as a result of the epidemic, and heroic deeds of family, friends, and neighbors who assisted those in need (Democrat & Chronicle, 7-4-03, 7-21-03).

More recent flu outbreaks are mostly anticipated on a cyclical basis, and the Public Health community prepares with education/awareness, vaccine clinics, and ramping-up within the health care arena for patient receipt and treatment. These outbreaks have taxed the local system, but have not overwhelmed it. And, unlike the 1918 epidemic, these flu strains are particularly hard on the very young, very old and those with respiratory ailments.
RE: Tuberculosis. This prompted the opening of special treatment facilities. People were

segregated from their families and sent to these facilities for treatment and recovery. The County operated a public facility for many years. When patient numbers dwindled, these buildings and their campus setting were converted to County government use. Patient cases are still identified today. Today, these single cases are treated within the existing health care system.

RE: Meningitis. Cases have been diagnosed in our community. Concern is heightened when patients reside in a residential facility, i.e. a college dormitory. University Health Care Centers are attentive to this and other highly contagious infections.

RE: West Nile Virus. In 2002, Monroe County saw the community's first case of this disease. The impact on the state prompted a Presidential Disaster Declaration on October 11, 2000 (identified as FEMA-3155-EM-NY), for all 62 New York counties. "Last year, there were 4,156 human cases of West Nile nationwide and 284 deaths; about 40,000 horses were infected. In New York State, 82 humans fell ill from the virus, including two in Monroe County, and there were five deaths" (Democrat & Chronicle, 6-27-03). This year's first case in the County was confirmed on July 18th. "Monroe is the seventh county in the state to find a West Nile-infected bird this year. Last year, 58 of New York's 62 counties reported 1,410 crows that died from the disease. In Monroe, 45 crows were found with the virus, along with two penguins from the Seneca Park Zoo. There are no reported human cases in New York yet this year. In Monroe County, two human cases were reported during 2002. There have been no Rochester-area deaths from the disease since the first U.S. outbreak was reported – in New York City – in 1999. The more infected crows, the higher the risk. West Nile severely sickens less than 1 percent of humans infected. Nineteen percent have mild, flu-like symptoms. About 80 percent show no symptoms" (Democrat & Chronicle, 7-19-03). "For a few, the infection left a legacy of weak limbs, tremors, serious muscle ticks and other motor trouble" (Democrat & Chronicle, 7-30-02). There is a confirmed case in Texas, that West Nile Virus was transmitted from a blood donor (ProMED-mail post, 7-17-03, listing [1]).

RE: Rabies. Rabies has been in New York State since its creep from Pennsylvania in the 1990's. Monroe County tracks bite cases, pays for patient treatment (cost of injections), and continues to keep awareness and safety tips in front of the public through media outlets and its own means. Since its presence was detected in the state, the County continues offering free pet vaccination clinics (Democrat & Chronicle, 7-17-03). Although raccoons are typically reported as the predominant animal carrier, County Public Health Director, Dr. Andrew Doniger just, " . . . Issued a warning that people should not handle bats, after 24 people in the County had to receive rabies-prevention shots" (Democrat & Chronicle, 8-9-03).

RE: E-Coli. Special Event venues and mass food preparation and handling have been in the local news. Also newsworthy, several individual food establishments were confirmed as sources of this problem. The Public Health Department investigates these cases, oversees remediation, and inspects all premises for compliance and abatement efforts.

Probability of future occurrences and potential magnitude:

In addition to those diseases described above (as already having a local presence), the probability for future occurrence related to possible biological warfare and terrorist attack is possible, although unlikely. There is always the potential for new strains of bacteria as well as bacteria that becomes

resistant to antibiotics making infection more difficult to treat. The potential magnitude is difficult to predict, but not hard to imagine in terms of severity.

One thing we can do to prevent disease is to ensure that adequate vaccine is available and that people are educated about its use. Hopefully the recent media swell about Smallpox Vaccine has reminded people about the tremendous Public Health benefits of vaccination. "Each year, 40,000 adults die from diseases for which a vaccine is available. Most adults don't realize they still need shots. For example, more than half of everyone in the U.S. over age 20 – and 70 percent of those over age 70 – have let their protection against tetanus lapse" (Debora Yost, Better Homes & Gardens, August 2003, p. 228). Vaccines readily available in our community include: Pneumococcal, Flu, Tetanus and Diphtheria, and Hepatitis B.

In addition to Rabies, Lyme Disease, and West Nile Virus, there are other diseases that can be contracted by humans from animal vectors. Of recent concern are Monkeypox, and Chronic Wasting Disease. The Trust for America's Health, a non-profit group that focuses on disease prevention in the United States, is concerned that most animal-borne diseases are tracked on an ad hoc basis, or at a state level without formal interstate coordination. "The groups looked at four diseases that have passed from animals to people – SARS, West Nile Virus, which infects birds and is carried to people by mosquitoes, Lyme disease, which is carried from deer to people by ticks, and monkeypox, found in West Africa but carried to U.S. pet prairie dogs by imported exotic pets including a Gambian rat. They also examined the response to chronic wasting disease, affecting deer and elk in western U.S. states but which has the potential to infect people as it is related to mad cow disease" (Maggie Fox, Health and Science Correspondent, Reuters News Service, 8-5-03).

RE: Chronic Diseases:

1. Cancer. There are many and varied forms of cancer that present in this community. Statistical evidence confirms them as chronic and anticipated. For example: "Cancer of the prostate, . . . was diagnosed in 189,000 Americans last year and killed 30,200 according to the American Cancer Society. It is the most common cancer in men after skin cancer. Almost 12,000 cases a year are diagnosed in New York and more than 2,200 men die of it annually in the Empire State, according to the State Health Department" (Democrat & Chronicle, 8-9-03).

2. Heart Disease. Public perception once held that this was predominantly a male ailment. Local media outlets announced new data and physician reports in the late 1990s – 2000, explained that this disease does not discriminate by sex, and that in fact it is claiming an equal number of female victims. This information has helped physicians and the public be more attentive to both genders.

RE: Sexually Transmitted Diseases (STDs):

1. STDs. The County Public Health Department operates a clinic for STD screening and treatment. Variations of this disease are present. The clinic also provides information on prevention.

2. AIDS. Originally defined as an STD, AIDS has been transmitted to unborn children, through blood donations, and via "dirty needles." There are cases of deliberate infection (a parolee was locally convicted of this crime), and there are people who unknowingly carry and spread HIV, the virus that causes AIDS (Democrat & Chronicle, 7-21-03). "About 2,200 people in the Rochester area are infected with AIDS, 75 percent of whom live within the City of Rochester, according to the Finger Lakes Health Systems Agency. Yet only about a third are receiving care" (Democrat & Chronicle, 7-21-03). "New data from the Centers for Disease Control and

Prevention show that the number of U.S. AIDS cases rose in 2002, ending a 10-year decline. In Rochester, the statistics bear that out. In 1999 there were 873 individuals living with AIDS; in 2001 there were 1,066. Though small in number, one of the fastest growing groups to contract HIV is older, post-menopausal women; 55 percent of Monroe County's Community Health Network's new patients are African-American or Latino" (Democrat & Chronicle, 8-11-03).

RE: Lead Poisoning. "An average of 1,200 children in Monroe County are exposed to lead poisoning each year, according to the Rochester Lead Free Coalition. Some studies have placed Rochester among the 10 U.S. cities with the worst lead problems" (Democrat & Chronicle, 8-9-03). A U.S. Center for Diseases report is expected in October " . . . that pulls together all the known research on blood-lead safety levels" (Democrat & Chronicle, 8-9-03).

RE: Emerging Infectious Diseases. "Current emerging infectious disease threats are bringing a heightened sense of awareness of smallpox, severe acute respiratory syndrome (SARS), monkeypox, norovirus, HIV and West Nile disease. CDC officials report the public's health will be impacted in the years to come by emerging infectious diseases like SARS that could reappear in the fall much like other respiratory illnesses such as influenza and may be spread by people who don't realize that they are carriers of the virus. The new normal is emerging infectious diseases, and emerging infectious diseases that are almost instantaneously a global concern because of the speed with which people, animals and products move around the world. Diarrheal diseases remain among the most common afflictions of mankind. In the U.S., it remains a common problem with more than 70 million episodes, 500,000 hospitalizations and some 5,000 deaths occurring each year. Noroviruses now appear to be the most common cause of outbreaks of gastroenteritis in Americans of all ages and the most common cause of diarrheal hospitalizations of adults. In 2002, West Nile virus produced the largest outbreak of arborviral meningo-encephalitis ever reported in North America, with 4,156 cases. Given an apparent to inapparent infection ratio of 1 to 150 persons, it can be estimated that more than 500,000 persons were infected with the virus last year. Along with the unprecedented outbreak of human illness, almost 15,000 equine cases were reported. It is impossible to predict the future public health impact of West Nile virus. However, the annual re-emergence of cases in all areas where the virus has been identified along with the large number of avian and mosquito hosts, suggests a need to be prepared for future outbreaks of similar magnitude to the one experienced in 2002" (National Foundation for Infectious Diseases, Press Conference, July 16, 2003).

Maps of hazard areas:

Map is not required due to widespread geographic potential. However, two maps are attached as examples of Public Health Department activities, and to show how databases of information can be utilized as tools for planning and response.

Map #12, Tracking Disease – West Nile Virus

The Monroe County Public Health Department has mapped a data set for West Nile Virus that identifies locations of dead animal reports, those animals tested and confirmed to be infected, and environmental risk factors (mostly standing water locations, e.g. catch basins). This information was used to plan larvacide activities and other mitigative actions.

Map #13, Tracking Disease – Rodent Baiting

The Monroe County Public Health Department, and the Department of Environmental Services have a program to bait and destroy rodents. This map of the sewer system identifies the target locations for bait placement.

The USGS West Nile Virus map is available at http://westnilemaps.usgs.gov

Although these diseases may not be mapped (for issues of privacy, and/or other regulations), the Monroe County Public Health Department maintains datasets for:

- Lead – addresses of reported medical cases, and medical case histories
- HIV
- Rabies - variety of information related to the investigation and management of 1,100 – 1,300 annual reported cases of animal contacts
- Sexually Transmitted Diseases (STD's)
- Tuberculosis
- Heart Disease – fatality data is kept for race, sex, age, and residence (Utter, Cheryl, and Ammerman, Eric. Monroe County Public Health Department. Telephone interviews, July 29, 2003).

There is also state-wide information available on the cost of care for chronic diseases (Utter, Cheryl. Monroe County Public Health Department. Telephone interview, July 29, 2003).

Analysis of the impact on business, infrastructure & critical facilities:

RE: Business. International travel for business and tourism is adversely impacted by disease. Local travel out of our community was curtailed because of SARS risk, and people traveling into our area have arrived finding themselves subject to "preventative treatments" ranging from questions about their travel and country of origin, to more intense surveillance. The University Health Care providers have already discussed their strategies with returning student populations (University Health Care Provider's Meeting, June 23, 2003).

Area businesses partner with the County on Public Health and Public Safety activities. Most notable is Wegman's: Pharmacists are part of the emergency activation for receipt and deployment of the National Pharmaceutical Stockpile; and, the Pharmacies in Newark, Penfield and Webster stores continue to distribute Potassium Iodide (KI) tablets to residents within the 10-mile Emergency Planning Zone of Ginna Station. And several businesses are partners with venues for annual flu vaccination clinics.

Animal and food imports are regulated by U.S. government agencies. " . . . Forty percent of Canada's annual $1.1 billion beef products normally exported to the U.S., and . . . another $1.1 billion in live cattle exports, were halted in May when one case of bovine spongiform encephalopathy (BSE) was found. The U.S. is the market for about 70 percent of Canada's cattle exports. The ban on meat products will be lifted by the end of the month, but the ban on live cattle will remain" (Democrat & Chronicle, 8-9-03).

RE: Infrastructure. Monroe County's Rodent Baiting Program has been discussed and mapped. This expense, although deemed critical, was subject to budget cuts several years ago. The costs of this all County-funded program is scrutinized and subject to change. Another mitigative program

targeted at an infrastructure introduction is the West Nile Virus larvacide program. This was an unanticipated expense at budget time, so the cost to the County and local municipal Departments of Public Works staffs for training, supplies/equipment, and application was not budgeted. This situation was not unique to Monroe County – it was statewide, and ultimately drove the Governor's request for Presidential Disaster assistance. West Nile Virus reimbursement was $4.75M statewide, and $69,790 to Monroe County (SEMO Region V e-mail, 8-16-01).

RE: Critical Facilities. The local health care infrastructure is stressed by disease occurrence whether it is cyclical and anticipated, or sudden and predominant. Even with anticipating actions, flu outbreaks can tax pre-hospital care (ambulance service), private physicians, and hospitals.

Monroe County's Ontario Beach Park on Lake Ontario, is normally open to swimmers from Memorial Day to Labor Day with life-guard patrols. The County Health Department monitors water quality at the beach each day to ensure swimmer safety. "Cloudy water conditions, an abundance of algae or high bacteria in the water can result in the closing of the beach. Frequent beach closings due to bacteria, rainfall, water clarity and algae have been a (persistent) problem. The beach has been closed more than 20 days each season since 1995, and more than 30 days in five of those years" (Democrat & Chronicle, 6-22-03). This season the beach was open for the first time on June 22nd (Democrat & Chronicle, 6-23-03).

Specific information concerning estimated value ($) of potential loss, damage to structures, casualties, etc.

identified in other sections

Notes on data limitations: Time and records access

Appendix B-24

Hazard Specific Analysis: Ice Jams

Definition:

"Large accumulation of ice in rivers or streams interrupting the normal flow of water, and often leading to flooding conditions and/or damage to structures."[1]

Description:

"Long cold spells can cause rivers and lakes to freeze. A rise in the water level or a thaw breaks the ice into large chunks which become jammed at man made and natural obstructions. Ice jams can act as a dam, resulting in severe flooding."[2]

Ice Jams can occur as a cascade event of an ice storm or independently during the winter as a result of normal fluctuations in weather conditions. They occur frequently and are considered as a normal course of events in Monroe County. They can cause moderate problems, but are still considered a low hazard with a rating of 165.8.[3]

Overview of specific hazard locations and the extent of the hazard:

Specific hazard locations include waterways such as Irondequoit Creeks and its tributaries.

Previous occurrences of the hazard:

Previous occurrences of the hazard in Monroe County are not listed.

When the County Office of Emergency Preparedness receives information about the potential for Ice Jams (NWS and/or SEMO), staff notifies local law enforcement agencies to have their road patrols monitor streams and tributaries. Background on Ice Jams in New York State is described in Russell E. Wege's report for NYS Department of Environmental Conservation, titled "Ice Jam Flooding – Evolution of New York State's Involvement," July 1986. (This report is available at the County Office of Emergency Preparedness.)

Probability of future occurrences and potential magnitude:

There is a high probability of future occurrence for this hazard with the potential magnitude determined by the specific location and other factors involved with the "event".

While it is impossible to predict if and where a jam will occur, typical ice jam locations are: at the decrease in slope of stream, bridge piers, bends in the stream, shallow reaches, and at stream confluences (U.S. Corps of Engineers, "Natural Disaster Response," p. Q-1). "Ice jams are most

1 HAZNY
2 FEMA, "Winter Storms: The Deceptive Killers," p. 3
3 Monroe County Hazard Analysis by SEMO, January 1999

likely to form where the stream channel has been modified by construction, where the stream bed gradient flattens out into a flood plain, where the channel is restricted or bends sharply, where a tributary enters a river, or where a stream meets a stable ice sheet, as at a pool or a lake. Man-made or natural channel obstructions can also cause ice to pile up. Severe and frequent ice jamming is most likely where these conditions occur in some combination. Damage is worst where homes and businesses have been built on the floodplain" (NYSDEC, "Ice James: Preventing Ice Damage in New York State," tri-fold brochure).

Maps of hazard areas:

Map #2, Waterways, identifies bodies of water that are subject to Ice Jams.

Analysis of the impact on business, infrastructure & critical facilities:

"Until the mid-1930s, ice jams . . . were considered a local problem. The great floods of 1935 and 1936 overwhelmed countless river communities and cities . . .. As a result, federal and state legislation in 1936 provided authority to develop local flood protection projects in severely damaged communities. But, without legislative mandate for involvement, ice jam problems until the 1960's were viewed by the state as little more than winter statistics. Reorganization of state government in 1967, led to the development of a flood control bureau within (now) NYSDEC. By December of 1976, it had become official state policy to provide technical assistance to communities having ice jam problems" (Wege Report, pp. 1-2). NYSDEC offered a state training program for state field personnel, local Emergency Managers, and community officials. County Office of Emergency Preparedness staff attended this training on March 8, 1988.

As a result of the NYSDEC position/policy to assist local communities, and to coordinate with NYSDEC and SEMO officials, SEMO requested that each county Emergency Management Office appoint an "Ice Jam Coordinator." The Office of Emergency Preparedness title rests with the Planning/Operations Officer.

Specific information concerning estimated value ($) of potential loss, damage to structures, casualties, etc.

Ice Jam flood loss statistics include:

- " . . . Loss of life, although the number of fatalities in the United States is considerably less than non-ice jam flooding. In the last 30 years at least seven people have died as a result of ice jam flooding. Six of the deaths were attributed to rescue attempts; the other death occurred from injuries sustained when a basement wall collapsed due to pressure from flood waters and ice.

- " . . . Approximately $125 million in damages annually, including an estimated $50 million in personal property damage and $25 million in operation and maintenance costs to USACE navigation, flood control, and channel stabilization structures.

- " . . . Suspended or delayed commercial navigation causing adverse economic impacts. Although navigational delays are commonly short, they may result in shortages of critical supplies, such as coal and industrial feedstocks and large costs from the operation of idle vessels. Ice jams sometimes cause damage to navigation lock gates.

- " . . . Suspension of hydropower generation due to intake blockage, high tailwater, the necessity to reduce discharge, or damage to intake works. Lost power revenue due to such shutdowns can be substantial.

- " . . . Scouring and river bed and bank erosion that may lead to bridge or river bank failure. Ice jams can damage stream channels and improvements so that overall vulnerability to flooding is increased. Riprap can be undermined or moved out of place. Ice jam-related damage to river training structures costs millions of dollars each year" (U.S. Corps of Engineers, "Natural Disaster Response," p. 2-2).

Notes on data limitations: Time and record access.

Appendix B-25

Hazard Specific Analysis: Air Contamination

Definition:

"Pollution caused by atmospheric conditions (as opposed to a chemical spill or release) such as a temperature inversion induced smoggy condition sufficiently serious to create some danger to human health."[1]

Description:

Pollution is an increasing national problem. For several years now California has suffered with regular smog alerts. Prolonged periods of extreme temperatures as well as an increase in industry, ozone depletion and other factors have resulted in Monroe County being included with the NYS Department of Environmental Conservation (NYSDEC) and/or the NYS Health Commissioner, "Ozone Alerts" advising those in the community with chronic lung problems to be aware of the potential health hazard. This hazard is considered moderately low with a rating of 150.8.[2]

Overview of specific hazard locations and the extent of the hazard:

RE: "Ozone Alert." Beginning in the summer of 2000, Monroe County was named in "Ozone Alerts" issued by NYSDEC and/or the NYS Health Commissioner. "Ozone exposure has been linked to adverse health effects. Nose and throat irritation, respiratory symptoms and decreasing lung function have been observed in healthy exercising persons breathing air containing elevated levels of ozone. When ozone levels are elevated, the N.Y.S. Department of Health recommends that individuals consider limiting strenuous outdoor physical activity to reduce the risk of adverse health effects" (Monroe County "911 Procedure Manual," No. 00-03).

These alerts generally accompany hot, humid, overcast days when the atmospheric ceiling is low and heavy, trapping energy-producing exhaust close to the ground.

RE: Air Emissions. Local industries and motor vehicle exhaust are the obvious producers of air contaminants:

1. Local industry has reported regulated air emissions to the U.S. Environmental Protection Agency (EPA) since 1987 – the first year of federal emissions reporting.

    - The latest EPA, "Toxic Release Inventory (TRI)" Report released June 30, 2003 and covering the year 2001, shares reported data from Kodak Park, and Russell Station (RG&E power plant):

1 HAZNY
2 Monroe County Hazard Analysis Report by SEMO, January 1999

2001 Toxics Release Inventory — NEW YORK

On-site and Off-site Releases for Top Ten Facilities Ranked on Total On-site Releases in the State (All Chemicals)

Facility, City, County	On-site Releases						Total On-site Releases* Pounds	Off-site Releases (Transfers Off-site to Disposal)	
			Underground Injection		On-site Releases to Land				
	Air Emissions Pounds	Surface Water Discharges Pounds	Class I Wells Pounds	Class II-V Wells Pounds	RCRA Subtitle C Landfills Pounds	Other On-site Land Releases Pounds		Transferred Within State Pounds	Transferred Out of State Pounds
Eastman Kodak Co. Kodak Park, Rochester, Monroe	3,880,472	1,070,855	0	0	0	6,965	4,958,292	93,503	3,068
CWM Chemical Services, L.L.C., Model City, Niagara**	3	184	0	0	4,544,217	139	4,544,543	0	8,342
Huntley Generating Station, Tonawanda, Erie	2,795,027	163,308	0	0	0	0	2,958,335	108,718	0
Dunkirk Steam Station, Dunkirk, Chautauqua	2,794,293	133,412	0	0	0	0	2,927,705	57,725	0
AES Somerset L.L.C., Barker, Niagara	197,699	1,439	0	0	0	2,381,446	2,580,584	0	0
Anheuser-Busch Inc., Baldwinsville, Onondaga	19,404	2,472,445	0	0	0	0	2,491,849	0	0
Russell Station, Rochester, Monroe	1,844,821	46	0	0	0	0	1,844,867	894	19
Danskammer Generating Facility, Newburgh, Orange	1,293,641	413	0	0	0	42,408	1,336,462	0	0
AES-Greenidge L.L.C., Dresden, Yates	1,101,461	529	0	0	0	178,662	1,280,652	0	0
Lovett Generating Station, Tomkins Cove, Rockland	1,065,605	0	0	0	0	0	1,065,605	36,855	95,088

- The TRI report records chemicals released to air, water or land, or shipped elsewhere for disposal. **The focus for this appendix is air.**

- The TRI, 2001 Report includes Monroe County data: "Forty-four reporting manufacturers and one utility recorded about 7.5 million pounds of legal pollution. The year before, the county figure was 7.8 million pounds" (Democrat & Chronicle, 7-10-03).

- "In 2001, Kodak released 6.54 grams of dioxins to the air; in 2000, that figure was about 5 grams (Democrat & Chronicle, 7-10-03).

- RG&E's Russell Station burns coal to generate power. In 2001, RG&E reported 0.2 grams of dioxins for the TRI Report (Democrat & Chronicle, 7-10-03).

- Kodak's "snapshot of its pollution totals for 2002 (not yet reported to EPA, for the TRI Report) . . . include a one percent drop in total air pollution. . . . Air releases of dioxin declined by about 16 percent – from 7 grams in 2001 to 6 in 2002 (Democrat & Chronicle, 7-10-03); lead releases declined about 19 percent, to 301 pounds" (Kodak "Update," July 2003, p. 2).

- Expressed in thousands of pounds, Kodak Park's Summary of its releases through air emission is:

1987	1997	1998	1999	2000	2001	2002
18,800	6,249	5,500	4,560	4,280	3,880	3,838

Source: Kodak "Update," July 2003, p. 2

2. Motor Vehicle exhaust: "TRI does not require reporting in all sectors, including transportation" (Democrat & Chronicle, 7-10-03).

- Kodak's calculation for dioxin release includes diesel truck emissions (Democrat & Chronicle, 7-10-03).

- "By the 2007 model year, federal regulations will require 90 percent cuts in exhaust particulate matter and nitrogen oxides from new buses . . . and the EPA has funds to retrofit many older vehicles. Federal environmental officials and a group representing school bus drivers promised Monday to work to reduce pollution reductions by idling buses less and retrofitting them for cleaner exhaust" (Democrat & Chronicle, 7-15-03).

"The future of pollution controls will be unregulated sources" (Democrat & Chronicle, 7-10-03), such as backyard trash burning, which EPA estimates for 2002-2004, at 58 percent responsible for dioxin discharges (Kodak "Update" – newsletter, July 2003, p. 2).

Previous occurrences of the hazard:

RE: Ozone Alerts. Since 2000, Monroe County has been named in about a dozen "Alerts."

RE: Industry. Known information is included in previous section.

Probability of future occurrences and potential magnitude:

Extreme temperatures seem to heighten the probability of this hazard. The potential magnitude or the "extent of hazard" is measured by the duration of the contamination, its adverse health impacts, and the number of victims it claims. By itself, this hazard has been manageable. As a cascade event, or in tandem with other hazards, this hazard could create a community emergency.

Maps of hazard areas:

Due to widespread geographical nature of this hazard, a map is not required.

Analysis of the impact on business, infrastructure & critical facilities:

States in the Northeast have discussed cooperative efforts "to slow the process of global warming by . . . limiting carbon-dioxide emissions from power plants . . . through a regional cap. In April, Governor Pataki invited governors from Northeast states to consider a regional cap. Pataki said he would announce July 23 whether Northeast governors were interested. If a regional cap went into place, New York's emissions would be reduced to 31 percent below the 1990 level by 2010, the state task force found. The power-plant industry supports a regional cap, but not a statewide carbon-dioxide limit, because both pollutants and electricity trading transcend state boundaries, said Gavin Donohue, president of the Independent Power Producers of New York. "We want clean air, but we want it done in a way that makes business and economic sense . . . so that we don't put New York at a disadvantage from other states we do business with" (Democrat & Chronicle, 7-15-03).

"Kodak recently announced that after four years of effort, it had met or exceeded seven out of eight of its five-year environmental goals. First announced in 1999, Kodak's goals were designed to reduce emissions, conserve natural resources, and strengthen its environmental management system. R. Hays Bell, Kodak vice president and director of Health, Safety, & Environment said, "These goals have been the catalyst for substantial improvement in our environmental performance. Most of the progress has been made right here in Rochester." Bell concluded, "2003 is the fifth and final year of our work toward accomplishing these goals. Next year, we'll report on the full five years of

progress, and then we'll announce a new set of goals. We intend to follow through on our commitment to continuous improvement" (Kodak "Update," July 2003, p. 4).

"This five year, $100 million project . . . met seven of eight promises for environmental improvements. The only unattained goal: It hasn't reduced emissions of greenhouse gases as much as it said it would. Kodak soon will announce a new five-year environmental plan" (Democrat & Chronicle, 8-9-03).

"Rochester's largest employer agreed to pay a $210,000 fine in connection with a number of incidents. The fine covers a collection of unrelated violations of New York's chemical bulk storage and hazardous waste rules dating back four years, Kodak said. The most potentially serious incident cited stems from an event last year in Building 218, where Kodak annually burns about 60 million pounds of chemicals that cannot be recycled. Pressure from a flash-fire in the rotary kiln incinerator blew out and dented a steel access door on May 30, 2002. No one was injured, but the incinerator was shut for six days for repairs. Kodak was cited for "failure to operate the facility" in a way that would have prevented the fire and explosion, spokesman Jim Blamphin said. Since the fine is cumulative for all the incidents, it's not possible to say how much of the $210,000 penalty stems from the event at the incinerator" (Democrat & Chronicle, August 9, 2003).

Specific information concerning estimated value ($) of potential loss, damage to structures, casualties, etc.

Known information included in previous sections.

Notes on data limitations: Time and records access.

Appendix B-26

Hazard Specific Analysis: Infestation

Definition:

"Excessive population of insects, rodents or other animals requiring control measures due to their potential to carry diseases, destroy crops, or harm the environment."[1]

Description:

Infestation of any kind can cause significant health problems in addition to overall inconvenience and localized damage dependent on the situation. Agricultural guidelines and restrictions as well as health codes in restaurants, sanitation requirements and measures all help to control this hazard making this a moderately low priority hazard with a rating of 143.8.[2]

Overview of specific hazard locations and the extent of the hazard:

Specific hazard locations and extent of hazard are not easily defined because of the wide range of possibilities, but it must be realized that any infestation can cause significant problems within any locale.

Previous occurrences of the hazard:

"Web worms" have been a problem in the recent past causing severe damage to trees in and around Monroe County. If left unchecked this particular insect could completely destroy large areas of trees over time.

Dutch Elm Disease destroyed a multi-state region of elms in the 1950's – 1960's.

Probability of future occurrences and potential magnitude:

There is always a probability of future occurrence for this hazard with the potential magnitude determined by the specific target of infestation and other factors involved with the "event".

Maps of hazard areas:

Map of this hazard is not required due to widespread geographic potential. However, two related maps are attached:

Map #13, Tracking Disease – Rodent Baiting

The Monroe County Public Health Department, and the Department of Environmental Services have a program to bait and destroy rodents. This map of the sewer system identifies the target locations for bait placement.

1 HAZNY
2 Monroe County Hazard Analysis Report by SEMO, January 1999

Map #14, Agricultural Districts

Monroe County maps established Agricultural Districts. Features on the map include the district boundaries, and the agricultural uses. Infestation and/or Agricultural Blight would most likely occur in these areas.

Analysis of the impact on business, infrastructure & critical facilities:

"Animal or plant pests or diseases threaten the agricultural production of the United States. There is an increasing frequency of new pest and disease incursions. Infestations can have a national impact, as well as affect State and local governments, industry, and producers" (Federal Register, Volume 68, Number 130, p. 40541).

Specific information concerning estimated value ($) of potential loss, damage to structures, casualties, etc.

No specific data found

Notes on data limitations: Time and records access.

Appendix B-27

Hazard Specific Analysis: Blight

Definition:

"Disease of agricultural crops or non-agricultural plants resulting in withering, lack of growth, and death of its parts (rapid browning and death of leaves, flowers or stems)."[1] A second definition is offered for economic blight as defined by federal poverty data. This condition is labeled, "Urban Blight."

Description:

Agricultural Blight is rare in Monroe County. It is considered a moderately low hazard with a rating of 129.8.[2]

Overview of specific hazard locations and the extent of the hazard:

Specific hazard locations for Agricultural Blight are difficult to predict, but likely to include agricultural areas of the County. The extent of hazard would be determined by the disease and other factors involved with location and specific plants.

Previous occurrences of the hazard:

No agricultural events identified in recent past

Probability of future occurrences and potential magnitude:

Agricultural Blight is always a probability, with the potential magnitude determined by the specific location and other factors involved with the "event."

Maps of hazard areas:

Map #10, Woodlots

The NYS Department of Environmental Conservation "Woodlots" within Monroe County are mapped and identified here because they are vulnerable to Windstorms. They are also at risk during Ice Storms, however the predominance is high winds, so we chose to catalog the Woodlot map with this hazard.

This map is useful in assisting responders in estimating the volume of debris from storms, the associated clean-up time, and the cost of clearance and disposal. When this map is overlaid with the Waterways Map (Map #2), it is a useful tool in calculating stream debris and its associated clearance costs.

1 HAZNY
2 Monroe County Hazard Analysis Report by SEMO, January 1999

Map #14, Agricultural Districts

Monroe County maps established Agricultural Districts. Features on the map include the district boundaries, and the agricultural uses. Infestation and/or Agricultural Blight would most likely occur in these areas.

Map #15, Urban Areas

Data from the 2000 Census includes population, income, ethnicity, and employment statistics. This information is helpful in identifying those areas of the County that may be vulnerable to Urban Blight.

Analysis of the impact on business, infrastructure & critical facilities:

Not available for agriculture.

Specific information concerning estimated value ($) of potential loss, damage to structures, casualties, etc.

Not available for agriculture.

Notes on data limitations: Time and records access.

Appendix B-28

Hazard Specific Analysis: Radiological (Transit)

Definition:

"Release, or threat of release, of radioactive material from a transportation vehicle including truck, rail, air and marine vehicle."[1]

Description:

An event of this type is unlikely to occur in Monroe County. The possibility results in the moderately low hazard rating of 123.8.[2]

Overview of specific hazard locations and the extent of the hazard:

Specific hazard locations with transit should be confined to the County's transportation corridors. The extent of the hazard is not easily defined, but any event could cause significant problems within the community.

Previous occurrences of the hazard:

None identified.

Probability of future occurrences and potential magnitude:

There is always a probability of future occurrence for this hazard with the potential magnitude determined by the specific location and other factors involved with the event.

Maps of hazard areas:

Map #7, Transportation Corridors

Monroe County's natural landscape is criss-crossed by multiple transportation corridors for rail, highway, marine, and air traffic. The active rail lines, inter-state, state and local highways, the navigable waterways, the outer boundary markers of the commercial airport, and several private landing strips are mapped.

Analysis of the impact on business, infrastructure & critical facilities:

In addition to the impact of any other transportation incident, the presence of a radiation source would require the increased cost of response and recovery associated with radiological exposure, i.e. Hazardous Materials emergency response and handling, radiological detection, monitoring, and decontamination, and proper remediation and disposal.

1 HAZNY
2 Monroe County Hazard Analysis Report by SEMO, January 1999

Specific information concerning estimated value ($) of potential loss, damage to structures, casualties, etc.

No local experience to note.

Notes on data limitations: Time and record access.

Appendix B-29

Hazard Specific Analysis: Food Shortage

Definition:

"Situation where the normal distribution pattern and/or the timely delivery of foodstuffs to retail establishments for normal consumer demand is interrupted for a substantial period of time."[1]

Description:

An event of this type is unlikely to occur in Monroe County. This hazard has a low hazard rating of 101.8.[2] A rare event might be the result of extreme weather conditions that contribute to the depletion of foodstuffs because people stockpile specific items that strips the local inventory.

Overview of specific hazard locations and the extent of the hazard:

Retail and/or wholesale food stores are affected. Local experience is from extreme weather conditions that cascade into short-term absences of staples from the grocery shelves. Like other areas of the country, we also bear the consequences of higher prices when supplies cannot meet demand.

Previous occurrences of the hazard:

- Blizzard '99. Milk, batteries, bread and other food staples were not replenished as the NYS Thruway was closed for several days impeding the delivery of local inventory.

- Price Spikes. These occur as product demand exceeds supply. Typical "mark-ups" are on coffee, produce, and meats.

Probability of future occurrences and potential magnitude:

There is always a probability of future occurrence for this hazard with the potential magnitude determined by the specific location and other factors involved with the event.

Maps of hazard areas:

Map is not required due to widespread geographic potential.

Analysis of the impact on business, infrastructure & critical facilities:

Businesses pass-along the mark-ups, especially wholesale houses to retailers and retailers to customers. Restaurants are more likely to absorb a short-term price spike.

1 HAZNY
2 Monroe County Hazard Analysis Report by SEMO, January 1999

Specific information concerning estimated value ($) of potential loss, damage to structures, casualties, etc.

Other than price increases in the groceries, we have not suffered adverse impact.

Notes on data limitations: Time and record access.

APPENDIX C

Hazard-Specific Action Plans

Appendix C-1

HAZARD B-1, Ice Storm

MITIGATION MEASURES (organized by the six categories identified in the Plan). In addition to the Mitigation Measures identified as Figure 1. in Section D of the Plan, the following measures are identified for an Ice Storm:

A. **Prevention.**

Measure: (describe measure)	**#1. Implement an "Annual, Tree/Stream Maintenance Program"**				
Priority Rank (pick one and delete others)	**High**, Medium or Low				
Cost Estimate (pick one and delete others)	under $1,000	$1,001 – 4,999	$5,000 – 9,999	**$10,000 – 19,999**	over $20,000
Source of Funds	**local municipal annual operating budget, private-sector funds, categorical grant, Mitigation Grant**				
Lead Agency	**local municipal officials and/or private-sector (as recommended in 4-24-01 transmittal of NYSDEC/Army Corps of Engineers, "Routine Stream Maintenance" brochure by County OEP)**				
Timetable (pick one and delete others)	**within 1 year**	within 1-3 years	within 5 years	continuous	

Measure: (describe measure)	**#2. Relocate vulnerable utilities**				
Priority Rank (pick one and delete others)	High, **Medium** or Low				
Cost Estimate (pick one and delete others)	under $1,000	$1,001 – 4,999	$5,000 – 9,999	$10,000 – 19,999	**over $20,000**
Source of Funds	**municipal utility funds, private-sector funds, categorical grants, Mitigation Grants**				
Lead Agency	**municipal officials and/or private-sector**				
Timetable (pick one and delete others)	within 1 year	within 1-3 years	**within 5 years**	continuous	

Measure: (describe measure)	**#3. Implement DPW/DOT Plans for debris clearance, removal, and disposal**				
Priority Rank (pick one and delete others)	**High**, Medium or Low				
Cost Estimate (pick one and delete others)	under $1,000	**$1,001 – 4,999**	$5,000 – 9,999	$10,000 – 19,999	over $20,000
Source of Funds	**local municipal annual operating budgets, categorical grants, Mitigation Grants**				
Lead Agency	**local municipal officials**				
Timetable (pick one and delete others)	within 1 year	**within 1-3 years**	within 5 years	continuous	

Measure: (describe measure)	**#4. Lobby state and federal officials to require permanent installation of emergency generators on-site at health care facilities and elderly housing facilities.**				
Priority Rank (pick one and delete others)	High, **Medium** or Low				
Cost Estimate (pick one and delete others)	under $1,000	$1,001 – 4,999	**$5,000 – 9,999**	$10,000 – 19,999	over $20,000
Source of Funds	**local municipal annual operating budgets, Mitigation Grants**				
Lead Agency	**municipal officials**				
Timetable (pick one and delete others)	within 1 year	within 1-3 years	**within 5 years**	continuous	

B. **Property Protection.**

Measure: (describe measure)	**#1. Encourage installation of backup power supply**				
Priority Rank (pick one and delete others)	High, **Medium** or Low				
Cost Estimate (pick one and delete others)	**under $1,000**	$1,001 – 4,999	$5,000 – 9,999	$10,000 – 19,999	over $20,000
Source of Funds	**local municipal annual operating budget**				
Lead Agency	**local municipal officials**				
Timetable (pick one and delete others)	within 1 year	within 1-3 years	within 5 years	**continuous**	

C. **Public Education & Awareness.**

Measure: (describe measure)	**#1. Develop pre-scripted, Public Safety messages for media outlets**				
Priority Rank (pick one and delete others)	**High**, Medium or Low				
Cost Estimate (pick one and delete others)	**under $1,000**	$1,001 – 4,999	$5,000 – 9,999	$10,000 – 19,999	over $20,000
Source of Funds	**local municipal annual operating budget**				
Lead Agency	**County Public Information Officer**				
Timetable (pick one and delete others)	**within 1 year**	within 1-3 years	within 5 years	continuous	

Measure: (describe measure)	**#2. Develop alternate communications plan**				
Priority Rank (pick one and delete others)	**High**, Medium or Low				
Cost Estimate (pick one and delete others)	under $1,000	**$1,001 – 4,999**	$5,000 – 9,999	$10,000 – 19,999	over $20,000
Source of Funds	**local municipal annual operating budget, categorical grant, Mitigation Grant**				
Lead Agency					
Timetable (pick one and delete others)	within 1 year	**within 1-3 years**	within 5 years	continuous	

Measure: (describe measure)	**#3. Provide utility restoration schedule to the public**				
Priority Rank (pick one and delete others)	**High**, Medium or Low				
Cost Estimate (pick one and delete others)	under $1,000	**$1,001 – 4,999**	$5,000 – 9,999	$10,000 – 19,999	over $20,000
Source of Funds	**municipal utility and/or private-sector utility, Mitigation Plan, categorical grant**				
Lead Agency	**municipal utility and/or private-sector utility**				
Timetable (pick one and delete others)	**within 1 year**	within 1-3 years	within 5 years	continuous	

Measure: (describe measure)	**#4. Provide more public outreach during an emergency**				
Priority Rank (pick one and delete others)	High, **Medium** or Low				
Cost Estimate (pick one and delete others)	under $1,000	**$1,001 – 4,999**	$5,000 – 9,999	$10,000 – 19,999	over $20,000
Source of Funds	**local municipal annual operating budget, Mitigation Grant, private-sector funds**				
Lead Agency	**Public Information Officers with government and private utilities**				
Timetable (pick one and delete others)	within 1 year	**within 1-3 years**	within 5 years	continuous	

Measure: (describe measure)	**#5. Expand utility Customer Service capacity**				
Priority Rank (pick one and delete others)	High, **Medium** or Low				
Cost Estimate (pick one and delete others)	under $1,000	$1,001 – 4,999	$5,000 – 9,999	**$10,000 – 19,999**	over $20,000
Source of Funds	**municipal utility funds, private-sector utility funds, categorical grants, Mitigation Grants**				
Lead Agency	**municipal and/or private utilities**				
Timetable (pick one and delete others)	within 1 year	**within 1-3 years**	within 5 years	continuous	

Measure: (describe measure)	**#6. Expand information available on websites**				
Priority Rank (pick one and delete others)	High, **Medium** or Low				
Cost Estimate (pick one and delete others)	under $1,000	**$1,001 – 4,999**	$5,000 – 9,999	$10,000 – 19,999	over $20,000
Source of Funds	**local municipal annual operating budgets, private-sector funding, categorical grants, Mitigation Grants**				
Lead Agency	**Web Masters**				
Timetable (pick one and delete others)	within 1 year	within 1-3 years	within 5 years	**continuous**	

D. **Natural Resource Protection.**

E. **Emergency Services.**

Measure: (describe measure)	**#1. Develop a strategy to reduce the time it takes to clear streets (Rights-of-Way) of debris**				
Priority Rank (pick one and delete others)	**High**, Medium or Low				
Cost Estimate (pick one and delete others)	under $1,000	**$1,001 – 4,999**	$5,000 – 9,999	$10,000 – 19,999	over $20,000
Source of Funds	**local municipal operating budgets, Mitigation Grants**				
Lead Agency	**Highway Superintendents**				
Timetable (pick one and delete others)	**within 1 year**	within 1-3 years	within 5 years	continuous	

Measure: (describe measure)	**#2. Regularly review restoration priorities**				
Priority Rank (pick one and delete others)	**High**, Medium or Low				
Cost Estimate (pick one and delete others)	under $1,000	**$1,001 – 4,999**	$5,000 – 9,999	$10,000 – 19,999	over $20,000
Source of Funds	**local municipal annual operating budgets, private-sector funds, Mitigation Grants**				
Lead Agency	**local municipal officials**				
Timetable (pick one and delete others)	within 1 year	within 1-3 years	within 5 years	**continuous**	

Measure: (describe measure)	**#3. Enhance utility "Town Liaison" Program**				
Priority Rank (pick one and delete others)	High, **Medium** or Low				
Cost Estimate (pick one and delete others)	under $1,000	**$1,001 – 4,999**	$5,000 – 9,999	$10,000 – 19,999	over $20,000
Source of Funds	**private-sector funds, Mitigation Grants, local municipal operating budget**				
Lead Agency	**local municipal officials**				
Timetable (pick one and delete others)	within 1 year	within 1-3 years	within 5 years	**continuous**	

Measure: (describe measure)	**#4. Identify and implement a plan for appropriate modes of public transportation**				
Priority Rank (pick one and delete others)	High, **Medium** or Low				
Cost Estimate (pick one and delete others)	under $1,000	**$1,001 – 4,999**	$5,000 – 9,999	$10,000 – 19,999	over $20,000
Source of Funds	**local municipal annual operating budgets, private-sector funds, Mitigation Grants**				
Lead Agency	**County Office For the Aging**				
Timetable (pick one and delete others)	within 1 year	within 1-3 years	within 5 years	**continuous**	

F. **Structural Projects.**

Measure: (describe measure)	**#1. Install permanent backup power supply at public facilities**				
Priority Rank (pick one and delete others)	**High**, Medium or Low				
Cost Estimate (pick one and delete others)	under $1,000	$1,001 – 4,999	$5,000 – 9,999	**$10,000 – 19,999**	over $20,000
Source of Funds	**local municipal annual operating budgets and capital improvement budgets, private-sector funds, Mitigation Grants**				
Lead Agency	**local municipal officials**				
Timetable (pick one and delete others)	within 1 year	**within 1-3 years**	within 5 years	continuous	

Measure: (describe measure)	**#2. Procure additional communication capacity**				
Priority Rank (pick one and delete others)	**High**, Medium or Low				
Cost Estimate (pick one and delete others)	under $1,000	$1,001 – 4,999	$5,000 – 9,999	**$10,000 – 19,999**	over $20,000
Source of Funds	**local municipal annual operating budgets and capital improvement budgets, categorical grants, Mitigation Grants**				
Lead Agency	**County Public Safety Communications Division**				
Timetable (pick one and delete others)	within 1 year	**within 1-3 years**	within 5 years	continuous	

Appendix C-2

HAZARD B-2, Flood

MITIGATION MEASURES (organized by the six categories identified in the Plan). In addition to the Mitigation Measures identified as Figure 1. in Section D of the Plan, the following measures are identified for a Flood:

A. **Prevention.**

Measure: (describe measure)	**#1. Implement an annual, "Waterway/Drainage Maintenance" Program**				
Priority Rank (pick one and delete others)	**High**, Medium or Low				
Cost Estimate (pick one and delete others)	under $1,000	$1,001 – 4,999	$5,000 – 9,999	**$10,000 – 19,999**	over $20,000
Source of Funds	**local municipal annual operating budgets, categorical grants, Mitigation Grants**				
Lead Agency	**local municipal officials**				
Timetable (pick one and delete others)	within 1 year	within 1-3 years	within 5 years	**continuous**	

Measure: (describe measure)	**#2. <u>County Project</u>. Prioritize and clean Highway culverts (approximately 2,200) to ensure maximum flow capacity and minimize surcharge flooding.**				
Priority Rank (pick one and delete others)	**High**, Medium or Low				
Cost Estimate (pick one and delete others)	**under $1,000 per culvert**	$1,001 – 4,999	$5,000 – 9,999	$10,000 – 19,999	over $20,000
Source of Funds	**Annual operating budget, Mitigation Grants**				
Lead Agency	**Highway Department**				
Timetable (pick one and delete others)	within 1 year	within 1-3 years	within 5 years	**continuous**	

B. **Property Protection.**

Measure: (describe measure)	**#1. Encourage affected property owners to purchase Flood Insurance**				
Priority Rank (pick one and delete others)	**High**, Medium or Low				
Cost Estimate (pick one and delete others)	**under $1,000**	$1,001 – 4,999	$5,000 – 9,999	$10,000 – 19,999	over $20,000
Source of Funds	**local municipal annual operating budgets, Mitigation Grants**				
Lead Agency	**local municipal officials (assistance available through brochures: "Monroe County Flood Loss Reduction Measures," transmitted by OEP 4-24-01; "Addressing Your Community's Flood Problems: A Guide for Elected Officials," transmitted by OEP with 1993 OEP Local Officials Emergency Management Guidebook)**				
Timetable (pick one and delete others)	within 1 year	within 1-3 years	within 5 years	**continuous**	

Measure: (describe measure)	**#2. Participate in the federal Community Rating System**				
Priority Rank (pick one and delete others)	**High**, Medium or Low				
Cost Estimate (pick one and delete others)	**under $1,000**	$1,001 – 4,999	$5,000 – 9,999	$10,000 – 19,999	over $20,000
Source of Funds	**local municipal annual operating budgets, Mitigation Grants, categorical grants**				
Lead Agency	**local municipal officials; County OEP for the Flood Mitigation Section within the County's Library System.**				
Timetable (pick one and delete others)	within 1 year	within 1-3 years	within 5 years	**continuous**	

C. **Public Education & Awareness.**

Measure: (describe measure)	**#1. Provide information about the Erie Canal and its spillway locations**				
Priority Rank (pick one and delete others)	**High**, Medium or Low				
Cost Estimate (pick one and delete others)	**under $1,000**	$1,001 – 4,999	$5,000 – 9,999	$10,000 – 19,999	over $20,000
Source of Funds	**state funds, local municipal annual operating budget, Mitigation Grant**				
Lead Agency	**local officials**				
Timetable (pick one and delete others)	**within 1 year**	within 1-3 years	within 5 years	continuous	

Measure: (describe measure)	**#2. Ensure dam owners have information on state regulations**				
Priority Rank (pick one and delete others)	**High**, Medium or Low				
Cost Estimate (pick one and delete others)	**under $1,000**	$1,001 – 4,999	$5,000 – 9,999	$10,000 – 19,999	over $20,000
Source of Funds	**local municipal annual operating budget, state funds**				
Lead Agency	**County Office of Emergency Preparedness with NYS DEC**				
Timetable (pick one and delete others)	**within 1 year**	within 1-3 years	within 5 years	continuous	

D. Natural Resource Protection.

E. **Emergency Services.**

Measure: (describe measure)	**#1. Provide water rescue training**				
Priority Rank (pick one and delete others)	**High**, Medium or Low				
Cost Estimate (pick one and delete others)	under $1,000	$1,001 – 4,999	$5,000 – 9,999	$10,000 – 19,999	over $20,000
Source of Funds	**local municipal annual operating budget**				

Lead Agency	**local municipal officials**			
Timetable (pick one and delete others)	within 1 year	within 1-3 years	within 5 years	**continuous**

Measure: (describe measure)	**#2. Continue to stockpile sandbags for flood emergencies**				
Priority Rank (pick one and delete others)	**High**, Medium or Low				
Cost Estimate (pick one and delete others)	under $1,000	**$1,001 – 4,999**	$5,000 – 9,999	$10,000 – 19,999	over $20,000
Source of Funds	**County operating budget, Mitigation Grant**				
Lead Agency	**County OEP**				
Timetable (pick one and delete others)	within 1 year	within 1-3 years	within 5 years	**continuous**	

F. **Structural Projects.**

Measure: (describe measure)	**#1. <u>Local Project</u>. Implement mitigation measures for Irondequoit Creek, as identified by the U.S. Army Corps of Engineer's 2003 proposal, and as agreed by local parties. (reference – <u>Democrat & Chronicle</u>, 3-2-03)**				
Priority Rank (pick one and delete others)	**High**, Medium or Low				
Cost Estimate (pick one and delete others)	under $1,000	$1,001 – 4,999	$5,000 – 9,999	$10,000 – 19,999	over **$7 M**
Source of Funds	**U.S. Army Corps of Engineers – 65%; state, County, local – 35%**				
Lead Agency	**U.S. Army Corps of Engineers**				
Timetable (pick one and delete others)	within 1 year	within 1-3 years	**within 5 years**	continuous	

Appendix C-3

HAZARD B-3, Water Supply Failure

MITIGATION MEASURES (organized by the six categories identified in the Plan). In addition to the Mitigation Measures identified as Figure 1. in Section D of the Plan, the following measures are identified for a Water Supply Failure:

A. **Prevention.**

Measure: (describe measure)	**#1. Provide redundant back-up power supply for public supply treatment facilities and system pump stations.**				
Priority Rank (pick one and delete others)	High, **Medium** or Low				
Cost Estimate (pick one and delete others)	under $1,000	$1,001 – 4,999	$5,000 – 9,999	$10,000 – 19,999	**over $20,000**
Source of Funds	**user fees; Mitigation Grants**				
Lead Agency	**Public Water Suppliers**				
Timetable (pick one and delete others)	within 1 year	**within 1-3 years**	within 5 years	continuous	

B. **Property Protection.**

C. **Public Education & Awareness.**

Measure: (describe measure)	**#1. Publish "Annual Water Quality Reports"**				
Priority Rank (pick one and delete others)	**High**, Medium or Low				
Cost Estimate (pick one and delete others)	under $1,000	$1,001 – 4,999	$5,000 – 9,999	**$10,000 – 19,999**	over $20,000
Source of Funds	**Monroe County Water Authority**				
Lead Agency	**Monroe County Water Authority**				
Timetable (pick one and delete others)	within 1 year	within 1-3 years	within 5 years	**continuous**	

D. **Natural Resource Protection.**

E. **Emergency Services.**

F. **Structural Projects.**

Appendix C-4

HAZARD B-4, Civil Disturbance

MITIGATION MEASURES (organized by the six categories identified in the Plan). In addition to the Mitigation Measures identified as Figure 1. in Section D of the Plan, the following measures are identified for a Civil Disturbance:

A. **Prevention.**

B. **Property Protection.**

C. **Public Education & Awareness.**

D. **Natural Resource Protection.**

E. **Emergency Services.**

Measure: (describe measure)	**#1. Obtain personal protective, detection and monitoring, and communications response equipment for Emergency Services providers.**				
Priority Rank (pick one and delete others)	**High**, Medium or Low				
Cost Estimate (pick one and delete others)	under $1,000	$1,001 – 4,999	$5,000 – 9,999	$10,000 – 19,999	**over $20,000**
Source of Funds	**Federal Homeland Security Grant (through NYS WMD Task Force), categorical grants, private-sector funds (especially Health Care)**				
Lead Agency	**Monroe County WMD Task Force (point-of-contact is County Office of Emergency Preparedness)**				
Timetable (pick one and delete others)	within 1 year	within 1-3 years	within 5 years	**continuous**	

F. **Structural Projects.**

Appendix C-5

HAZARD B-5, Utility Failure

MITIGATION MEASURES (organized by the six categories identified in the Plan). In addition to the Mitigation Measures identified as Figure 1. in Section D of the Plan, the following measures are identified for a Utility Failure:

A. **Prevention.**

Measure: (describe measure)	**#1. National Public/Private-Sector Partnership Project. Utilize technology to up-grade the national electric grid transmission system.**				
Priority Rank (pick one and delete others)	**High**, Medium or Low				
Cost Estimate (pick one and delete others)	under $1,000	$1,001 – 4,999	$5,000 – 9,999	$10,000 – 19,999	**over $20,000**
Source of Funds	**private and public; federal incentives**				
Lead Agency	**North America Electric Reliability Council (non-profit, market interface manager)**				
Timetable (pick one and delete others)	within 1 year	**within 1-3 years**	within 5 years	continuous	

B. **Property Protection.**

Measure: (describe measure)	**#1. Local Utilities Project. Preserve capacity to generate local power and enhance the ability to segregate local supply from the national power grid during major failures, e.g. August 14, 2003**				
Priority Rank (pick one and delete others)	High, **Medium** or Low				
Cost Estimate (pick one and delete others)	under $1,000	$1,001 – 4,999	$5,000 – 9,999	$10,000 – 19,999	**over $20,000**
Source of Funds	**private-sector; federal incentives**				
Lead Agency	**utilities**				
Timetable (pick one and delete others)	within 1 year	**within 1-3 years**	within 5 years	continuous	

C. **Public Education & Awareness.**

D. **Natural Resource Protection.**

E. **Emergency Services.**

Measure: (describe measure)	**#1. <u>Local Projects</u>. Provide power back-up supply for municipal fueling stations.**				
Priority Rank (pick one and delete others)	High, **Medium** or Low				
Cost Estimate (pick one and delete others)	under $1,000	**$1,001 – 4,999**	$5,000 – 9,999	$10,000 – 19,999	over $20,000
Source of Funds	**local annual operating budgets, Mitigation Grants**				
Lead Agency	**municipalities**				
Timetable (pick one and delete others)	within 1 year	**within 1-3 years**	within 5 years	continuous	

F. **Structural Projects.**

Appendix C-6

HAZARD B-6, Structural Collapse

MITIGATION MEASURES (organized by the six categories identified in the Plan). In addition to the Mitigation Measures identified as Figure 1. in Section D of the Plan, the following measures are identified for a Structural Collapse:

A. **Prevention.**

Measure: (describe measure)	**#1. Local Project. Enact Local Laws that require property owners to demolish and remove unsafe structures from their property(ies).**				
Priority Rank (pick one and delete others)	**High**, Medium or Low				
Cost Estimate (pick one and delete others)	under $1,000	**$1,001 – 4,999**	$5,000 – 9,999	$10,000 – 19,999	over $20,000
Source of Funds	**local annual operating budgets; Mitigation Grants**				
Lead Agency	**local Legislative Body**				
Timetable (pick one and delete others)	within 1 year	**within 1-3 years**	within 5 years	continuous	

B. **Property Protection.**

C. **Public Education & Awareness.**

D. **Natural Resource Protection.**

E. **Emergency Services.**

F. **Structural Projects.**

Appendix C-7

HAZARD B-7, Hazardous Materials (at Fixed Facilities)

MITIGATION MEASURES (organized by the six categories identified in the Plan). In addition to the Mitigation Measures identified as Figure 1. in Section D of the Plan, the following measures are identified for Hazardous Materials (at Fixed Facilities):

A. **Prevention.**

B. **Property Protection.**

C. **Public Education & Awareness.**

D. **Natural Resource Protection.**

E. **Emergency Services.**

F. **Structural Projects.**

Appendix C-8

HAZARD B-8, Blizzard

MITIGATION MEASURES (organized by the six categories identified in the Plan). In addition to the Mitigation Measures identified as Figure 1. in Section D of the Plan, the following measures are identified for a Blizzard:

A. **Prevention.**

B. **Property Protection.**

C. **Public Education & Awareness.**

D. **Natural Resource Protection.**

E. **Emergency Services.**

Measure: (describe measure)	**#1. NYS Project. Provide annual NYS Dept. of Transportation (NYSDOT) "Snow and Ice Control" Program for local Highway Superintendents and Emergency Service providers.**				
Priority Rank (pick one and delete others)	**High**, Medium or Low				
Cost Estimate (pick one and delete others)	**under $1,000**	$1,001 – 4,999	$5,000 – 9,999	$10,000 – 19,999	over $20,000
Source of Funds	**NYSDOT; County Highway Superintendents Association; Mitigation Grants**				
Lead Agency	**NYSDOT**				
Timetable (pick one and delete others)	within 1 year	within 1-3 years	within 5 years	**continuous**	

F. **Structural Projects.**

Appendix C-9

HAZARD B-9, Hazardous Materials (Transportation)

MITIGATION MEASURES (organized by the six categories identified in the Plan). There are no specific additions to the Mitigation Measures identified as Figure 1. in Section D of the Plan for Hazardous Materials (Transportation).

Appendix C-10

HAZARD B-10, Explosion

MITIGATION MEASURES (organized by the six categories identified in the Plan). In addition to the Mitigation Measures identified as Figure 1. in Section D of the Plan, the following measures are identified for an Explosion:

A. **Prevention.**

B. **Property Protection.**

C. **Public Education & Awareness.**

Measure: (describe measure)	**#1. NYS Project. Provide notice of licensing issuance for explosive permits and materials storage to local jurisdictions.**				
Priority Rank (pick one and delete others)	**High**, Medium or Low				
Cost Estimate (pick one and delete others)	under $1,000	**$1,001 – 4,999**	$5,000 – 9,999	$10,000 – 19,999	over $20,000
Source of Funds	**state funds**				
Lead Agency	**NYS Department of Labor**				
Timetable (pick one and delete others)	within 1 year	within 1-3 years	within 5 years	**continuous**	

D. **Natural Resource Protection.**

E. **Emergency Services.**

F. **Structural Projects.**

Appendix C-11

HAZARD B-11, Fire

MITIGATION MEASURES (organized by the six categories identified in the Plan). In addition to the Mitigation Measures identified as Figure 1. in Section D of the Plan, the following measures are identified for a Fire:

A. **Prevention.**

B. **Property Protection.**

Measure: (describe measure)	**#1. Encourage residential use of smoke detectors through public education, and "give away" programs.**				
Priority Rank (pick one and delete others)	**High**, Medium or Low				
Cost Estimate (pick one and delete others)	under $1,000	**$1,001 – 4,999**	$5,000 – 9,999	$10,000 – 19,999	over $20,000
Source of Funds	**fire jurisdiction budgets; private-sector partners; Mitigation Grants**				
Lead Agency	**local fire jurisdictions**				
Timetable (pick one and delete others)	within 1 year	within 1-3 years	within 5 years	**continuous**	

C. **Public Education & Awareness.**

D. **Natural Resource Protection.**

E. **Emergency Services.**

F. **Structural Projects.**

Appendix C-12

HAZARD B-12, Tornado

MITIGATION MEASURES (organized by the six categories identified in the Plan). There are no specific additions to the Mitigation Measures identified as Figure 1. in Section D of the Plan for a Tornado.

Appendix C-13

HAZARD B-13 Dam Failure

MITIGATION MEASURES (organized by the six categories identified in the Plan). There are no specific additions to the Mitigation Measures identified as Figure 1. in Section D of the Plan for a Dam Failure.

Appendix C-14

HAZARD B-14, Transportation Incident

MITIGATION MEASURES (organized by the six categories identified in the Plan). In addition to the Mitigation Measures identified as Figure 1. in Section D of the Plan, the following measures are identified for a Transportation Incident:

A. **Prevention.**

B. **Property Protection.**

C. **Public Education & Awareness.**

Measure: (describe measure)	**#1. Local Project. Provide construction information and project status on sites that impact traffic**				
Priority Rank (pick one and delete others)	**High**, Medium or Low				
Cost Estimate (pick one and delete others)	under $1,000	$1,001 – 4,999	$5,000 – 9,999	$10,000 – 19,999	**unknown**
Source of Funds	**Gannett Publishers**				
Lead Agency	**Democrat & Chronicle newspaper**				
Timetable (pick one and delete others)	within 1 year	within 1-3 years	within 5 years	**continuous**	

D. **Natural Resource Protection.**

E. **Emergency Services.**

F. **Structural Projects.**

Measure: (describe measure)	**#1. Improve motorist safety on the highway, at intersections, and/or bridges.**				
Priority Rank (pick one and delete others)	**High**, Medium or Low				
Cost Estimate (pick one and delete others)	under $1,000	$1,001 – 4,999	$5,000 – 9,999	$10,000 – 19,999	**over $20,000**
Source of Funds	**County Capital Budget, categorical grants, Mitigation Grants**				
Lead Agency	**County DOT**				
Timetable (pick one and delete others)	within 1 year	within 1-3 years	within 5 years	**continuous**	

Appendix C-15

HAZARD B-15, Landslide

MITIGATION MEASURES (organized by the six categories identified in the Plan). In addition to the Mitigation Measures identified as Figure 1. in Section D of the Plan, the following measures are identified for a Landslide:

A. **Prevention.**

Measure: (describe measure)	**#1. Local Project. Enact Local Laws: to restrict development on steep slopes; to require property owners and/or mine operators to rehabilitate open mines at closing.**				
Priority Rank (pick one and delete others)	High, **Medium** or Low				
Cost Estimate (pick one and delete others)	under $1,000	**$1,001 – 4,999**	$5,000 – 9,999	$10,000 – 19,999	over $20,000
Source of Funds	**local municipal operating budgets, Mitigation Grants**				
Lead Agency	**local municipalities**				
Timetable (pick one and delete others)	within 1 year	within 1-3 years	**within 5 years**	continuous	

B. **Property Protection.**

C. **Public Education & Awareness.**

D. **Natural Resource Protection.**

E. **Emergency Services.**

F. **Structural Projects.**

Appendix C-16

HAZARD B-16, Radiological (Fixed)

MITIGATION MEASURES (organized by the six categories identified in the Plan). There are no additions to the Mitigation Measures identified as Figure 1. in Section D of the Plan for Radiological (Fixed).

NOTE: FEMA regulations mandate community emergency response plans, personnel training requirements, and testing and evaluation on the emergency response plan. Monroe County complies with all mandates. Our most recent evaluation, a Plan Exercise on March 4, 2003 resulted in another "Excellent" Rating.

Monroe County Office of Emergency Preparedness complies with all FEMA standards in its planning, training, and exercise programs.

Appendix C-17

HAZARD B-17, Windstorm

MITIGATION MEASURES (organized by the six categories identified in the Plan). In addition to the Mitigation Measures identified as Figure 1. in Section D of the Plan, the following measures are identified for a Windstorm:

A. **Prevention.**

B. **Property Protection.**

C. **Public Education & Awareness.**

D. **Natural Resource Protection.**

E. **Emergency Services.**

F. **Structural Projects.**

Appendix C-18

HAZARD B-18, Earthquake

MITIGATION MEASURES (organized by the six categories identified in the Plan). In addition to the Mitigation Measures identified as Figure 1. in Section D of the Plan, the following measures are identified for an Earthquake:

A. **Prevention.**

B. **Property Protection.**

C. **Public Education & Awareness.**

D. **Natural Resource Protection.**

E. **Emergency Services.**

F. **Structural Projects.**

Appendix C-19

HAZARD B-19, Drought

MITIGATION MEASURES (organized by the six categories identified in the Plan). There are no additions to the Mitigation Measures identified as Figure 1. in Section D of the Plan for Drought.

Appendix C-20

HAZARD B-20, Terrorism

MITIGATION MEASURES (organized by the six categories identified in the Plan). In addition to the Mitigation Measures identified as Figure 1. in Section D of the Plan, the following measures are identified for Terrorism:

A. **Prevention.**

Measure: (describe measure)	**#1. Review emergency plans for public facilities to ensure that appropriate measures are considered and referenced**				
Priority Rank (pick one and delete others)	**High**, Medium or Low				
Cost Estimate (pick one and delete others)	under $1,000	$1,001 – 4,999	**$5,000 – 9,999**	$10,000 – 19,999	over $20,000
Source of Funds	**jurisdiction's annual operating budget, categorical grants, federal and state Homeland Security Grants**				
Lead Agency	**each regulated jurisdiction**				
Timetable (pick one and delete others)	within 1 year	within 1-3 years	within 5 years	**continuous**	

Measure: (describe measure)	**#2. <u>Schools Project</u>. Comply with *Project Save* regulations for plan review and revision cycles.**				
Priority Rank (pick one and delete others)	**High**, Medium or Low				
Cost Estimate (pick one and delete others)	under $1,000	**$1,001 – 4,999**	$5,000 – 9,999	$10,000 – 19,999	over $20,000
Source of Funds	**School District, Mitigation Grants**				
Lead Agency	**School Districts**				
Timetable (pick one and delete others)	within 1 year	within 1-3 years	within 5 years	**continuous**	

B. **Property Protection.**

Measure: (describe measure)	**#1. Implement a strategy to "target harden" critical and public facilities.**				
Priority Rank (pick one and delete others)	**High**, Medium or Low				
Cost Estimate (pick one and delete others)	under $1,000	$1,001 – 4,999	$5,000 – 9,999	$10,000 – 19,999	**over $20,000**
Source of Funds	**federal and state Homeland Security Grants; local operating and capital improvement budgets**				
Lead Agency	**local municipalities and constituted government Authorities**				
Timetable (pick one and delete others)	within 1 year	within 1-3 years	**within 5 years**	continuous	

C. **Public Education & Awareness.**

Measure: (describe measure)	**#1. Promote community vigilance through accurate and timely media reports, and public education campaigns.**				
Priority Rank (pick one and delete others)	**High**, Medium or Low				
Cost Estimate (pick one and delete others)	under $1,000	$1,001 – 4,999	$5,000 – 9,999	$10,000 – 19,999	**over $20,000**
Source of Funds	**federal and state Homeland Security Grants, local municipal annual operating budget, categorical grants**				
Lead Agency	**Monroe County Public Safety Dept.**				
Timetable (pick one and delete others)	within 1 year	within 1-3 years	within 5 years	**continuous**	

D. **Natural Resource Protection.**

E. **Emergency Services.**

Measure: (describe measure)	**#1. Obtain personal protective, detection and monitoring, and communications response equipment for Emergency Services providers.**				
Priority Rank (pick one and delete others)	**High**, Medium or Low				
Cost Estimate (pick one and delete others)	under $1,000	$1,001 – 4,999	$5,000 – 9,999	$10,000 – 19,999	**over $20,000**
Source of Funds	**Federal Homeland Security Grant (through NYS WMD Task Force), categorical grants, private-sector funds (especially Health Care)**				
Lead Agency	**Monroe County WMD Task Force (point-of-contact is County Office of Emergency Preparedness)**				
Timetable (pick one and delete others)	within 1 year	within 1-3 years	within 5 years	**continuous**	

Measure: (describe measure)	**#2. Provide training to Emergency Services providers on personal protective equipment (PPE) and WMD response.**				
Priority Rank (pick one and delete others)	**High**, Medium or Low				
Cost Estimate (pick one and delete others)	under $1,000	$1,001 – 4,999	$5,000 – 9,999	$10,000 – 19,999	**over $20,000**
Source of Funds	**Federal Homeland Security Grant (through NYS WMD Task Force), categorical grants, private-sector funds (especially Health Care)**				
Lead Agency	**Monroe County WMD Task Force (point-of-contact is County Office of Emergency Preparedness)**				
Timetable (pick one and delete others)	within 1 year	within 1-3 years	within 5 years	**continuous**	

F. **Structural Projects.**

Appendix C-21

HAZARD B-21, Energy Crisis

MITIGATION MEASURES (organized by the six categories identified in the Plan). In addition to the Mitigation Measures identified as Figure 1. in Section D of the Plan, the following measures are identified for an Energy Crisis:

A. **Prevention.**

Measure: (describe measure)	**#1. Continue monitoring all available information outlets for status of generated supply versus demand, to determine predicted/projected shortfalls.**				
Priority Rank (pick one and delete others)	High, **Medium** or Low				
Cost Estimate (pick one and delete others)	under $1,000	**$1,001 – 4,999**	$5,000 – 9,999	$10,000 – 19,999	over $20,000
Source of Funds	**local municipal annual operating budget, categorical grants, Mitigation Grants, private-sector funds**				
Lead Agency	**Monroe County Office of Emergency Preparedness**				
Timetable (pick one and delete others)	within 1 year	within 1-3 years	within 5 years	**continuous**	

B. **Property Protection.**

C. **Public Education & Awareness.**

D. **Natural Resource Protection.**

E. **Emergency Services.**

F. **Structural Projects.**

Appendix C-22

HAZARD B-22, Extreme Temperatures

MITIGATION MEASURES (organized by the six categories identified in the Plan). In addition to the Mitigation Measures identified as Figure 1. in Section D of the Plan, the following measures are identified for Extreme Temperatures:

A. **Prevention.**

B. **Property Protection.**

C. **Public Education & Awareness.**

Measure: (describe measure)	**#1. Partner with government agencies, the media and the private sector to heighten awareness of safety concerns related to extreme temperatures. A model is the National Safe Kids Campaign with General Motors (Democrat & Chronicle, July 10, 2003).**				
Priority Rank (pick one and delete others)	High, **Medium** or Low				
Cost Estimate (pick one and delete others)	**under $1,000**	$1,001 – 4,999	$5,000 – 9,999	$10,000 – 19,999	over $20,000
Source of Funds	**categorical grants, private-sector funds, Mitigation Grant**				
Lead Agency	**Monroe County Traffic Safety Office**				
Timetable (pick one and delete others)	within 1 year	within 1-3 years	within 5 years	**continuous**	

D. **Natural Resource Protection.**

E. **Emergency Services.**

Measure: (describe measure)	**#1. As technology advancements divert subscribership from the County's paging system, develop an alternative means to convey "extreme temperature" advisories to subscribers system.**				
Priority Rank (pick one and delete others)	High, **Medium** or Low				
Cost Estimate (pick one and delete others)	under $1,000	**$1,001 – 4,999**	$5,000 – 9,999	$10,000 – 19,999	over $20,000
Source of Funds	**local municipal annual operating budgets, categorical grants, Mitigation Grants**				
Lead Agency	**County Public Safety Communications**				
Timetable (pick one and delete others)	within 1 year	**within 1-3 years**	within 5 years	continuous	

F. **Structural Projects.**

Appendix C-23

HAZARD B-23, Disease

MITIGATION MEASURES (organized by the six categories identified in the Plan). In addition to the Mitigation Measures identified as Figure 1. in Section D of the Plan, the following measures are identified for a Disease:

A. **Prevention.**

B. **Property Protection.**

C. **Public Education & Awareness.**

D. **Natural Resource Protection.**

E. **Emergency Services.**

F. **Structural Projects.**

Appendix C-24

HAZARD B-24, Ice Jam

MITIGATION MEASURES (organized by the six categories identified in the Plan). There are no specific additions to the Mitigation Measures identified as Figure 1. in Section D of the Plan for an Ice Jam.

Appendix C-25

HAZARD B-25, Air Contamination

MITIGATION MEASURES (organized by the six categories identified in the Plan). In addition to the Mitigation Measures identified as Figure 1. in Section D of the Plan, the following measures are identified for Air Contamination:

A. **Prevention.**

B. **Property Protection.**

C. **Public Education & Awareness.**

D. **Natural Resource Protection.**

E. **Emergency Services.**

F. **Structural Projects.**

Appendix C-26

HAZARD B-26, Infestation

MITIGATION MEASURES (organized by the six categories identified in the Plan). In addition to the Mitigation Measures identified as Figure 1. in Section D of the Plan, the following measures are identified for Infestation:

A. **Prevention.**

B. **Property Protection.**

C. **Public Education & Awareness.**

D. **Natural Resource Protection.**

E. **Emergency Services.**

F. **Structural Projects.**

Appendix C-27

HAZARD B-27, Blight

MITIGATION MEASURES (organized by the six categories identified in the Plan). There are no specific additions to the Mitigation Measures identified as Figure 1. in Section D of the Plan for Blight.

Appendix C-28

HAZARD B-28, Radiological (Transit)

MITIGATION MEASURES (organized by the six categories identified in the Plan). There are no specific additions to the Mitigation Measures identified as Figure 1. in Section D of the Plan for Radiological (Transit).

Appendix C-29

HAZARD B-29, Food Shortage

MITIGATION MEASURES (organized by the six categories identified in the Plan). There are no specific additions to the Mitigation Measures identified as Figure 1. in Section D of the Plan for a Food Shortage.

APPENDIX D

Planning Committee Roster

Pre-Disaster Mitigation Plan Development
Planning Committee Roster
8-1-03

Village of Fairport

Ken Moore, Administrator 421-3201
31 South Main Street
Fairport, New York 14450

Town of Perinton

Tom Beck, Commissioner of Public Works 223-5115
100 Cobbs Lane
Fairport, New York 14450

Scott Copp, Director of Building Department 223-0770
1350 Turk Hill Road
Fairport, New York 14450

Jim Schenkel, Fire Marshal 223-0770
1350 Turk Hill Road
Fairport, New York 14450

Fire Departments

Bushnell's Basin Fire Department 529-2911
Bill Haines, 2nd Assistant Chief
683 Pittsford Victor Road
Pittsford, New York 14534

Egypt Fire Department 529-0313
Jim Roche, Deputy Chief
7478 Pittsford Palmyra Road
Fairport, New York 14450

Fairport Fire Department 529-0314
Steve Schalabba, Chief
31 South Main Street
Fairport, New York 14450

Other

Fairport Electric 223-9500
Mitch Wilke, Superintendent
31 South Main Street
Fairport, New York 14450

Fairport Police 223-1740

Kirk Parsons, Chief
31 South Main Street
Fairport, New York 14450

Fairport Schools 421-2005
Scott Covell, Assistant Superintendent for Business
38 West Church Street
Fairport, New York 14450

Monroe #1 BOCES 387-3840
David Duford, Director of Operations & Safety
41 O'Connor Road
Fairport, New York 14450

Perinton Ambulance 746-8574
Michelle Longyear, President
1400 Turk Hill Road
Fairport, New York 14450

Perinton Ambulance 721-8487
Kevin Duhamel, Vice-President of Operations
1400 Turk Hill Road
Fairport, New York 14450

APPENDIX E

NOTE: The maps, #1 through #15 are supplied on a Compact Disk.