Multi-Jurisdictional Natural Hazard Mitigation Plan Jefferson County, New York

Prepared for

Jefferson County
Office of Fire and Emergency Management
Metro-Jeff Public Safety Building
753 Waterman Drive
Watertown, New York 13601

URS

201 Willowbrook Boulevard, Third Floor
Wayne, New Jersey 07470-7005

Final Plan – January 2011

PLAN ADOPTION RESOLUTIONS

In accordance with Part 201.6 of the Disaster Mitigation Act of 2000 (DMA 2000), Jefferson County, New York, has developed this Multi-Jurisdictional Hazard Mitigation Plan to identify hazards that threaten the County and ways to reduce future damages associated with these hazards.

Following this page are the signed adoption resolutions of the County and all participating jurisdictions that have adopted this plan, authorizing municipal government staff to carry out the actions detailed herein.

Signed resolutions of adoption by all participating jurisdictions shall be inserted following this page after FEMA has reviewed and determined that the Draft plan is approvable. It is recommended that municipalities in Jefferson County consider using the Sample Adoption Resolution from the FEMA Region 2 "Hazard Mitigation Plan Development Tool Kit CD", as shown below. Failure of any participating jurisdiction to ultimately adopt the plan and provide their adoption resolution to FEMA will result in a determination from FEMA that such jurisdiction has not successfully met the requirements of DMA 2000 and that the community does not have a plan "in place".

SAMPLE
ADOPTION RESOLUTION

Note: This sample plan adoption resolution has been extracted from FEMA Region 2's "Hazard Mitigation Plan Development Tool Kit" CD (April 2009). It is recommended that municipalities in Jefferson County consider using this resolution when adopting the Final Plan.

(Name of Jurisdiction) Town A

(Governing Body) Town Council

(Address) 100 Main Street, Town A

RESOLUTION

WHEREAS, Town A, with the assistance from URS Corporation, has gathered information and prepared the Jefferson County, New York, Multi-Jurisdictional Hazard Mitigation Plan ("the Plan"); and

WHEREAS, the Plan has been prepared in accordance with the Disaster Mitigation Act of 2000; and

WHEREAS, Town A is a local unit of government that has afforded the citizens an opportunity to comment and provide input in the Plan and the actions in the Plan; and

WHEREAS, Town A has reviewed the Plan and affirms that the Plan will be updated no less than every five years;

NOW THEREFORE, BE IT RESOLVED by Town Council that Town A adopts the Jefferson County, New York, Multi-Jurisdictional Hazard Mitigation Plan as this jurisdiction's Natural Hazard Mitigation Plan, and resolves to execute the actions in the Plan.

ADOPTED this (date) day of (Month), (year) at a meeting of the Town Council.

_____
(Mayor)

_____
(Clerk)

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EXECUTIVE SUMMARY

Across the United States and around the world, natural disasters occur each day, as they have for thousands of years. As the world's population and development have increased, so have the effects of these natural disasters. The time and money required to recover from these events often strain or exhaust local resources. The purpose of hazard mitigation planning is to identify policies, actions, and tools for implementation that will, over time, work to reduce risk and the potential for future losses. Hazard mitigation is best realized when community leaders, businesses, citizens, and other stakeholders join together an in effort to undertake a process of learning about hazards that can affect their area and use this knowledge to prioritize needs and develop a strategy for reducing damages.

Section 322, Mitigation Planning, of the Robert T. Stafford Disaster Relief and Emergency Assistance Act ("the Stafford Act"), enacted by Section 104 of the Disaster Mitigation Act of 2000 ("DMA 2000"), provides new and revitalized approaches to mitigation planning. Section 322 continues the requirement for a State mitigation plan as a condition of disaster assistance, and establishes a new requirement for local mitigation plans. In order to apply for Federal aid for technical assistance and post-disaster funding, local jurisdictions must comply with DMA 2000 and its implementing regulations (44 CFR Part 201.6).

While Jefferson County has always sought ways to reduce their vulnerability to hazards, the passage of DMA 2000 helped County officials to recognize the benefits of pursuing a long-term, coordinated approach to hazard mitigation through hazard mitigation planning. The County has received grant funds from the Federal Emergency Management Agency (FEMA) for the purpose of developing this very hazard mitigation plan. Funding was received under the Hazard Mitigation Grant Program for development of a multi-jurisdictional hazard mitigation plan for the County and as many of its 43 municipalities that chose to participate. This **Jefferson County Multi-Jurisdictional Natural Hazard Mitigation Plan** represents the collective efforts of the county and seven fully participating jurisdictions, the general public, and other stakeholders. Natural disasters cannot be prevented from occurring. However, over the long-term, the continued implementations of this Plan will gradually, but steadily, lessen the impacts associated with hazard events.

The Jefferson County Multi-Jurisdictional Hazard Mitigation Plan has been developed by the Jefferson County Hazard Mitigation Planning Team (the "Planning Team"), with support from outside consultants. The efforts of the Planning Committee were headed by Joseph Plummer of the Jefferson County Office of Fire and Emergency Management (JCOFEM). The Planning Committee was supplemented by a Core Planning Group (CPG) and Jurisdictional Assessment Teams (JATs), with one JAT for each of the County's participating jurisdictions.

The plan development process was initiated in earnest in the fall of 2008 with the project initiation meeting held on March 31, 2009. A Kickoff Meeting of the full Core Planning Group was conducted on July 9, 2009. Thereafter, the Core Planning Group met on July 9, 2009; September 30, 2009; October 14, 2009; and November 10, 2009. Jurisdictional Assessment Teams met individually throughout the plan development process as they deemed necessary. Following completion of the draft plan, a public meeting was held on February 16, 2010, to present the draft plan to County Legislators.

Community support is vital to the success of any hazard mitigation plan. The Planning Committee provided opportunities for participation and input of the public and other stakeholders throughout the plan development process, both prior to this Draft and before approval of the Final plan, providing citizens and other stakeholders with opportunities to take part in the decisions that will affect their future. On a mitigation planning section of the Jefferson County web site, the JCOFEM posted information on the plan development process and where to go for additional information or comments beginning in September

2009; this web site has been and continues to be maintained and updated regularly. The County also conducted numerous other outreach actions throughout the planning process. The public and other stakeholders were apprised of the hazard mitigation planning process through the County website and via the posting of the project fact sheet in public buildings. JCOFEM also made it a point to speak of the mitigation planning process during regularly-scheduled public presentations on emergency preparedness initiatives. Jurisdictional Assessment Team members supplemented County efforts by reaching out to the public and other stakeholders within their respective jurisdictions to get the word out through various means and provide opportunities for feedback and participation.

The hazard mitigation planning process consisted of the following key steps:

- Researching a full range of natural hazards to identify which hazards could affect the County;
- Identifying the location and extent of hazard areas;
- Identifying assets located within these hazard areas;
- Characterizing existing and potential future assets at risk;
- Assessing vulnerabilities to the most prevalent hazards; and
- Formulation and prioritization of goals, objectives, and mitigation actions to reduce or avoid long-term vulnerabilities to the identified hazards.

Natural hazards that can affect Jefferson County that were studied in detail in the Plan are as follows:

- ***Atmospheric hazards***, including: extreme temperatures, extreme wind, hurricanes and tropical storms, nor'easters, tornadoes, and winter storms;
- ***Hydrologic hazards***, including: flooding, drought, and lakeshore erosion;
- ***Geologic hazards***, including: earthquakes and landslides; and
- ***Other hazards***, including: wildfires.

After evaluating these hazards and assets within the County to which they are vulnerable, the Planning Team developed a mitigation strategy to increase the disaster resistance of the County, along with procedures for monitoring, evaluating and updating the Plan to ensure that it remains a "living document."

This Draft Plan is currently under review by the Planning Team, NYSEMO, FEMA, and the public and other stakeholders. Later, comments will be incorporated, and the County and all participating jurisdictions will each formally adopt the Final Plan. The Final Plan will include copies of adoption resolutions following Page i.

If you have any questions or comments on the Multi-Jurisdictional Natural Hazard Mitigation Plan for Jefferson County, New York, additional information can be obtained by contacting:

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Program Coordinator
Jefferson County Office of Fire and Emergency Management
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Watertown, NY 13601
Phone: 315-786-2654
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E-Mail: josephp@co.jefferson.ny.us

ACKNOWLEDGEMENTS

Throughout the plan development process, the JCOFEM worked tirelessly to involve all of its 43 municipalities. These local jurisdictions were not only invited to participate but were truly guided through the process by JCOFEM at every stage.

The following municipal entities (Jefferson County and seven of its constituent municipalities) successfully in the development of this plan by attending meetings and submitting the key deliverables:

Jefferson, County of

Clayton, Town of
Clayton, Village of
Deferiet, Village of
Village of Glen Park
Town of Henderson
Lorraine, Town of
Watertown, City of

A more detailed summary of the participation demonstrated by each municipality in the County, including attendance at meetings and submission of requested deliverables, is presented in Table 1.5.

In addition, the records show that the following stakeholder entities participated by attending at least one Core Planning Group meeting.

Jefferson County Community College
Frontier Housing Corporation
St. Lawrence County, New York
NYSEMO Region 4

URS Corporation (Wayne, NJ) acted as the plan development consultant providing hazard mitigation planning services.

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SECTION 1 - INTRODUCTION

Purpose

Jefferson County is susceptible to a number of different natural hazards. These natural hazards have the potential to cause property loss, loss of life, economic hardship, and threats to public health and safety. While an important aspect of emergency management deals with disaster recovery – those actions that a community must take to repair damages and make itself whole in the wake of a natural disaster – an equally important aspect of emergency management involves hazard mitigation. Hazard mitigation measures are efforts taken *before* a disaster happens to lessen the impact that future disasters of that type will have on people and property in the community. They are things you do today to be more protected in the future.

Recognizing the risks that natural hazards pose to Jefferson County, the Jefferson County Office of Emergency Management submitted an application, and was approved for, grant monies from the Federal Emergency Management Agency (FEMA) under the Hazard Mitigation Grant Program in 2006 to be used to develop a hazard mitigation plan for the County.

This **Jefferson County Multi-Jurisdictional Natural Hazard Mitigation Plan** (the "Plan") has been developed by the Jefferson County Hazard Mitigation Planning Committee (the "Planning Committee"), with support from outside consultants at URS Corporation ("URS," the contractor responsible for providing the Planning Committee with hazard mitigation planning support services). The Plan represents the collective efforts of citizens, elected and appointed government officials, business leaders, volunteers of non-profit organizations, and other stakeholders.

Through the development of this Plan, the Planning Committee has identified the natural hazards that could affect the County, and has evaluated the risks associated with these hazards. The successful implementation of this Plan will make Jefferson County more disaster-resistant because the County has taken the initiative to recognize the benefits that can be gained by planning ahead and taking measures to reduce damages before the next disaster strikes. The Plan will also allow Jefferson County and participating jurisdictions to comply with the Disaster Mitigation Act of 2000 (DMA 2000) and its' implementing regulations (44 CFR Part 201.6), thus resulting in eligibility to apply for Federal aid for technical assistance and post-disaster hazard mitigation project funding.

Natural disasters cannot be prevented from occurring. However, over the long-term, the continued implementation of this Plan will gradually, but steadily, lessen the impacts associated with hazard events.

About Jefferson County

Overview

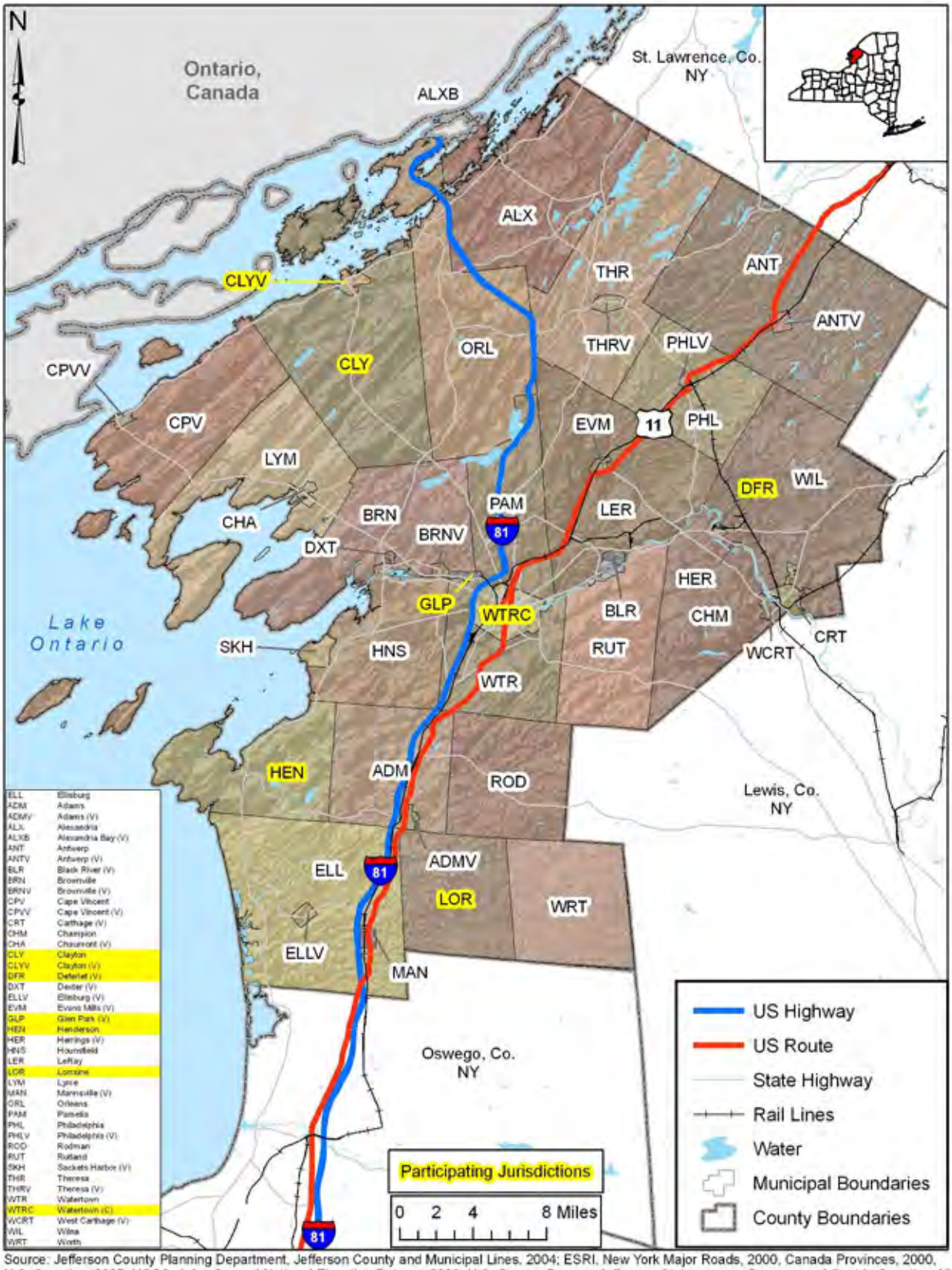
Jefferson County is located in the northern part of Northern New York State. It is bounded to the west by Lake Ontario and to the east by the Saint Lawrence River, which forms the border with Canada. To the east and north Jefferson County is bounded by Lewis County and Saint Lawrence County, and to the south by Oswego County. As of the 2000 Census, the population of Jefferson County was 111,738. The county seat is Watertown. The county also includes a number of islands in the St. Lawrence River, including such large islands as Carleton Island, Grindstone Island, and Wellesley Island. Part of Jefferson County is located in the famous "Thousand Islands Region," an international tourist destination shared between New York State and Canada. Figure 1.1 depicts the location of Jefferson County in relation to the rest of New York State.

Figure 1.1 - Location of Jefferson County in New York State

Jefferson County is home to 43 municipalities (twenty-one towns, twenty-one villages, and one city). They are the City of Watertown; the Villages of Adams, Alexandria Bay, Antwerp, Black River, Brownville, Cape Vincent, Carthage, Chaumont, Clayton, Deferiet, Dexter, Ellisburg, Evans Mills, Glen Park, Herrings, Mannsville, Philadelphia, Rutland, Sackets Harbor, Theresa, and West Carthage; and the Towns of Adams, Alexandria, Antwerp, Brownville, Cape Vincent, Champion, Clayton, Ellisburg, Henderson, Hounsfield, Le Ray, Lorraine, Lyme, Orleans, Pamelia, Philadelphia, Rodman, Theresa, Watertown, Wilna, and Worth. The location and extent of all these municipalities, as well as significant highways (including Interstate 81, which runs north-south through Jefferson County and U.S. Highway 11, which runs north-south through the County) are shown on the base map of the County in Figure 1.2 below.

In 2007, Jefferson County's median household income was $40,702. Jefferson County's economy has traditionally been resource based. Major industries in the County include dairy farming, food processing, and papermaking. Other industries in the county include manufacturing of railroad equipment, industrial machinery, and medical equipment. Jefferson County is also the location of Fort Drum Army Base, home of the 10th Mountain Division. Jefferson County's economy is also influenced by its location adjacent to Canadian markets.

Figure 1.2 – Base Map of Jefferson County



Source: Jefferson County Planning Department, Jefferson County and Municipal Lines, 2004; ESRI, New York Major Roads, 2000, Canada Provinces, 2000, U.S. Counties, 2005; USGS, 1-Arc Second National Elevation Dataset, 2009; U.S. Census Bureau, Jefferson, St. Lawrence, Oswego, and Oneida Counties, NY Area Hydrography, 2008, Census Railroads, New York State, 2001

According to the US Census, the population of Jefferson County in 1990 was 110,943, whereas, in 2000 it increased to 111,738 – an increase of approximately 0.8 percent over ten years. County-wide, this general upward trend is expected to continue with a 5.6 percent increase projected by the US Census Bureau from 2000 to 2008. Table 1.1 shows key County population changes (county-wide and for each municipality) as reported by the Jefferson County Planning Department, using US Census Bureau data.

Table 1.1
Jefferson County Population Changes
(*Source: Jefferson County Planning Department/US Census Bureau)*

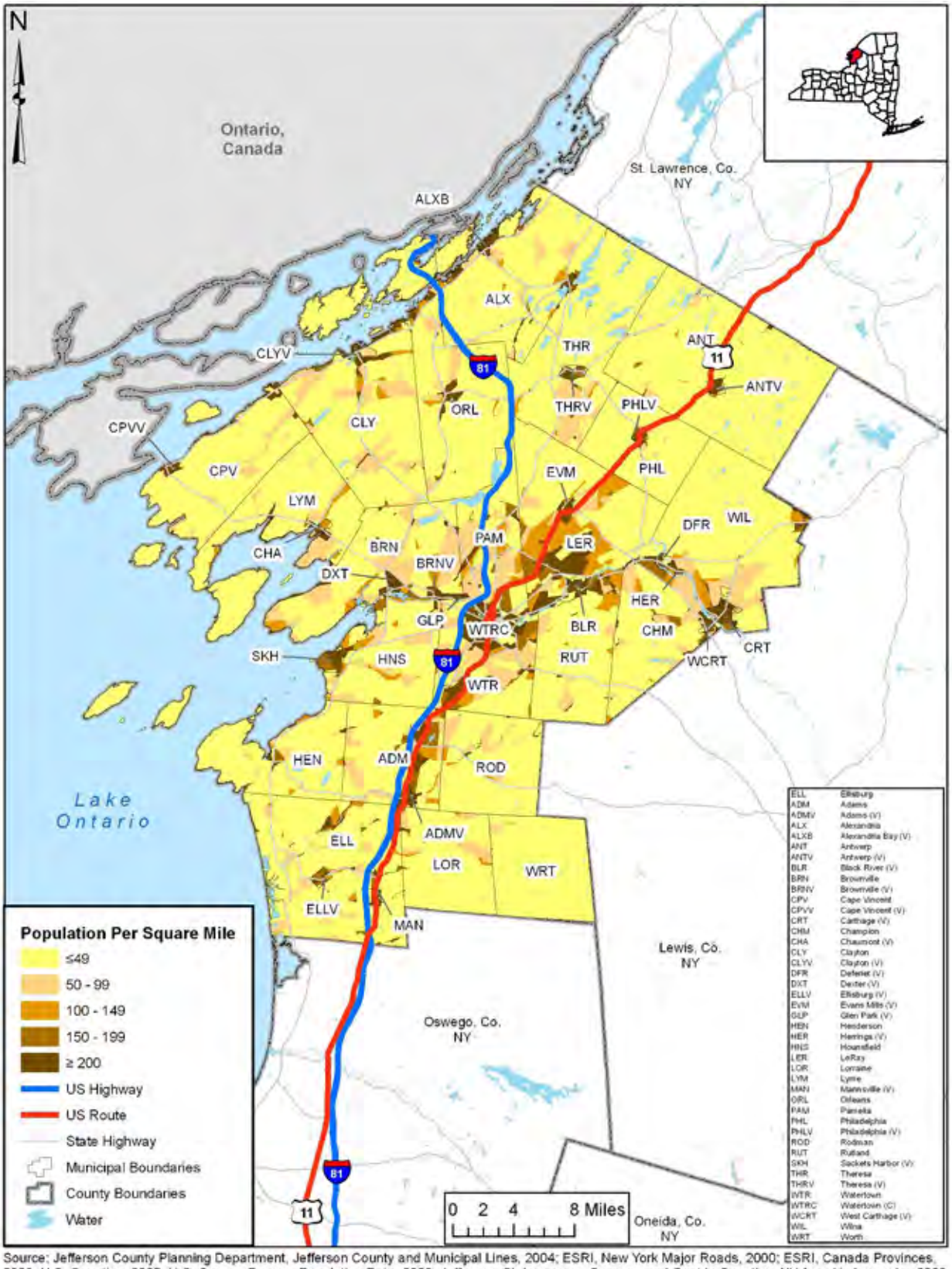
Municipality	Census Population 1990	Census Population 2000
Jefferson, County of	**110,943**	**111,738**
Adams, Town of	4,977	4,782
Adams, Village of	1,753	1,624
Alexandria, Town of	3,949	4,097
Alexandria Bay, Village of	1,194	1,088
Antwerp, Town of	1,856	1,793
Antwerp, Village of	739	716
Black River, Village of	1,349	1,285
Brownville, Town of	5,604	5,843
Brownville, Village of	1,138	1,022
Cape Vincent, Town of	2,768	3,345
Cape Vincent, Village of	683	760
Carthage, Village of	4,344	3,721
Champion, Town of	4,574	4,361
Chaumont, Village of	593	592
Clayton, Town of	4,629	4,817
Clayton, Village of	2,160	1,821
Deferiet, Village of	293	309
Dexter, Village of	1,030	1,120
Ellisburg, Town of	3,386	3,541
Ellisburg, Village of	246	269
Evans Mills, Village of	661	605
Glen Park, Village of	527	487
Henderson, Town of	1,268	1,377
Herrings, Village of	140	129
Hounsfield, Town of	3,089	3,323
Le Ray, Town of	17,973	19,836
Lorraine, Town of	766	930
Lyme, Town of	1,701	2,015
Mannsville, Village of	444	400
Orleans, Town of	2,248	2,465
Pamelia, Town of	2,811	2,897
Philadelphia, Town of	2,136	2,140
Philadelphia, Village of	1,478	1,519
Rodman, Town of	1,016	1,147
Rutland, Village of	3,023	2,959
Sackets Harbor, Village of	1,313	1,386
Theresa, Town of	2,281	2,414
Theresa, Village of	889	812
Watertown, City of	29,429	26,705

Table 1.1 Jefferson County Population Changes (*Source: Jefferson County Planning Department/US Census Bureau)*		
Municipality	**Census Population 1990**	**Census Population 2000**
Watertown, Town of	4,341	4,482
West Carthage, Village of	2,166	2,102
Wilna, Town of	6,899	6,235
Worth, Town of	219	234

According to the U.S. Census Bureau, Jefferson County has a total area of 1,857 square miles, of which, 1,272 square miles is land, and 585 square miles is water.

The 2000 U.S. Census population density per square mile of land in Jefferson County was 88 persons per square mile; whereas, in the 1990 U.S. Census, there were 87 persons per square mile – an increase of 1.15 percent in ten years. By 2008, the population density is projected to be 89 persons per square mile – an increase of 1.14 percent over the year 2000 values. The population of Jefferson County is mostly concentrated in the center of the County, with other noticeable areas of higher population density along the St. Lawrence River and the I-81 corridor. The majority of the remainder of the County is sparsely populated.

Figure 1.3 –Jefferson County Population Density



Source: Jefferson County Planning Department, Jefferson County and Municipal Lines, 2004; ESRI, New York Major Roads, 2000; ESRI, Canada Provinces, 2000, U.S. Counties, 2005; U.S. Census Bureau, Population Data, 2000, Jefferson, St. Lawrence, Oswego, and Oneida Counties, NY,Area Hydrography, 2008

The overall median age in 2000 has been estimated by the U.S. Census Bureau to be 32.5, up from 29.2 in 1990. The percentage of the County population over 65 years of age according to the US Census Bureau was 11.3% in 2000, slightly less than the national figure of 12.4%), with the Census Bureau projecting no significant change in the foreseeable future. The portion of the County population under 5 years of age was 7.3% in 2000, with the Census Bureau projecting a slight decrease to 6.8% in 2005-2007.

Income and Employment. In the first half of the current decade both the median household and median family incomes in Jefferson County exhibited a fractionally greater rise than rises in the national averages, according to the U.S. Census Bureau, as shown in Table 1.2. Also, according to the same sources, between 2000 and 2007 the percentages of families and individual below the poverty line increased at a greater rate than the national figures, while unemployment increased slower than the national rate over the same time period.

Table 1.2
Income and Employment in Jefferson County
Source: U.S. Census Bureau

Economic Characteristic	2000		2007	
	Jefferson County	USA	Jefferson County	USA
Median Household Income	$34,006	$41,994	$40,702	$50,007
Median Family Income	$39,296	$50,046	$47,905	$60,374
Families Below Poverty Level	10%	9.2%	13.0%	9.8%
Individuals Below Poverty Level	13.3%	12.4%	15.4%	13.3%
Unemployed*	4.8%	5.8%	5.3%	4.2%

*As a percentage of the population aged 16 years or more

Transportation Links. Jefferson County is linked to the surrounding area by road, notably Interstate 81 which traverses the full extent of the County from north to south and US Highway 11 that runs north to south as well. There are no passenger railroads serving Jefferson County, but freight railroad services are provided by CSX and the Mohawk, Adirondack and Northern Railroad Corporation. Watertown International Airport provides a twin 5,000 foot runway system with facilities for commercial, private, and airborne freight uses. At the time of writing, the only scheduled passenger air services to/from Watertown Airport were operated by Cape Air to Albany, New York. Reports suggest that Delta Airlines have expressed interest in providing regional jet services out of Watertown Airport, however, some significant improvements to infrastructure such as runway extensions would be required.

FEMA Disaster Declarations. Disaster declarations, for the county or counties affected by a disaster, are declared by the President of the United States under the authority of the Robert T. Stafford Disaster Relief and Emergency Assistance Act (the "Stafford Act"). FEMA then manages the entire process, including making federally-funded assistance available in declared areas; coordinates emergency rescue and response efforts; provides emergency resources; and provides other related activities/funding in the process of aiding citizens and local governments in a nationally-declared disaster. Tables 1.3 and 1.4 provide a summary of disaster and emergency declarations for the State of New York (based on review of the FEMA and NYSEMO web sites and the New York State Hazard Mitigation Plan), with an indication as to whether Jefferson County was part of the declared area, and the type of assistance the County was eligible for: PA – Public Assistance, IA – Individual Assistance.

Since 1954, Jefferson County has been designated as eligible for at least one form of FEMA assistance in five Federally-declared disasters and four Federally-declared emergencies.

Table 1.3
New York State Major Disaster Declarations: 1954 – 2009
(Source: FEMA, online at http://www.fema.gov/news/disasters_state.fema?id=36
NYSEMO, online at http://www.semo.state.ny.us/programs/recovery/History.cfm
And Appendix N of the New York State Hazard Mitigation Plan)

Year	Date	Disaster Type	Disaster Number	Was Jefferson County Designated?
2009	4-Mar	Severe Winter Storm	1827	No
2007	31-Aug	Severe Storms, Flooding, and Tornado	1724	No
2007	2-Jul	Severe Storms and Flooding	1710	No
2007	24-Apr	Severe Storms and Inland and Coastal Flooding	1692	No
2006	12-Dec	Severe Storms and Flooding	1670	No
2006	24-Oct	Severe Storms and Flooding	1665	No
2006	1-Jul	Severe Storms and Flooding	1650	No
2005	19-Apr	Severe Storms and Flooding	1589	No
2004	1-Oct	Tropical Depression Ivan	1565	No
2004	1-Oct	Severe Storms and Flooding	1564	No
2004	3-Aug	Severe Storms and Flooding	1534	No
2003	29-Aug	Severe Storms, Tornadoes and Flooding	1486	No
2003	12-May	Ice Storm	1467	No
2002	16-May	Earthquake	1415	No
2002	1-Mar	Snowstorm	1404	No
2001	11-Sep	World Trade Center Terrorist Attack	1391	No
2000	21-Jul	Severe Storms	1335	No
1999	19-Sep	Hurricane Floyd	1296	No
1998	11-Sep	Severe Storms	1244	No
1998	7-Jul	Severe Storms and Flooding	1233	No
1998	16-Jun	New York Severe Thunderstorms and Tornadoes	1222	No
1998	10-Jan	Ice Storm	1196	Yes: IA, PA
1996	9-Dec	Severe Storms/Flooding	1148	No
1996	19-Nov	Severe Storms/Flooding	1146	No
1996	24-Jan	Severe Storms/Flooding	1095	Yes: PA
1996	12-Jan	Blizzard	1083	No
1993	2-Apr	World Trade Center Explosion	984	No
1992	21-Dec	Coastal Storm, High Tides, Heavy Rain, Flooding	974	No
1991	16-Sep	Hurricane Bob	918	No
1991	21-Mar	Severe Storm, Winter Storm	898	Yes: PA
1987	10-Nov	Severe Winter Storms	801	No
1987	15-May	Flooding	792	No
1985	18-Oct	Hurricane Gloria	750	No
1985	22-Mar	Snow Melt, Ice Jams	734	No
1985	20-Mar	Flooding	733	No
1984	25-Sep	Severe Storms/Flooding	725	No
1984	17-Apr	Coastal Storms/Flooding	702	No
1977	5-Feb	Snowstorms	527	Yes: IA, PA
1976	3-Sep	Hurricane Belle	520	No
1976	21-Jul	Severe Storms/Flooding	515	No
1976	29-Jun	Flash Flooding	512	No
1976	19-Mar	Ice Storm, Severe Storms, Flooding	494	No
1975	2-Oct	Hurricane Eloise	487	No
1974	23-Jul	Severe Storms/Flooding	447	No
1973	20-Jul	Severe Storms/Flooding	401	No

Table 1.3
New York State Major Disaster Declarations: 1954 – 2009
(Source: FEMA, online at http://www.fema.gov/news/disasters_state.fema?id=36
NYSEMO, online at http://www.semo.state.ny.us/programs/recovery/History.cfm
And Appendix N of the New York State Hazard Mitigation Plan)

Year	Date	Disaster Type	Disaster Number	Was Jefferson County Designated?
1973	21-Mar	High Winds, Wave Action and Flooding	367	Yes: IA, PA
1972	23-Jun	Tropical Storm Agnes	338	No
1971	13-Sep	Severe Storms/Flooding	311	No
1970	22-Jul	Heavy Rains, Flooding	290	No
1969	26-Aug	Heavy Rains, Flooding	275	No
1967	30-Oct	Severe Storms/Flooding	233	No
1965	18-Aug	Water Shortage	204	No
1963	23-Aug	Heavy Rains, Flooding	158	No
1962	16-Mar	Severe Storm, High Tides, Flooding	129	No
1956	29-Mar	Flood	52	Not Recorded
1955	22-Aug	Hurricanes Connie and Diane	45	Not Recorded
1954	7-Oct	Hurricanes Carol and Hazel	26	Not Recorded

Table 1.4
New York State Emergency Declarations: 1954 – 2009
(Source: FEMA, online at http://www.fema.gov/news/disasters_state.fema?id=36
NYSEMO, online at http://www.semo.state.ny.us/programs/recovery/History.cfm
And Appendix N of the New York State Hazard Mitigation Plan

Year	Date	Emergency Type	Declaration Number	Was Jefferson County Designated?
2008	18-Dec	Severe Winter Storm	3299	No
2007	23-Feb	Snow	3273	No
2006	15-Oct	Snowstorm	3268	No
2005	30-Sep	Hurricane Katrina Evacuation	3262	No
2004	3-Mar	Snow	3195	No
2003	23-Aug	Power Outage	3186	Yes: PA
2003	27-Mar	Snowstorm	3184	No
2003	26-Feb	Snowstorm	3173	No
2002	1-Jan	Snowstorm	3170	No
2000	4-Dec	Snow Storm	3157	No
2000	11-Oct	Virus Threat	3155	Yes: PA
1999	18-Sep	Hurricane Floyd	3149	No
1999	10-Mar	Winter Storm	3138	No
1999	15-Jan	Snow Emergency	3136	Yes: PA
1993	17-Mar	Severe Blizzard	3107	Not Recorded
1980	21-May	Chemical Waste, Love Canal	3080	No
1978	7-Aug	Chemical Waste, Love Canal	3066	No
1977	29-Jan	Snowstorms	3027	Yes: PA
1974	2-Nov	Flooding (NYS Barge Canal)	3004	Not Recorded

Plan Development Process

Multi-Jurisdictional Approach

Jefferson County took a multi-jurisdictional approach to preparing its hazard mitigation plan. The County had resources (i.e., funding, data, GIS, etc.) which local jurisdictions lacked. However, the County could not develop the plan on its own. To undertake such a regional planning effort, the County needed to involve its member municipalities since only they have the legal authority to enforce compliance with land use planning and development issues.

Throughout the plan development process, the Jefferson County Office of Fire and Emergency Management (JCOFEM) worked tirelessly to involve all of its 43 municipalities. These local jurisdictions were not only invited to participate but were truly guided through the process by JCOFEM at every stage.

The following municipal entities (Jefferson County and seven of its constituent municipalities) successfully in the development of this plan by attending meetings and submitting the key deliverables:

Jefferson, County of

Clayton, Town of
Clayton, Village of
Deferiet, Village of
Village of Glen Park
Town of Henderson
Lorraine, Town of
Watertown, City of

A more detailed summary of the participation demonstrated by each municipality in the County, including attendance at meetings and submission of requested deliverables, is presented in Table 1.5. Only those municipalities shown in green in Table 1.5 are considered to have successfully participated in the plan.

In addition, the records show that the following stakeholder entities participated by attending at least one Core Planning Group meeting and/or responding to at least one questionnaire.

Jefferson County Community College
Frontier Housing Corporation
St. Lawrence County, New York
NYSEMO Region 4

URS Corporation (Wayne, NJ) acted as the plan development consultant providing hazard mitigation planning services.

Readers are invited to review the contents of ***Appendix G – Planning Committee Membership Information*** for a list of municipal representatives.

Table 1.5
Jefferson County Jurisdictions Plan Participation

Jurisdiction	Meetings Attended				Key Deliverables Submitted					
	Kickoff Meeting	Progress Meeting	Risk Assessment Q & A	Mitigation Working Session	Wish List Items	Land Use and Development Questionnaire	Hazard Identification Questionnaire	Capabilities Assessment Questionnaire	Mitigation Prioritization / Implementation Worksheets	NFIP Actions Worksheets
Jefferson, County of	■	■	■	■	■	■	■	■	■	N/A
Adams, Town of		■								
Adams, Village of										
Alexandria, Town of	■						■			
Alexandria Bay, Village of										
Antwerp, Town of										
Antwerp, Village of							■			
Black River, Village of	■									
Brownville, Town of	■						■			
Brownville, Village of										
Cape Vincent, Town of										
Cape Vincent, Village of										
Carthage, Village of										
Champion, Town of	■				■	■	■	■		
Chaumont, Village of	■									
Clayton, Town of	■	■	■	■	■	■	■	■	■	■
Clayton, Village of		■	■	■	■	■	■	■	■	■
Deferiet, Village of		■	■	■		■	■	■	■	■
Dexter, Village of	■		■	■			■			
Ellisburg, Town of										
Ellisburg, Village of										
Evans Mills, Village of										
Glen Park, Village of	■				■	■	■	■	■	■
Henderson, Town of	■					■	■	■	■	■
Herrings, Village of										
Hounsfield, Town of	■									
LeRay, Town of										
Lorraine, Town of		■	■			■	■	■	■	N/A
Lyme, Town of	■									

Table 1.5
Jefferson County Jurisdictions Plan Participation

Jurisdiction	Meetings Attended				Key Deliverables Submitted					
	Kickoff Meeting	Progress Meeting	Risk Assessment Q & A	Mitigation Working Session	Wish List Items	Land Use and Development Questionnaire	Hazard Identification Questionnaire	Capabilities Assessment Questionnaire	Mitigation Prioritization / Implementation Worksheets	NFIP Actions Worksheets
Mannsville, Village of										N/A
Orleans, Town of										
Pamelia, Town of										
Philadelphia, Town of	■	■					■			
Philadelphia, Village of	■				■		■			
Rodman, Town of										
Rutland, Town of										
Sackets Harbor, Village of	■						■			
Theresa, Town of				■			■			
Theresa, Village of				■						
Watertown, City of	■				■	■	■	■	■	■
Watertown, Town of										
West Carthage, Village of										
Wilna, Town of										
Worth, Town of										

Fully Participating Jurisdictions
Partially Participating Jurisdictions
Non-Participating Jurisdictions

While the County retained the services of a consultant (URS Corporation) to guide participants through the process and author the plan, participating jurisdictions contributed throughout the overall planning process, as follows:

- Each participating jurisdiction provided staff to participate in the overall county-wide Core Planning Group (CPG). Each municipality was encouraged to form a Jurisdictional Assessment Team, to be responsible for reviewing information, data and documents, submitting feedback to the Consultant, completing questionnaires/forms, reaching out to the public and other stakeholders in their respective jurisdictions, developing a unique mitigation strategy for their municipality, and reviewing and commenting on draft documents. The jurisdiction's CPG member(s) were lead member(s) of their municipality's Jurisdictional Assessment Team (JAT). *More information on the planning team structure and roles/responsibilities is presented later in this section.*
- The Consultant provided ***"Guidance Memorandum 1- Assessing Community Support, Building the Planning Team, and Engaging the Public and Other Stakeholders"*** at the project outset (July 9, 2009). This memorandum was prepared to provide Jefferson County and its participating jurisdictions with suggestions for: assessing community support, building the planning team and engaging the public and other stakeholders throughout the plan development process and prior to plan approval. The Jurisdictional Assessment Team for each municipality used this memorandum as a guide for outreach, documented their completed activities in the memorandum's "**Outreach Log**". The County and3 jurisdictions provided a summary of their outreach activities to the Consultant for incorporation into the plan.
- Participating jurisdictions provided feedback during the Hazard Identification and Hazard Profile steps of the process (Sections 2 and 3.a of the plan, respectively) through their completion and submittal of a **Hazard Identification Questionnaire** to the Consultant. This questionnaire summarized the Consultant's evaluation of a full range of natural hazards, including whether or not each hazard was recommended for inclusion in the plan and why. Municipalities were asked to provide information as to whether or not they concurred with the consultant's findings, and information on impacts from past events in their respective communities. Local responses were used by the Consultant to supplement hazard information obtained through research of past disaster declarations in the County, review of the New York State Hazard Mitigation Plan (2008), and review of readily available online information from reputable sources (such as federal and state agencies). The County and 15 jurisdictions returned this questionnaire or provided a statement of full concurrence with the Consultant's findings.
- Participating jurisdictions provided feedback during the evaluation of Land Uses and Development Trends step of the process (Section 3.d of the plan) through their completion and submittal of a **Land Uses and Development Trends Questionnaire** to the Consultant. This questionnaire asked jurisdictions to: (1) describe development trends occurring within their jurisdiction, such as the predominant types of development occurring, location, expected intensity, and pace by land use; and (2) describe any regulations/ordinances/codes their jurisdiction enforces to protect new development from the effects of natural hazards. Local responses were used by the Consultant to supplement information presented in the County Cross-Acceptance Report. The County and eight jurisdictions returned this questionnaire.
- Participating jurisdictions provided feedback during the Capability Assessment step of the process (Section 4 of the plan) through their completion and submittal of a **Capability Assessment Questionnaire** to the Consultant. This questionnaire asked respondents to examine their jurisdiction's abilities to implement and manage a comprehensive mitigation strategy, which includes a range of mitigation actions. The questionnaires requested information pertaining to existing plans, polices, and regulations that contribute to or hinder the ability to implement hazard mitigation actions. They also requested information pertaining to the legal

and regulatory capability, technical and administrative capacity, and fiscal capability of each jurisdiction. The County and eight jurisdictions submitted completed questionnaires illustrating their capability to implement a mitigation strategy.

- Participating jurisdictions provided feedback regarding **problem areas in need of mitigation and possible mitigation alternatives**. Some municipalities provided this type of information to the consultant separately, either via email or separate written correspondence. Their feedback is included in Section 6 of the plan. At a working session of the Core Planning Group on November 10, 2009, participating jurisdictions were asked to consider a range of various types of hazard mitigation actions, and identify a mitigation strategy for their municipality. Jefferson County and seven participating jurisdictions have submitted a unique mitigation strategy.
- The Consultant provided ***"Guidance Memorandum #2 – Plan Maintenance Procedures: Monitoring, Evaluating and Updating the Plan***" in July 2009. This memorandum provided participants with an overview of the requirements regarding plan maintenance, types of plan maintenance activities that can be selected to meet the requirements, and some examples of plan maintenance strategies from other FEMA-approved plans in FEMA Region 2. Participating jurisdictions were asked to review this information, coordinate with their Jurisdictional Assessment Team, and provide comments back to JCOFEM regarding what types of plan maintenance activities their community was in favor of, versus any elements their community like to see excluded. Jurisdictions were asked to submit their feedback to JCOFEM. They were advised that lack of feedback would be interpreted to indicate that their jurisdiction had no particular preferences regarding this plan element. In turn, JCOFEM reviewed feedback received and developed a county-wide plan maintenance strategy that best reflected the expressed desires of the full team.
- The Consultant provided "***Guidance Memorandum #3 – Plan Integration***" in July 2009. The memorandum summarized requirements in terms of how mitigation recommendations will be integrated into job descriptions, or existing planning mechanisms such as comprehensive plans, capital improvement plans, zoning and building codes, site reviews, permitting and other planning tools, where such tools are appropriate. Various ways that the hazard mitigation plan can be integrated into local planning mechanisms were presented, along with sample text from other plans approved by FEMA Region 2. Participating jurisdictions were asked to review this information, coordinate with their Jurisdictional Assessment Team, and provide comments back to JCOFEM regarding what types of plan integration activities their community was in favor of, versus any elements their community like to see excluded. Jurisdictions were asked to submit their feedback to JCOFEM. They were advised that lack of feedback would be interpreted to indicate that their jurisdiction had no particular preferences regarding this plan element. In turn, JCOFEM reviewed feedback received and developed a county-wide plan maintenance strategy that best reflected the expressed desires of the full team.

Jefferson County Hazard Mitigation Planning Committee

This Plan has been developed by the **Jefferson County Hazard Mitigation Planning Committee (the "Planning Committee"**), with support from an outside consulting firm (URS Corporation, "URS"). The efforts of the Planning Committee were headed by Joseph Plummer of the Jefferson County Office of Fire and Emergency Management. The Plan represents the collective efforts of citizens, elected and appointed government officials, business leaders, volunteers of non-profit organizations, and other stakeholders.

The overall **Planning Committee** consisted of members of Jefferson County, each participating jurisdiction, and the public and other stakeholders. The overall Planning Committee did not meet

together in one place during the planning process. Instead, a team concept was used to more evenly distribute responsibilities and to make best of use of every participant's unique capabilities.

As shown in Figure 1.4, the overall Planning Committee was divided into a **Core Planning Group (CPG)** and a series of **Jurisdictional Assessment Teams (JATs),** with one JAT for each of the County's participating jurisdictions. Each jurisdiction was encouraged to form a JAT by bringing together personnel from their local government organization, ideally utilizing people with knowledge and experience of local administration, planning, hazards, and infrastructure. While in practice each individual JAT varied in number and composition, each participating municipality provided at least one person who was actively involved throughout the planning process. The names of all JAT members whose participation was documented by attendance at meetings or completion of the various deliverables are included in Appendix G.

The Role of the County in the Plan Development Process

The role of the County in the plan development process was to act as lead agency and facilitator on behalf of the participating jurisdictions. The County was originally responsible for securing the grant funding for the plan and for originally soliciting the participation of all jurisdictions. The County was responsible for selecting the consultant, administering the contract, and ensuring payment to the consultant.

As well as acting as a jurisdiction in its own right, the County took on the responsibility of managing all communications between the consultant and the CPG (principally through the use of a master email mailing list), distributing all drafts to jurisdictions and reviewing agencies, distributing deliverables and outreach materials, and facilitating meetings. For each meeting the County was responsible for procuring a venue and presentation equipment, distributing invitations, and disseminating any subsequent relevant information. The County also hosted the central hazard mitigation planning website, including the interactive mitigation survey, the results of which the County was also responsible for processing and forwarding to the consultant. The Jefferson County Office of Fire and Emergency Management was the County agency tasked with meeting the County's responsibilities, and the plan coordinator and main point of contact was Mr. Joseph Plummer (see the Executive Summary, Page iii).

This team concept was beneficial for two reasons: (1) the Consultant and the County's main points of contact was the Jefferson County Planning Committee and the CPG; and (2) JATs with intimate local knowledge were best suited for coordination and outreach within their respective jurisdictions.

JCOFEM Efforts to Involve All of the County's Municipalities in the Project

On June 23, 2009 JCOFEM sent formal correspondence to each jurisdiction in the county inviting them participate in the multi-jurisdictional hazard mitigation planning process. The letter explained the process, invited local participation in the multi-jurisdictional plan, and outlined some advantages to having a plan in place and participating in a larger multi-jurisdictional plan. Each municipality was asked to sign and return one of two formal statements – one indicating a desire to participate and the second indicating a desire to decline. Responses were requested by no later than August 7, 2009. Municipalities were advised that if opting to participate, they should identify a single representative and an alternate to represent their jurisdiction on the Core Planning Group and fill this information in on the appropriate line of an attached Statement of Authority to Participate. In this same letter, municipalities were also invited to attend one of two project Kickoff Meetings scheduled for July 9, 2009 (at their choice of 2pm or 7pm) at the Jefferson Community College Building 6, Jules Center, Room 0002.

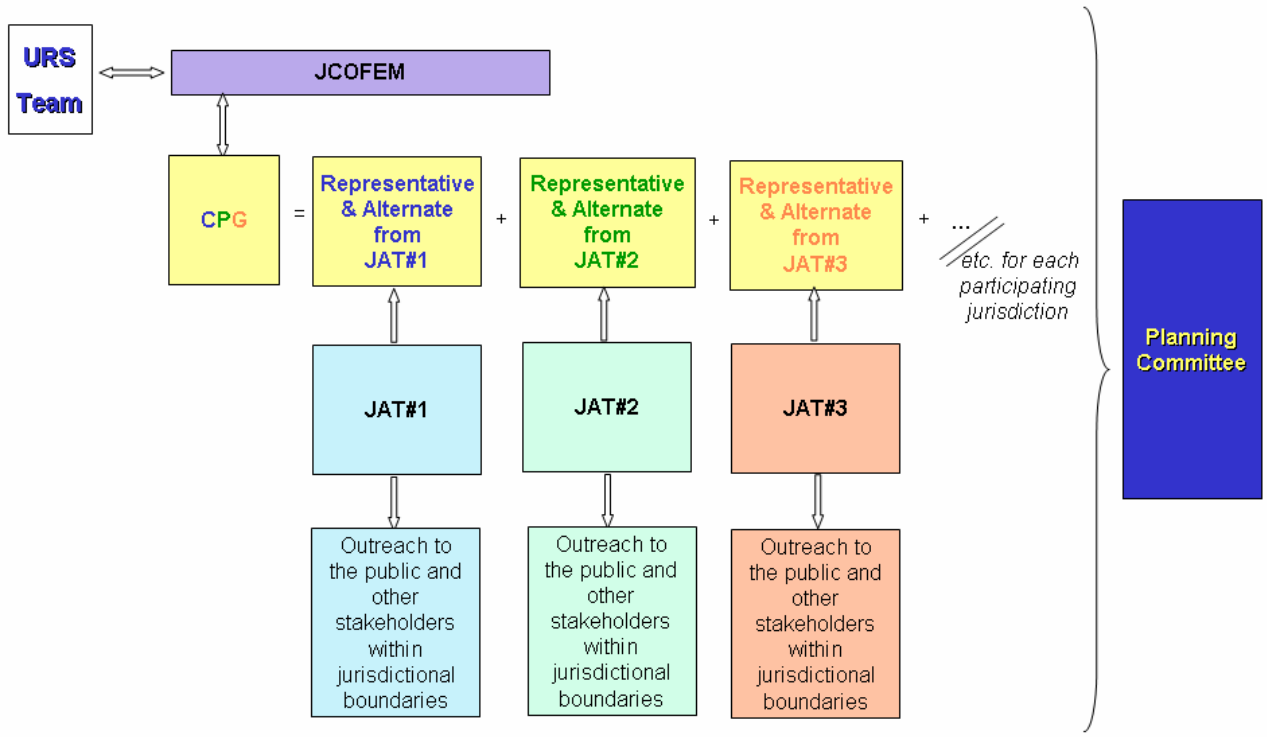
Municipal participation subsequent to the June 23, 2009 invitation letter and the July 9, 2009 Kickoff Meeting was minimal. Recognizing the importance of expanding and enhancing local jurisdiction

participation with an aim toward participation by all of the county's municipalities, JCOFEM sent another letter out to each municipality on July 20, 2009, again inviting participation and providing a copy of all presentation materials and handouts from the Kickoff Meeting.

In spite of these efforts of the JCOFEM, by late summer and early fall 2009 it became clear that many municipalities in the County still were not opting to participate in the multi-jurisdictional plan. In a further attempt to reach out to the local municipalities on an ongoing basis, periodic (approximately weekly) emails were sent out by JCOFEM to every jurisdiction in the county (regardless of stated desire to participate) regarding the project overview, status, current level of municipal participation and ongoing invitation to join in the process, upcoming meetings, current deliverables due for completion by CPG members and subsequent delivery to consultant, and next steps in going forward. These email messages were distributed on the following occasions during the plan development process: September 11, 21, 25 and 29; October 2, 15, 23 and 30; November 6, 13 and 20; and December 18.

Despite all of these efforts of the JCOFEM, only seven of the County's 43 municipalities ultimately participated successfully by attending meetings, providing feedback, selecting action items, etc. Ongoing outreach to nonparticipating municipalities will be undertaken during the plan maintenance phase and new municipalities will be provided with an opportunity to 'opt-in' for subsequent plan updates.

Figure 1.4 – Planning Committee Organizational Structure



Key:
JCOFEM Jefferson County Office of Fire and Emergency Management
CPG Core Planning Group
JAT Jurisdictional Assessment Team

All members of the CPG and the JATs were also members of the overall Planning Committee. The CPG included head members of each JAT (the County and each of the municipalities who elected to participate in the process). The Jefferson County Planning Committee was responsible for managing the overall plan formulation activities. The CPG was responsible for attending CPG meetings and providing information and feedback, and coordinating an outreach program within their municipality's JAT and beyond to the public and other stakeholders. Each JAT was responsible for coordinating and facilitating local efforts, sending CPG representatives to meetings, providing information and feedback, involving the public and local community stakeholders in the planning process, assessing mitigation alternatives, selecting a course of action to be followed for their community, adopting the plan, and participating in plan monitoring and implementation.

With regard to meetings, JCOFEM was responsible for setting meeting dates and times, securing a meeting facility, and notifying all team members of upcoming meetings. They also played a very large role in reminding CPG members of certain project deadlines. The Consultant prepared meeting agendas, handouts, PowerPoint presentations, and minutes for the project initiation meeting. JCOFEM maintained the County's web site posting various guidance memoranda, interim deliverables, worksheets, etc..

The plan development process was initiated in earnest in the spring of 2009 with the Jefferson County **Hazard Mitigation Plan Project Initiation Meeting held on March 31, 2009.** At this meeting, the

consultant met with the JCOFEM to refine the project work plan, discuss schedule and the anticipated level of County labor support. The Consultant provided a "Wish List" of information, data and documents they hope each participating jurisdiction can submit for their review and incorporation into the plan. The Consultant also provided Guidance Memorandum #1 regarding assessing community support, building the planning team, and engaging the public. At this meeting, expectations regarding the CPG Project Kickoff Meeting were discussed. Handouts included the project scope of work, targeted implementation schedule and Wish List.

While Jurisdictional Assessment Teams met individually throughout the plan development process as they deemed necessary, the following is an overview of CPG meetings held during the plan development process.

- July 9, 2009 – Core Planning Group Kickoff Meeting. This was the first meeting of the Core Planning Group. Participants were provided with an overview of: the intent of the project; the organizational structure of the planning group; the plan development process overall; the role of participating jurisdictions, contractors, the public and other stakeholders; what it means to participate; key deliverables; data collection/supporting documents; the project timeline; and next steps. Handouts included the PowerPoint presentation, targeted implementation schedule, Wish List, sources of information on hazard mitigation planning, project Fact Sheet and Guidance Memo #1.
- September 30, 2009 – Core Planning Group Progress Meeting. This meeting was conducted to provide an overview of plan development progress and continued work to be completed. JCOFEM also reiterated the benefits of municipal participation and the requirements that must be met for a municipality to be considered fully participating..
- October 14, 2009 – Risk Assessment Question and Answer Session. The purpose of the meeting was to provide CPG members with an opportunity to ask questions and submit feedback on the recently distributed Risk Assessment Interim Deliverable. The Risk Assessment Interim Deliverable comprised the following working chapters of the draft report: Hazard Identification, Hazard Profiles, Asset Identification, Vulnerability Assessment, Range of Mitigation Actions to be Considered.
- November 10, 2009 – Mitigation Strategy Working Session. At this working session, attendees conducted an evaluation and prioritization of hazard mitigation actions and developed an implementation strategy for selected mitigation actions. For jurisdictions not present, or those who were present but who needed more time to complete the Prioritization and Implementation Strategy sheets, an opportunity was provided for jurisdictions to do so remotely. Following this meeting, the County and all 24 municipal jurisdictions had evaluated, prioritized, and developed a strategy for at least one mitigation action.

See Appendix H for agendas, attendance sheets, and copies of presentations made at the CPG meetings listed above. Additional information, such as meeting agendas, presentations, handouts, and minutes were posted on the Jefferson County hazard mitigation planning web site at:

http://www.co.jefferson.ny.us/jefflive.nsf/Hazard%20Select%20Links

The Role of the Contractors in the Plan Development Process

This Hazard Mitigation Plan is the County's plan; as such, its success rests on the decisions and directions set by the Planning Committee members throughout the plan development process. URS was contracted by Jefferson County to work with the JCOFEM and the Planning Committee to assist them in developing a plan that would meet the requirements of DMA 2000. **URS was the lead firm for this assignment**,

doing so from their local office in Wayne, New Jersey. URS was the direct County point of contact, assisted in the hazard identification and risk assessment, lead the hazard mitigation planning efforts, authored the final document, and provided overall contract administration.

URS assisted the Planning Committee by conducting the analyses necessary to provide the team members with the information they needed to make sound decisions, and helped guide them through the necessary steps of the plan development process. The Planning Committee, in turn, took the lead by including the local community, assessing the alternatives, and ultimately selecting the course of action to be followed. At the end of the planning process, URS prepared this Plan text (with feedback from the Planning Committee) to document the group's efforts, along with hazard information and findings, in a manner consistent with applicable regulations (DMA 2000), criteria (44 CFR Part 201.6), and guidance (FEMA's Mitigation Planning "How-To" Guides; FEMA's Multi-Hazard Mitigation Planning Guidance document of March 2004 (Revised July 2008).

A series of three Guidance Memorandums were distributed to JCOFEM and the Core Planning Group by URS Corporation, at various meetings and also were posted on the County's mitigation planning web site. These three memos provide a summary of key information presented in DMA 2000, its implementing regulations (IFR), and the FEMA How-To Guides for three key topic areas. The memos are intended to serve as a supplement – and not as a replacement – to the FEMA documents. Each memo provides suggestions to municipalities in a certain topic area, and requests feedback from each municipality at the end of the process regarding their decisions. A summary of the Guidance Memos is presented below.

Guidance Memorandum #1 – Assessing Community Support, Building the Planning Team, and Engaging the Public and Other Stakeholders , dated May 6, 2009, describes the project and its goal of identifying the risks associated with natural hazards in Jefferson County. It is centered on developing the structure of the Planning Committee and identifying the jurisdictions that are interested in participating in the plan; reaching out to various parties (general public, local residents, business owners, non-profit organizations, community leaders and other stakeholders) during the development and maintenance processes; identifying the role of contractors in the planning process; and ultimately, documenting the planning process.

Guidance Memorandum #2 - Plan Maintenance Procedures: Monitoring, Evaluating and Updating the Plan, dated July 14, 2009, highlights the essential steps necessary for monitoring, evaluating and maintaining the plan, and its value as a vital tool for mitigating hazards and reducing risk. The memo stresses several key factors that need to be undertaken by the Planning Committee: organizing resources, i.e., identifying and organizing interested parties, including the public, during the planning process; assessing the risks, i.e., identifying the natural hazards that generally affect Jefferson County; how the communities will be impacted by the hazards; and developing a mitigation plan, i.e., once the risks have been identified, the Planning Committee determines the methods and strategies for avoiding or minimizing the risks. The memo also conveys the importance of following the regulations that require the plan to be monitored, evaluated and updated within a five-year cycle, and the importance of periodically measuring the effectiveness of the actions contributing to the overall success of the plan.

Guidance Memorandum #3 - Plan Integration, dated July 14, 2009, recapitulates the importance of using existing processes and resources by the Planning Committee during plan implementation; thus, saving time and effort in meeting the plan's goals and objectives. The memo states that by following the requirements and key steps previously discussed, the next essential goal is taking action by integrating the objectives into daily activities and by implementing the plan in a timely manner.

The memos are valuable tools that guide the team members through each step toward the establishment of the hazard mitigation plan. As such, these memos assist the Planning Committee through the planning process that leads to the formal adoption of the plan.

In addition, URS also: (1) Distributed questionnaires for CPG member completion, as described previously beginning on Page 1-13. They were the: Hazard Identification Questionnaire, Land Uses and Development Trends Questionnaire, Capability Assessment Questionnaire; (2) Assisted the CPG through preparation of a project Fact Sheet (discussed on Page 1-21) and development of a project web site (discussed beginning on Page 1-20); and (3) presented at each CPG meeting to guide participating jurisdictions through the process, and advise CPG members regarding each step of the process such as hazards identified and profiled, risks and vulnerabilities identified, possible types of mitigation solutions, etc.

Opportunities for Public Involvement in the Plan Development Process

The role of public involvement in the plan development process is to provide the general public with some variety of means to not only learn about the process that the Planning Committee is undertaking, but to voice concerns and to provide input throughout the planning process. CPG members undertook a range of activities to: (a) alert the public to the fact that the Planning Committee was working to develop this Hazard Mitigation Plan, and (b) provide the public an opportunity to participate with a forum to ask questions, and submit comments and/or suggestions on the process.

The Planning Committee pursued a variety of different ways to provide the public with an opportunity to become involved and engaged during the planning process, in addition to ensuring that the participating jurisdictions were also fully aware of the process and were able to contribute and voice their concerns as well as the general public. As such, the following key activities were employed:

- Jefferson County Multi-jurisdictional Mitigation Planning web site
- *Plan Facts* project fact sheet
- Open Public Meetings
- Other Outreach Activities by JCOFEM and CPG Members

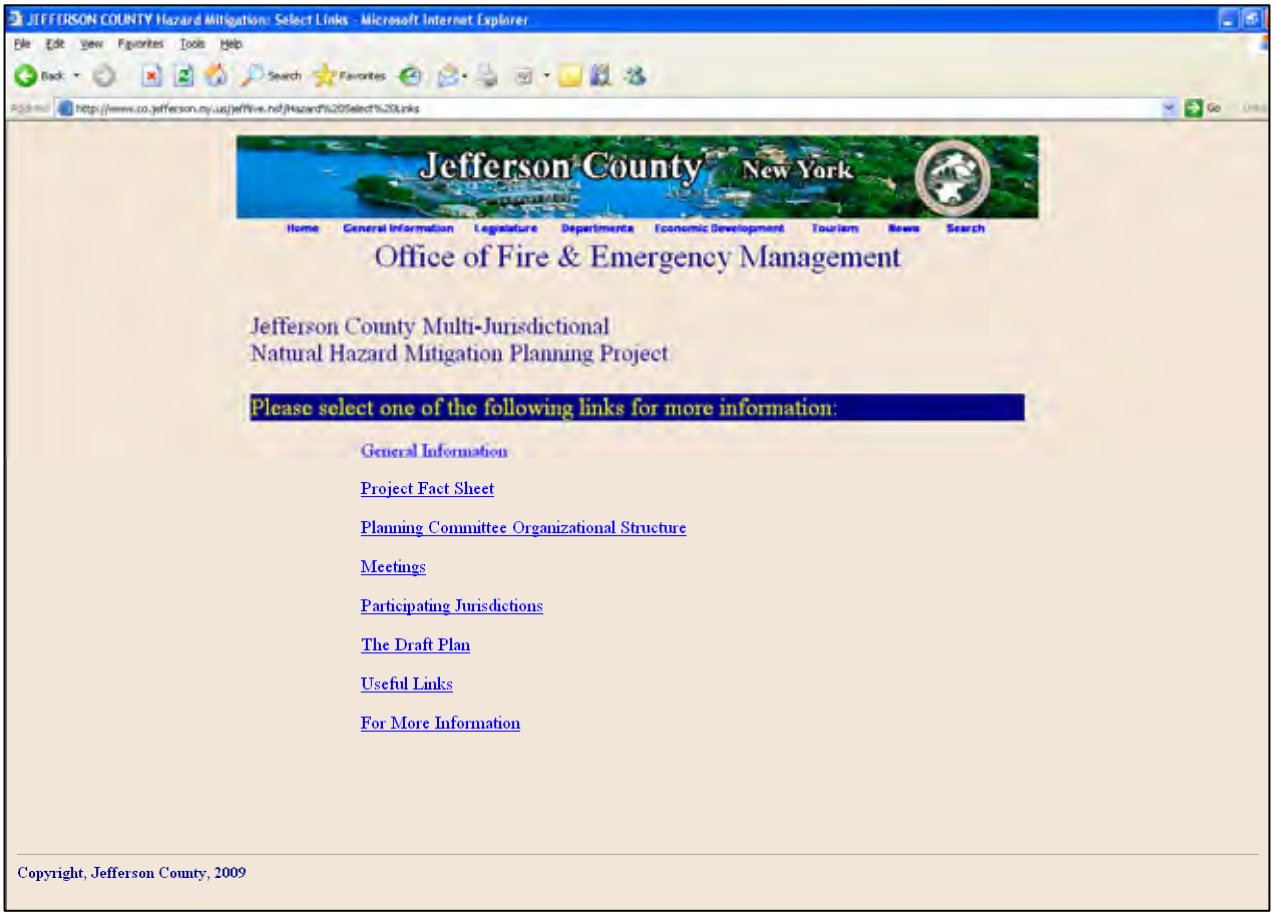
Jefferson County Multi-Jurisdictional Hazard Mitigation Planning Web Site

The CPG made an effort to involve the public and other stakeholders in the process during the drafting stage of the plan in part through a mitigation planning web site. The Jefferson County Web site contains a new section on the county-wide multi-jurisdictional hazard mitigation planning process. It can be found online at:

http://www.co.jefferson.ny.us/jefflive.nsf/Hazard%20Select%20Links

The web site was initiated in September 2009 and will continue to be maintained and updated by JCOFEM on a regular basis. The additional web pages were incorporated into the site for the purpose of informing the public (including businesses, local citizens and the residents that are part of the Jefferson County communities) about the importance of hazard mitigation planning and their opportunity to participate and provide feedback during the process. In this section, the JCOFEM provides general information about the process, the organizational structure of the planning team, meeting information (agendas, presentations, handouts, and minutes), other reference materials, a link for the Risk Assessment Interim Deliverable and the Draft Plan, and more. Contact information for the JCOFEM Coordinator is also provided and individuals are invited to reach out to this person for information on how to become

involved or to provide comments. The image below is a screen-capture of the main mitigation planning web page on the County's site.



The main page of the website contains as illustrated above presents an introduction to hazard mitigation planning, outlining the purpose and need for the plan, municipal participation and Core Planning Group structure, the basic steps in the process, and key dates in the schedule. A series of links in the cetner of the main page provides access to the following additional information:

- General Information: Definitions of hazard mitigation, explanations of the purpose and need for the plan, participation requirements, planning group structure, and the overall schedule.
- Project fact sheet: Plan Facts (see below) in PDF format for downloading.
- Planning Committee Organizational Structure: The roles of the County, municipalities, other stakeholders, and the consultant.
- Meetings: Copies of the agenda, handouts, presentations, and sign-in sheets for CPG meetings.
- Participating Jurisdictions: (not yet finalized as of December 2009.
- The Draft Plan: PDF copies of the Draft Plan and Risk Assessment Interim Deliverable for downloading.
- Useful Links: Links to the NY State Emergency Management Office and to various FEMA web pages giving information on mitigation planning, grants, and disasters.
- For More Information: Full contact details for JCOFEM.

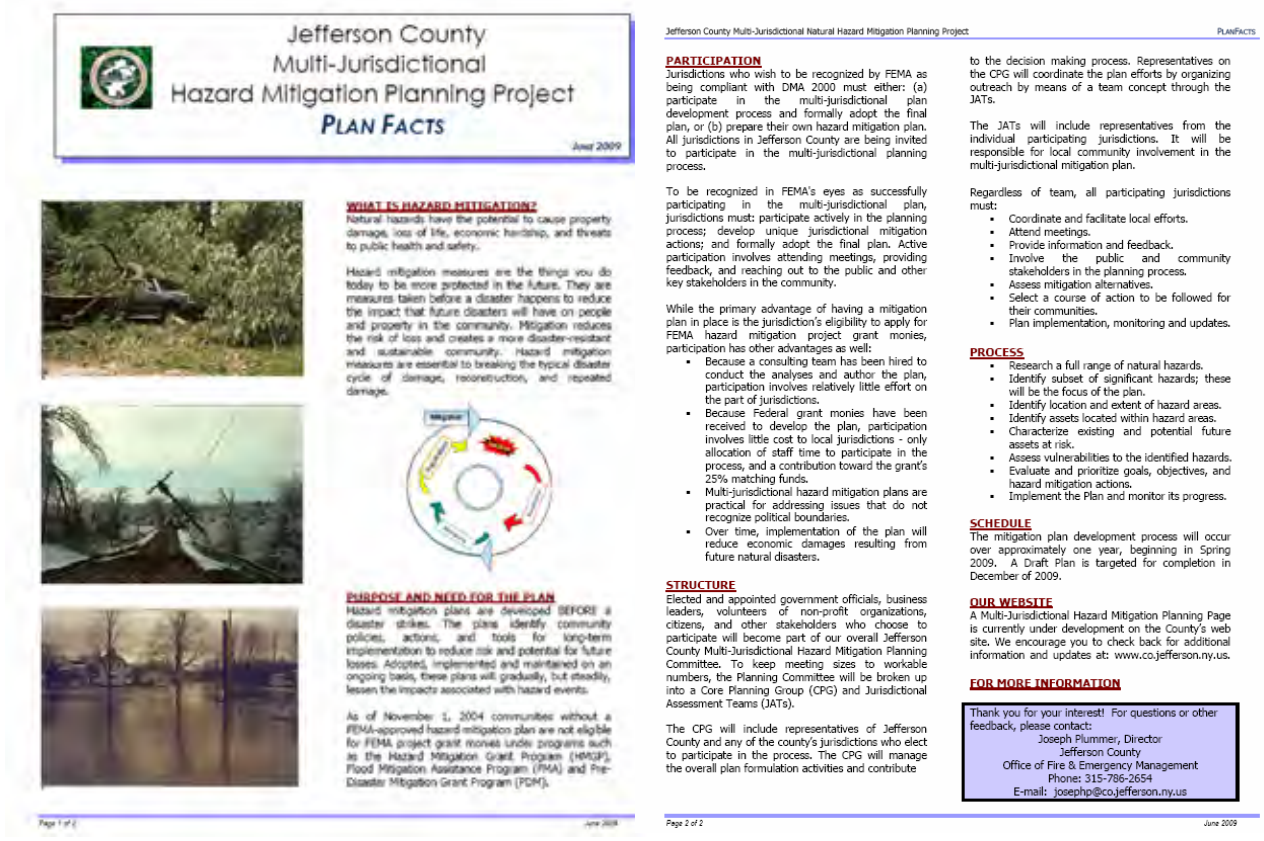
PlanFacts

The CPG made an effort to involve the public and other stakeholders in the process during the drafting stage of the plan in part through a fact sheet. The Planning Committee increased public awareness of the hazard mitigation plan process by providing a two-page summation on hazard mitigation facts and the mitigation planning process to the public, community leaders, business owners, local residents and other stakeholders in the plan. The flyer, entitled *Jefferson County Multi-Jurisdictional Natural Hazard Mitigation Planning Project PlanFacts*, furnishes pertinent plan data that explains the purpose and need for the mitigation plan in Jefferson County.

The two-page flyer begins by providing a basic understanding to "What is hazard mitigation?" It then contains information on the plan development process and how jurisdictions can participate in the plan or prepare their own hazard mitigation plans in compliance with DMA 2000 requirements. It also provides an overview of the Hazard Mitigation Planning Committee members and their roles; the steps in the mitigation process (goals, objectives, natural hazards evaluation, etc.); the plan scheduled target completion date; and a point of contact at JCOFEM for more information.

PlanFacts was distributed to the attendees at the Core Planning Group Kickoff Meeting on July 9, 2009. It was also posted by several Core Planning Group Members on local notice boards throughout the county. The Fact Sheet can be found electronically (PDF format) at the Jefferson County Office of Emergency Management web site address given above.

PlanFacts was also distributed in hard copy format widely throughout the County by CPG members. Locations that it has been posted/distributed include local libraries, fire departments, and city/town halls. A copy of the full fact sheet is presented below:



Jefferson County
Multi-Jurisdictional
Hazard Mitigation Planning Project
PLAN FACTS
June 2009

WHAT IS HAZARD MITIGATION?

Natural hazards have the potential to cause property damage, loss of life, economic hardship, and threats to public health and safety.

Hazard mitigation measures are the things you do today to be more protected in the future. They are measures taken before a disaster happens to reduce the impact that future disasters will have on people and property in the community. Mitigation reduces the risk of loss and creates a more disaster-resistant and sustainable community. Hazard mitigation measures are essential to breaking the typical disaster cycle of damage, reconstruction, and repeated damage.

PURPOSE AND NEED FOR THE PLAN

Hazard mitigation plans are developed BEFORE a disaster strikes. The plans identify community policies, actions, and tools for long-term implementation to reduce risk and potential for future losses. Adopted, implemented and maintained on an ongoing basis, these plans will gradually, but steadily, lessen the impacts associated with hazard events.

As of November 1, 2004 communities without a FEMA-approved hazard mitigation plan are not eligible for FEMA project grant monies under programs such as the Hazard Mitigation Grant Program (HMGP), Flood Mitigation Assistance Program (FMA) and Pre-Disaster Mitigation Grant Program (PDM).

Page 1 of 2 June 2009

Jefferson County Multi-Jurisdictional Natural Hazard Mitigation Planning Project PLANFACTS

PARTICIPATION

Jurisdictions who wish to be recognized by FEMA as being compliant with DMA 2000 must either: (a) participate in the multi-jurisdictional plan development process and formally adopt the final plan, or (b) prepare their own hazard mitigation plan. All jurisdictions in Jefferson County are being invited to participate in the multi-jurisdictional planning process.

To be recognized in FEMA's eyes as successfully participating in the multi-jurisdictional plan, jurisdictions must: participate actively in the planning process; develop unique jurisdictional mitigation actions; and formally adopt the final plan. Active participation involves attending meetings, providing feedback, and reaching out to the public and other key stakeholders in the community.

While the primary advantage of having a mitigation plan in place is the jurisdiction's eligibility to apply for FEMA hazard mitigation project grant monies, participation has other advantages as well:

- Because a consulting team has been hired to conduct the analyses and author the plan, participation involves relatively little effort on the part of jurisdictions.
- Because Federal grant monies have been received to develop the plan, participation involves little cost to local jurisdictions - only allocation of staff time to participate in the process, and a contribution toward the grant's 25% matching funds.
- Multi-jurisdictional hazard mitigation plans are practical for addressing issues that do not recognize political boundaries.
- Over time, implementation of the plan will reduce economic damages resulting from future natural disasters.

STRUCTURE

Elected and appointed government officials, business leaders, volunteers of non-profit organizations, citizens, and other stakeholders who choose to participate will become part of our overall Jefferson County Multi-Jurisdictional Hazard Mitigation Planning Committee. To keep meeting sizes to workable numbers, the Planning Committee will be broken up into a Core Planning Group (CPG) and Jurisdictional Assessment Teams (JATs).

The CPG will include representatives of Jefferson County and any of the county's jurisdictions who elect to participate in the process. The CPG will manage the overall plan formulation activities and contribute to the decision making process. Representatives on the CPG will coordinate the plan efforts by organizing outreach by means of a team concept through the JATs.

The JATs will include representatives from the individual participating jurisdictions. It will be responsible for local community involvement in the multi-jurisdictional mitigation plan.

Regardless of team, all participating jurisdictions must:

- Coordinate and facilitate local efforts.
- Attend meetings.
- Provide information and feedback.
- Involve the public and community stakeholders in the planning process.
- Assess mitigation alternatives.
- Select a course of action to be followed for their communities.
- Plan implementation, monitoring and updates.

PROCESS

- Research a full range of natural hazards.
- Identify subset of significant hazards; these will be the focus of the plan.
- Identify location and extent of hazard areas.
- Identify assets located within hazard areas.
- Characterize existing and potential future assets at risk.
- Assess vulnerabilities to the identified hazards.
- Evaluate and prioritize goals, objectives, and hazard mitigation actions.
- Implement the Plan and monitor its progress.

SCHEDULE

The mitigation plan development process will occur over approximately one year, beginning in Spring 2009. A Draft Plan is targeted for completion in December of 2009.

OUR WEBSITE

A Multi-Jurisdictional Hazard Mitigation Planning Page is currently under development on the County's web site. We encourage you to check back for additional information and updates at: www.co.jefferson.ny.us.

FOR MORE INFORMATION

Thank you for your interest! For questions or other feedback, please contact:
Joseph Plummer, Director
Jefferson County
Office of Fire & Emergency Management
Phone: 315-786-2654
E-mail: josephp@co.jefferson.ny.us

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Open Public Meetings

Several participating jurisdictions spoke about the mitigation planning process at regularly scheduled meetings in their respective municipalities (i.e., board meetings), granting the public and other stakeholders an opportunity to participate in the process. See Table 1.6 for more information. In addition, there will be open meetings of local governing bodies before resolutions are passed to formally adopt the plan (see individual resolutions for more information).

Following completion of the draft plan, a public meeting was held on February 16, 2010, to present the draft plan to County Legislators. In addition to Legislators and members of the public, who were encouraged to review the plan and make comments, this meeting was attended by members of the local news media, and the meeting was featured on local TV news (channel YNN). See Appendix I for screen captures and text from the accompanying online article.

Other Outreach Activities by JCOFEM and CPG Members

In addition to the web site, fact sheet, and open public meetings held, the Core Planning Group (through their respective JATs) undertook the actions summarized in chronological order in Table 1.6 to raise awareness of the plan development process among those not directly tasked with involvement in the plan process, and provide the public and other stakeholders with a forum for participating in - and providing feedback throughout - the plan development process. While participating jurisdictions have provided comments, to date, no documented feedback from the public or other stakeholders has been received. Comments received in time to be incorporated into the Final will be reviewed by the Consultant and JCOFEM and integrated into the plan as applicable. As this is a living document, other comments will be considered for integration during future maintenance cycles and plan updates.

Table 1.6
Summary of Jurisdiction Outreach Activities

Date	Jurisdiction	Action
7/14/2009	Clayton, Village of	Posted "Plan Facts" in Clayton Post Office
7/14/2009	Jefferson, County of	Hand outs and available to speak with citizens about the Hazard Mitigation Project , County Fair Booth, with distribution of "Plan Facts"
7/16/2009	Jefferson, County of	Posted "Plan Facts" in County Office Building
7/16/2009	Jefferson, County of	Posted "Plan Facts" in Public Safety Building
7/18/2009	Jefferson, County of	Posted "Plan Facts" Mannsville Post Office
7/20/2009	Clayton, Village of	Distributed "Plan Facts" at Village Board Meeting
7/20/2009	Clayton, Village of	Posted "Plan Facts" in Paynter Senior Center
7/20/2009	Clayton, Village of	Posted "Plan Facts" in Samaritan Medical Center
7/22/2009	Clayton, Town of	Posted "Plan Facts" in Depauville Post Office
7/22/2009	Clayton, Town of	Posted "Plan Facts" in Depauville Library
7/22/2009	Clayton, Town of	Distributed "Plan Facts" at Town Board Meeting
7/22/2009	Clayton, Town of	Posted "Plan Facts" at Recreation Park
7/22/2009	Clayton, Town of	Posted "Plan Facts" in Depauville Fire Hall
7/22/2009	Clayton, Town of	Posted "Plan Facts" in Depauville Mini Mart
7/31/2009	Clayton, Town of	Distributed "Plan Facts" at annual antique boat show
8/3/2009	Clayton, Village of	Posted "Plan Facts" in Town Fire House

Table 1.6 Summary of Jurisdiction Outreach Activities		
Date	**Jurisdiction**	**Action**
8/3/2009	Clayton, Village of	Posted "Plan Facts" in Municipal Buildings
8/3/2009	Clayton, Village of	Posted "Plan Facts" in Hawn Memorial Library
8/3/2009	Clayton, Village of	Posted "Plan Facts" in Big M Supermarket
8/7/2009	Clayton, Town of	Distributed "Plan Facts" at antique sale at Recreation Park
8/10/2009	Lorraine, Town of	Posted "Plan Facts" in Town Hall
8/10/2009	Lorraine, Town of	Raised HMP at Town Board Meeting
10/05/2009	Glen Park, Village of	Discussed the plan at Village Board Meeting
10/05 – 11/02 2009	Glen Park, Village of	Posted “Plan Facts” outside Village office on bulletin board
10/27/2009	Jefferson, County of	Press release and J. Plummer interview in Watertown Daily Times Newspaper
10/29/2009	Jefferson, County of	Press release sent to Newzjunky.com - internet news service covering northern New York State
15/10/2009	Lorraine, Town of	Posted "Plan Facts" in Post Office
2/16/2010	County and Participating Jurisdictions	Meeting to present the Draft Plan to the Public and County Legislators; covered on local TV and newpspapers

Opportunities for Involvement of Other Stakeholders in the Plan Development Process

In order to meet Federal requirements, the plan development process must be open to stakeholders beyond planning group members and the general public. That is, opportunities must be available for other stakeholders (such as businesses, neighboring communities, academia, other relevant private and non-profit interests, and other interested parties) to become involved in the planning process.

As with the general public, other stakeholders must be provided with some variety of means to not only learn about the process that the Planning Committee is undertaking, but to voice concerns and to provide input throughout the planning process. With support and guidance from URS, each JAT took the lead in pursuing a range of activities to: (a) alert other stakeholders to the fact that the planning was working to develop this Hazard Mitigation Plan, and (b) provide other stakeholders with a forum to ask questions, and to submit comments and/or suggestions on the process or directly participate.

The Core Planning Group determined that outreach activities to the general public as summarized in the previous section would also reach and provide the same opportunities for other stakeholders such as businesses, neighboring communities, academia, other relevant private and non-profit interests, and other interested parties. In addition, the JCOFEM Program Coordinator spoke with the following key stakeholder groups at various times during the plan development stage to alert them to the fact that the plan was under development and open the door for their participation and feedback:

Jefferson County Community College
Frontier Housing Corporation
Carthage Area Hospital
Samaritan Medical Center
Fort Drum Emergency Management Office
Jefferson County Fire Chiefs and Firefighters Association
National Grid
St Lawrence County
Lewis County
Oswego County
Tug Hill Commission

Review and Incorporation of Existing Plans, Studies, Reports, and Technical Information

In the process of preparing this hazard mitigation plan, many other existing plans, studies, reports, and technical information were evaluated. These sources are noted throughout this report as various topics are discussed. In summary, the development of this hazard mitigation plan included the review and incorporation as applicable of data from the following sources:

- Readily available on-line information from federal and state agency web sites including: FEMA, NYSEMO, NY State Department of Environmental Conservation, US Forest Service National Avalanche Center, US Geological Survey, National Oceanic and Atmospheric Administration (including National Weather Service and National Climatic Data Center, and the National Severe Storms Laboratory),U.S. Department of Agriculture Natural Resources Conservation Service, U.S. Army Cold Regions Research and Engineering Laboratory USGS National Geomagnetism Program, National Drought Mitigation Center Drought Impact Reporter, USGS National Earthquake Information Center, NASA Space Environment Center, and the US Department of Transportation Federal Highway Authority.
- New York State Hazard Mitigation Plan (January 2008)
- FEMA Q3 Flood Data and municipal Flood Insurance Studies
- NYSDEC Coastal Erosion Hazard Area Mapping (Town of Ellisburg)
- Jefferson County GIS data
- Fort Drum Regional Growth Management Strategy Summary Report (December 2008)
- Jefferson County Comprehensive Economic Development Strategy (2006, 2007 Report Card, and 2008 Priority Goals and Strategies)
- Jefferson County Planning Board Growth and Development Guidelines (October 2005)
- Jefferson County Agricultural and Farmland Protection Plan (2002)
- NYSDOT Northern Tier Expressway: Route 11 Corridor Study (December 2008)
- Black River Corridor Economic Adjustment Strategy (September 2001)
- White Still and Wild: A Blueway Trail Development Plan for the Black River in Oneida, Lewis and Jefferson Counties (September 2007)
- NYS Tug Hill Commission White Paper, Evaluation of Tug Hill Commission Program (July 2008)
- Town of Champion Comprehensive Plan (March 2009)
- River Area Council of Governments Comprehensive Plan Background Report (March 2009)
- Jefferson County Office of Fire and Emergency Management's collection of newspaper articles on past disaster events (current as of 08/20/09)
- USGS Earthquake History of New York State
- NY State Geological Survey NEHRP Soil Class Mapping
- NY State Landslide Inventory Mapping
- USGS National Landslides Program Landslide Mapping
- USGS Fact Sheet 165-00, Land Subsidence in the United States
- National Agricultural Statistics Service, Jefferson County Profile 2007
- New York agricultural Statistics Service, Jefferson County Profile, 2002
- American Farmland Trust Agricultural Economic Development for the Hudson Valley, Technical Report and Recommendations 2004
- HAZUS-MH database for emergency facilities and utilities
- NYSDEC Inventory of Dams
- Stanford University National Performance of Dams Program web site
- U.S. Army Corps of Engineers National Inventory of Dams

- New York State Historic Preservation Office GIS shape files for state and federally listed historic and cultural resources
- The NYS Park System: An Economic Asset to the Empire State – Parks and Trails New York/ The Political and Economic Research Institute of the University of Massachusetts
- The American Society of Civil Engineers Standard 7-02, Minimum Design Loads for Buildings and Other Structures and "Wind Zones in the United States" map
- New York City Area Consortium for Earthquake Loss Mitigation website
- FEMA Publication 320: Taking Shelter from the Storm
- FEMA NFIP Community Status Book
- FEMA data for NFIP Repetitive Loss Properties and Community Rating System communities
- FEMA's "NFIP Floodplain Management Requirements: a Study Guide and Desk Reference for Local Officials (FEMA-480)"
- USGS Landslide Overview Map of the Conterminous United States, prepared in hard copy format in 1982 by Dorothy H. Radbruch-Hall, Roger B. Colton, William E. Davies, Ivo Lucchitta, Betty A. Skipp, and David J. Varnes (Geologic Survey Professional Paper 1183), compiled digitally by Jonathan W. Godt (USGS Open File Report 97-289), as viewed on NationalAtlas.gov
- American Society of Civil Engineers (ASCE) Standard 7-98: Minimum Design Loads for Buildings and Other Structures
- FEMA's "Multi-Hazard Identification and Risk Assessment" (1997)
- American Meteorological Society "Glossary of Meteorology"
- In addition, to conduct their Capability Assessments, local jurisdictions considered relevant plans, codes, and ordinances currently in place such as building codes, zoning ordinances, subdivision ordinances, special purpose ordinances, site plan review requirements, growth management ordinances, comprehensive plans, capital improvements plans, economic development plans, emergency response plans, post-disaster recovery plans, post-disaster recovery ordinances, and real estate disclosure ordinances. For additional information, please see the "Capabilities and Resources" section of this plan.

Regulatory Compliance

This Hazard Mitigation Plan was prepared in a manner consistent with applicable regulations, criteria, and guidance. The Plan's components address the local hazard mitigation planning requirements of the DMA 2000. The Planning Group used FEMA's Multi-Hazard Mitigation Planning Guidance document of March 2004 (Revised July 2008) as a guide. This document contains what is known as a Crosswalk Reference Document for FEMA reviewers to track where in a document various criteria are addressed. Each criteria must be addressed satisfactorily for a plan to be approved by FEMA. There are three exceptions, with regard to assessing vulnerability. They are:

- Assessing Vulnerability: Identifying Structures: §201.6(c)(2)(ii)(A)
- Assessing Vulnerability: Estimating Potential Losses: §201.6(c)(2)(ii)(B)
- Assessing Vulnerability: Analyzing Development Trends: §201.6(c)(2)(ii)(C)

For these three criteria, highlighted in gray in Table 1.8, actions are strongly encouraged by FEMA, though not required by the DMA 2000 Interim Final Rule. While FEMA encourages communities to address such criteria, they are not required for Plan approval. For the Jefferson County Multi-Jurisdictional Hazard Mitigation Plan, these three criteria were addressed to the greatest extent practicable in the time available and using the best readily-available data.

The following table summarizes specific requirements in the Interim Final Rule, and whether the

regulation implementing DMA 2000 is addressed in this plan. Information in this plan is presented in the order of the plan review criteria for NYSEMO/FEMA reviewer's ease in evaluating compliance.

Table 1.
FEMA Plan Review Criteria

FEMA Plan Review Criteria	Addressed in this Plan
Prerequisites	
Adoption by the Local Governing Body: §201.6(c)(5)	Placeholder following page i
Multi-Jurisdictional Plan Adoption: §201.6(c)(5)	Placeholder following page i
Multi-Jurisdictional Planning Participation: §201.6(a)(3)	Section 1, Apdx F
Planning Process	
Documentation of the Planning Process: §201.6(b) and §201.6(c)(1)	Section 1 and Apdx. A
Risk Assessment	
Identifying Hazards: §201.6(c)(2)(i)	Section 2
Profiling Hazards: §201.6(c)(2)(i)	Section 3
Assessing Vulnerability: Overview: §201.6(c)(2)(ii)	Section 3 and Apdx. A-C
Assessing Vulnerability: Addressing Repetitive Loss Properties: §201.6(c)(2)(ii)	Section 3
Assessing Vulnerability: Identifying Structures: §201.6(c)(2)(ii)(A)	Section 3 and Apdx. C
Assessing Vulnerability: Estimating Potential Losses: §201.6(c)(2)(ii)(B)	Section 3
Assessing Vulnerability: Analyzing Development Trends: §201.6(c)(2)(ii)(C)	Section 3
Multi-Jurisdictional Risk Assessment: §201.6(c)(2)(iii)	Section 3
Mitigation Strategy	
Local Hazard Mitigation Goals: §201.6(c)(3)(i)	Section 5
Identification and Analysis of Mitigation Actions: §201.6(c)(3)(ii)	Sections 6 - 7 and Apdx. D
Identification and Analysis of Mitigation Actions: NFIP Compliance: §201.6(c)(3)(iii)	*Sections 6 - 7 and Apdx. D*
Implementation of Mitigation Actions: §201.6(c)(3)(iii)	Section 8 and Apdx. E
Multi-Jurisdictional Mitigation Actions: §201.6(c)(3)(iv)	Section 8 and Apdx. E
Plan Maintenance Process	
Monitoring, Evaluating, and Updating the Plan: §201.6(c)(4)(i)	Section 9
Incorporation into Existing Planning Mechanisms: §201.6(c)(4)(ii)	Section 9
Continued Public Involvement: §201.6(c)(4)(iii)	Section 9

Document Organization

This Multi-Jurisdictional Hazard Mitigation Plan for Jefferson County is organized into the following major sections.

Introduction. Plan purpose, overview of Jefferson County, summary of plan development process, document organization, and key terms.

Identification of Potential Hazards. Documentation of the Planning Committee's evaluation of a full range of natural hazards, and indication of which hazards were identified for inclusion in this plan (and why) versus those that were not identified (and why not).

Risk Assessment. Hazard profiles, identification and characterization of assets in hazard areas, damage estimates, and summary of land uses and development trends in hazard areas.

Capabilities and Resources. Overview of local, state, and federal resources for hazard mitigation.

Mitigation Goals. Summary of hazard mitigation goals for the State Hazard Mitigation Plan and also for this county-wide multi-jurisdictional hazard mitigation plan.

Range of Alternative Mitigation Actions Considered. Summary of mitigation actions considered by participating jurisdictions.

Action Item Evaluation and Prioritization. Information regarding the methodology and process followed by participating jurisdictions to evaluate and prioritize unique hazard mitigation actions for their communities.

Implementation Strategy. Summary of hazard mitigation actions selected by each participating jurisdiction.

Plan Maintenance. Procedures selected for monitoring, evaluating, and updating this mitigation plan; including participation of the public and other stakeholders in plan maintenance, and plan integration.

Key Terms

For the purpose of clarity throughout this document, the following definitions are briefly outlined:

- **Hazard mitigation** is the method by which measures are taken to reduce, eliminate, avoid or redirect natural hazards in order to diminish or eradicate the long-term risks to human life and property.

- A **natural hazard** is any hazard that occurs or results from acts of nature such as floods, earthquakes, hurricanes, tornadoes and coastal storms, to name a few.

- A **hazard mitigation plan** is a well-organized and well-documented evaluation of the natural hazards and the extent that the events will occur. In addition, the plan identifies the vulnerability to the effects of the natural hazards typically present in a certain area, as well as the goals, objectives and actions required for minimizing future loss of life and property damage as a result of natural hazards.

- **Hazard mitigation planning** is the process of managing actions taken by individual citizens and professional organizations involved in mitigation activities. The process involves carrying out plans to reduce loss of life, injuries and damage to property, as well as reducing the costs associated with losses from natural hazards. It is a long-term process with benefits best realized over time.

- A **disaster** is any catastrophic event that causes loss of life, injuries and widespread destruction to property. For the purpose of this document, a disaster is the result of a natural hazard, whether anticipated (such as flash flood warnings) or fortuitous (such as earthquakes).

- The term **human-caused hazards** refers to technological hazards + terrorism, where "technological hazards" are incidents that arise from human activities such as the manufacture, transportation, storage, and use of hazardous materials, where the incidents are accidental and their consequences unintended; and "terrorism" is the intentional, criminal, and/or malicious acts resulting from the use of Weapons of Mass Destruction (WMD), including biological, chemical, nuclear, and radiological weapons; arson, incendiary, explosive and armed attacks; industrial sabotage and intentional hazardous materials releases; and cyberterrorism.

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SECTION 2 - IDENTIFICATION OF POTENTIAL HAZARDS

FEMA's current regulations and interim guidance require, at a minimum, an evaluation of a full range of natural hazards. An evaluation of "human-caused" hazards (i.e., technological hazards and/or terrorism) is encouraged, though not required, for plan approval under DMA 2000. Jefferson County has chosen to focus solely on natural hazards at this time. Human-caused hazards can be evaluated in future versions of the plan, as it is a "living document" which will be monitored, evaluated and updated regularly.

After consideration of a full range of natural hazards, the participating jurisdictions have identified several hazards that are addressed in this Multi-Jurisdictional Hazard Mitigation Plan. These hazards were identified through an extensive process that utilized direct input from Core Planning Group members, research of past disaster declarations in the County, and review of the New York State Hazard Mitigation Plan (2008). Readily available online information from reputable sources (such as Federal and state agencies) was also evaluated to supplement information from these key sources.

The following table (Table 2.1) presents the full range of natural hazards considered and provides a brief description of the hazard. Subsequently, Table 2.2 documents the evaluation process for the hazards listed in Table 2.1 to determine the hazards worthy of further consideration in the plan. For each hazard considered, Table 2.2 indicates whether or not the hazard was identified as a significant hazard to be addressed in the plan, how this determination was made (i.e. the sources of information that were consulted while researching each hazard) and why this determination was made. The table summarizes not only those hazards that *were* identified (and why) but also those that *were not* identified (and why not).

Some of these hazards are considered to be interrelated or cascading (e.g., hurricanes can cause wind damage and flooding), but for preliminary hazard identification purposes these individual hazards have been broken out separately. It should also be noted that some hazards, such as earthquakes or winter storms may impact a large area yet cause little damage, while other hazards, such as a tornado, may impact a small area yet cause extensive damage within that area.

Because this Hazard Mitigation Plan is a living document, hazard events not identified for inclusion at this time could be addressed during future evaluations and updates of the plan if deemed necessary by the Core Planning Group at that time.

Lastly, Table 2.3 provides a summary checklist of the hazard identification and evaluation process noting which of the 23 initially identified hazards are considered significant enough for further evaluation through the multi-jurisdictional hazard risk assessment (marked with a "☑").

Table 2.1
Descriptions of the Full Range of Initially Identified Hazards

Hazard	Description
ATMOSPHERIC	
Avalanche	A rapid fall or slide of a large mass of snow down a mountainside.
Extreme Temperatures	Extreme heat and extreme cold constitute different conditions in different parts of the country. Extreme cold can range from near freezing in the South to temperatures well below zero in the North. Similarly, extreme heat is typically recognized as the condition whereby temperatures hover ten degrees or more above the average high temperature for a region for an extended period.
Extreme Wind	Wind is air that is in constant motion relative to the surface of the earth. Extreme wind events can occur suddenly without warning. They can occur at any time of the day or night, in any part of the country. Extreme winds pose a threat to lives, property, and vital utilities primarily due to the effects of flying debris and can down trees and power lines. Extreme winds are most commonly the result of hurricanes, tropical storms, nor'easters, severe thunderstorms and tornadoes, but can also occur in their absence as mere "windstorms." One type of windstorm, the downburst, can cause damage equivalent to a strong tornado.
Hailstorm	Any storm that produces hailstones that fall to the ground; usually used when the amount or size of the hail is considered significant. Hail is formed when updrafts in thunderstorms carry raindrops in to parts of the atmosphere where the temperatures are below freezing.
Hurricane and Tropical Storm	Hurricanes and tropical storms are classified as cyclones and defined as any closed circulation developing around a low-pressure center in which the winds rotate counter-clockwise in the Northern Hemisphere (or clockwise in the Southern Hemisphere) and with a diameter averaging 10 to 30 miles across. When maximum sustained winds reach or exceed 39 miles per hour, the system is designated a tropical storm, given a name, and is closely monitored by the National Hurricane Center. When sustained winds reach or exceed 74 miles per hour the storm is deemed a hurricane. The primary damaging forces associated with these storms are high-level sustained winds, heavy precipitation and tornadoes. Coastal areas are also vulnerable to the additional forces of storm surge, wind-driven waves and tidal flooding which can be more destructive than cyclone wind. The majority of hurricanes and tropical storms form in the Atlantic Ocean, Caribbean Sea and Gulf of Mexico during the official Atlantic hurricane season, which extends from June through November.
Lightning	Lightning is a discharge of electrical energy resulting from the buildup of positive and negative charges within a thunderstorm, creating a "bolt" when the buildup of charges becomes strong enough. This flash of light usually occurs within the clouds or between the clouds and the ground. A bolt of lightning can reach temperatures approaching 50,000 degrees Fahrenheit. Lightning rapidly heats the sky as it flashes, but the surrounding air cools following the bolt. This rapid heating and cooling of the surrounding air causes thunder. On average, 73 people are killed each year by lightning strikes in the United States.
Nor'easter	Similar to hurricanes, nor'easters are ocean storms capable of causing substantial damage to coastal areas in the Eastern United States due to their associated strong winds and heavy surf. Nor'easters are named for the winds that blow in from the northeast and drive the storm up the East Coast along the Gulf Stream, a band of warm water that lies off the Atlantic coast. They are caused by the interaction of the jet stream with horizontal temperature gradients and generally occur during the fall and winter months when moisture and cold air are plentiful. Nor'easters are known for dumping heavy amounts of rain and snow, producing hurricane-force winds, and creating high surf that causes severe beach erosion and coastal flooding.
Tornado	A tornado is a violently rotating column of air that has contact with the ground and is often visible as a funnel cloud. Its vortex rotates cyclonically with wind speeds ranging from as low as 40 mph to as high as 300 mph. Tornadoes are most often generated by thunderstorm activity when cool, dry air intersects and overrides a layer of warm, moist air forcing the warm air to rise rapidly. The destruction caused by tornadoes ranges from light to catastrophic depending on the intensity, size and duration of the storm.
Winter Storm	Winter storms may include snow, sleet, freezing rain, or a mix of these wintry forms of precipitation. Blizzards, the most dangerous of all winter storms, combine low temperatures, heavy snowfall, and winds of at least 35 miles per hour, reducing visibility to only a few yards. Ice storms occur when moisture falls and freezes immediately upon impact on trees, powerlines, communication towers, structures, roads and other hard surfaces. Winter storms and ice storms

	can down trees, cause widespread power outages, damage property, and cause fatalities and injuries to human life.
HYDROLOGIC	
Coastal Erosion	Landward displacement of a shoreline caused by the forces of waves and currents. Coastal erosion is measured as the rate of change in the position or horizontal displacement of a shoreline over a period of time. It is generally associated with episodic events such as hurricanes and tropical storms, nor'easters, storm surge and coastal flooding but may also be caused by human activities that alter sediment transport. Construction of shoreline protection structures can mitigate the hazard, but may also exacerbate it under some circumstances.
Dam Failure	Dam failure is the collapse, breach, or other failure of a dam structure resulting in downstream flooding. In the event of a dam failure, the energy of the water stored behind even a small dam is capable of causing loss of life and severe property damage if development exists downstream of the dam. Dam failure can result from natural events, human-induced events, or a combination of the two. The most common cause of dam failure is prolonged rainfall that produces flooding. Failures due to other natural events such as hurricanes, earthquakes or landslides are significant because there is generally little or no advance warning.
Drought	A prolonged period of less than normal precipitation such that the lack of water causes a serious hydrologic imbalance. Common effects of drought include crop failure, water supply shortages, and fish and wildlife mortality. High temperatures, high winds, and low humidity can worsen drought conditions and also make areas more susceptible to wildfire. Human demands and actions have the ability to hasten or mitigate drought-related impacts on local communities.
Flood	The accumulation of water within a water body which results in the overflow of excess water onto adjacent lands, usually floodplains. The floodplain is the land adjoining the channel of a river, stream ocean, lake or other watercourse or water body that is susceptible to flooding. Most floods fall into the following three categories: riverine flooding, coastal flooding, or shallow flooding (where shallow flooding refers to sheet flow, ponding and urban drainage).
Ice Jams	A formation of ice over a body of water that limits the flow of the water due to freezing. Ice jam flooding occurs when warm temperatures and heavy rain cause the snow to melt rapidly, causing frozen rivers or lakes to overflow. As the water lifts, the ice that's formed on top of the body of water breaks into small pieces of varying sizes. These pieces or large chunks of ice tend to float downstream and often pile up near narrow passages or near obstructions, such as bridges and dams. This accumulation can impact the integrity of the structures and also cause upstream flooding as water backs up behind the obstruction.
Storm Surge	A storm surge is a large dome of water often 50 to 100 miles wide and rising anywhere from four to five feet in a Category 1 hurricane up to more than 30 feet in a Category 5 storm. Storm surge heights and associated waves are also dependent upon the shape of the offshore continental shelf (narrow or wide) and the depth of the ocean bottom (bathymetry). A narrow shelf, or one that drops steeply from the shoreline and subsequently produces deep water close to the shoreline, tends to produce a lower surge but higher and more powerful storm waves. Storm surge arrives ahead of a storm's actual landfall and the more intense the hurricane is, the sooner the surge arrives. Storm surge can be devastating to coastal regions, causing severe beach erosion and property damage along the immediate coast. Further, water rise caused by storm surge can be very rapid, posing a serious threat to those who have not yet evacuated flood-prone areas.
Wave Action	The characteristics and effects of waves that move inland from an ocean, bay, or other large body of water. Large, fast moving waves can cause extreme erosion and scour and their impact on buildings can cause severe damage. During hurricanes and other high-wind events, storm surge and wind increase the destructiveness of waves and cause them to reach higher elevations and penetrate further inland.
GEOLOGIC	
Earthquake	A sudden, rapid shaking of the Earth caused by the breaking and shifting of rock beneath the surface. This movement forces the gradual building and accumulation of energy. Eventually, strain becomes so great that the energy is abruptly released, causing the shaking at the earth's surface which we know as an earthquake. Roughly 90 percent of all earthquakes occur at the boundaries where plates meet, although it is possible for earthquakes to occur entirely within plates. Earthquakes can affect hundreds of thousands of square miles; cause damage to property measured in the tens of billions of dollars; result in loss of life and injury to hundreds of thousands of persons; and disrupt the social and economic functioning of the affected area.
Expansive Soils	Soils that will exhibit some degree of volume change with variations in moisture conditions. The most important properties affecting degree of volume change in a soil are clay mineralogy and the

	aqueous environment. Expansive soils will exhibit expansion caused by the intake of water and, conversely, will exhibit contraction when moisture is removed by drying. Generally speaking, they often appear sticky when wet, and are characterized by surface cracks when dry. Expansive soils become a problem when structures are built upon them without taking proper design precautions into account with regard to soil type. Cracking in walls and floors can be minor, or can be severe enough for the home to be structurally unsafe.
Landslide	The movement of a mass of rock, debris, or earth down a slope when the force of gravity pulling down the slope exceeds the strength of the earth materials that comprise to hold it in place. Slopes greater than 10 degrees are more likely to slide, as are slopes where the height from the top of the slope to its toe is greater than 40 feet. Slopes are also more likely to fail if vegetative cover is low and/or soil water content is high.
Land Subsidence	The gradual settling or sudden sinking of the Earth's surface due to the subsurface movement of earth materials. Causes of land subsidence include groundwater pumpage, aquifer system compaction, drainage of organic soils, underground mining, hydrocompaction, natural compaction, sinkholes, and thawing permafrost.
Tsunami	A series of waves generated by an undersea disturbance such as an earthquake. The speed of a tsunami traveling away from its source can range from up to 500 miles per hour in deep water to approximately 20 to 30 miles per hour in shallower areas near coastlines. Tsunamis differ from regular ocean waves in that their currents travel from the water surface all the way down to the sea floor. Wave amplitudes in deep water are typically less than one meter; they are often barely detectable to the human eye. However, as they approach shore, they slow in shallower water, basically causing the waves from behind to effectively "pile up", and wave heights to increase dramatically. As opposed to typical waves which crash at the shoreline, tsunamis bring with them a continuously flowing 'wall of water' with the potential to cause devastating damage in coastal areas located immediately along the shore.
Volcano	A mountain that opens downward to a reservoir of molten rock below the surface of the earth. While most mountains are created by forces pushing up the earth from below, volcanoes are different in that they are built up over time by an accumulation of their own eruptive products: lava, ash flows, and airborne ash and dust. Volcanoes erupt when pressure from gases and the molten rock beneath becomes strong enough to cause an explosion.
OTHER	
Wildfire	An uncontrolled fire burning in an area of vegetative fuels such as grasslands, brush, or woodlands. Heavier fuels with high continuity, steep slopes, high temperatures, low humidity, low rainfall, and high winds all work to increase risk for people and property located within wildfire hazard areas or along the urban/wildland interface. Wildfires are part of the natural management of forest ecosystems, but most are caused by human factors. Over 80 percent of forest fires are started by negligent human behavior such as smoking in wooded areas or improperly extinguishing campfires. The second most common cause for wildfire is lightning.

Table 2.2
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Natural Hazards Considered	Was this hazard identified as a significant hazard to be addressed in the plan at this time? (Yes or No)	How was this determination made?	Why was this determination made?
ATMOSPHERIC HAZARDS			
Avalanche	NO	• Review of US Forest Service National Avalanche Center web site • Review of NY State Hazard Mitigation Plan • Review of FEMA's Multi-Hazard Identification and Risk Assessment • Input from the Core Planning Group	• Avalanches are not one of the hazards included in the HAZNY. • While avalanches are not unknown in northern New York State, particularly in backcountry regions of the Adirondacks, the lack of event history in Jefferson County and the County's location in the Adirondack foothills and generally flat topography would indicate a low risk. • Avalanches are not included in the NY State Hazard Mitigation Plan, and the US Forest Service does not have an Avalanche Center in New York State. The American Avalanche Association reports only one avalanche-related fatality in New York State in the last decade (02/19/00 on Wright Peak, Adirondack High Peaks – outside of Jefferson County). • The NYSDEC has issued guidance regarding avalanche risks in the Adirondack Mountains (outside of Jefferson County); however, no such guidance has been issued for the remainder of the State.
Extreme Temperatures	**YES**	• Review of NY State Hazard Mitigation Plan • Review of National Oceanic and Atmospheric Administration (NOAA) National Climatic Data Center (NCDC) Database • Review of FEMA's Multi-Hazard Identification and Risk Assessment • Review of Jefferson County's HAZNY • Input from the Core Planning Group	• Extreme temperatures are not one of the hazards included in the HAZNY. • Extreme heat events are mentioned in the NY State plan as a discrete hazard. Extreme cold is mentioned in the context of winter storms. • The state plan records zero significant extreme heat events affecting Jefferson County since 1994 and shows that the percentage of the population most susceptible to extreme heat (under five years and over 65 years) is 18.2%, which is somewhat lower than the statewide average of 19.5%. • NOAA's NCDC reports two significant extreme temperature events for areas including Jefferson County between February 1993 and December 2008 (including one record heat event in October 1993, and one extreme winter cold event in February 1993). For these events there are $50,000 estimated property damages but no attributed fatalities, injuries or crop damages across the County.
Extreme Wind	**YES**	• Review of NY State Hazard Mitigation Plan • Review of FEMA's Multi-	• Extreme wind is not one of the hazards included in the HAZNY. • Extreme wind events are included in the NY

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Natural Hazards Considered	Was this hazard identified as a significant hazard to be addressed in the plan at this time? (Yes or No)	How was this determination made?	Why was this determination made?
		Hazard Identification and Risk Assessment • Review of NOAA NCDC Storm Events Database • Review of American Society of Civil Engineers (ASCE) Standard 7-02 (Minimum Design Loads for Buildings and Other Structures) • Review of Wind Zones in the United States as per FEMA Publication 320 – Taking Shelter From the Storm • Review of Jefferson County's HAZNY • Input from the Core Planning Group	State plan in the context of hurricane and tornado events. • Jefferson County was included in a Federal Disaster Declaration in 1973 for an event involving high winds (in addition to wave action and flooding). • The state plan ranks Jefferson County as 49th out of 62 counties in the state for the threat of extreme wind and vulnerability to extreme wind losses. • Jefferson County is located in a climate region that is susceptible to numerous types of extreme wind events including straight line winds, severe thunderstorms, and nor'easters as well as winds associated with occasional tropical and extratropical systems. • According to FEMA-320, Jefferson County is located in a wind zone where extreme wind speeds of 160mph are possible. • NCDC reports 78 high wind events (wind speed > 50 knots/58 mph) for Jefferson County since 1958. These events have most often been associated with thunderstorms, and have caused three deaths, 14 injuries, $25 million in property damage, and $400,000 in crop damage. • The 3 second wind gust for Jefferson County for building design purposes as per ASCE 7-02 is 90 mph, though Jefferson County is located outside of mapped Special Wind Regions (areas where wind anomalies are known to occur and in which wind speeds may be substantially higher than specified). • NOAA's NSSL estimates that Jefferson County is in a region of the United States with the lowest number of "wind days" (wind speed > 50 knots/58 mph) per year, with only 1 to 3 "wind days" per year expected, based on a period of record between 1980 and 1999.
Hailstorm	NO	• Review of NY State Hazard Mitigation Plan • Review of FEMA's Multi-Hazard Identification and Risk Assessment • Review of NOAA NCDC Storm Events Database and NOAA NSSL website • New York Agricultural Statistics Service	• Hail is not one of the hazards included in the HAZNY • While the state plan includes hailstorms as a discrete hazard, NCDC reports 12 significant hailstorm events (3/4 inch diameter hail or greater) for Jefferson County between 1968 and 2008 causing $65,000 in property damage but no deaths, injuries, or crop damages. • NCDC reports no events in which "damaging" hail (of at least 2 inches in

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Natural Hazards Considered	Was this hazard identified as a significant hazard to be addressed in the plan at this time? (Yes or No)	How was this determination made?	Why was this determination made?
		• Review of Jefferson County's HAZNY • Input from the Core Planning Group	diameter) fell in Jefferson County. • According to NSSL data, Jefferson County is located in a part of the country with the lowest annual number of days with hailstorms (less than 1), and where the annual average number of damaging hail days is less than 0.25 per year. • Hailstorms in Jefferson County are not particularly likely, or likely to be particularly intense. There are minimal hazard mitigation techniques available to reduce hailstorm impacts to property (i.e., structure roofing, vehicles), outside of building code enforcement and the emergency preparedness procedures and severe weather warning systems already in place (i.e. mass public notifications that recommend immediate protective actions such as moving automobiles into protected spaces). Forty percent of the County's land area is devoted to agricultural uses (ranked 3rd for land in farms in the state) and agriculture is economically significant in Jefferson County and could be severely impacted during a hail event. However, there are unfortunately no known hail mitigation measures for crops, which would be exposed to the greatest hail damages.
Hurricane and Tropical Storm	NO	• Review of NY State Hazard Mitigation Plan • Analysis of NOAA historical tropical cyclone tracks • Review of NOAA National Hurricane Center and Coastal Services Center websites • Review of NOAA NCDC Storm Events Database and National Hurricane Center (NHC) web site • Review of FEMA's Multi-Hazard Identification and Risk Assessment • Review of Jefferson County's HAZNY • Input from the Core Planning Group	• Hurricanes and tropical storms are not one of the hazards included in the HAZNY • Jefferson County has never been a declared county in any Federal disaster declarations related to hurricanes or tropical storms. • Hurricane and tropical storm events are discussed in the state plan, though the plan's FEMA mapping indicates that Jefferson County is located outside of mapped hurricane-susceptible areas. • NOAA NCDC historical records do not indicate any hurricane or tropical storm events impacting Jefferson County, or any ocean and lake surf events. • NOAA CSC records do not contain any hurricane tracks passing within 65 nautical miles of Jefferson County between 1900 and 2008. There are, however, 27 records representing 13 systems, all of which were extratropical in nature by the time they traversed areas within 65 nm of Jefferson County, with three exceptions (unnamed tropical storm in September 1903; unnamed tropical storm in August 1933; and remnants

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Natural Hazards Considered	Was this hazard identified as a significant hazard to be addressed in the plan at this time? (Yes or No)	How was this determination made?	Why was this determination made?
			of Hurricane Fran (tropical depression/extratropical) in September 1996).
Lightning	**YES**	• Review of NY State Hazard Mitigation Plan • Review of NOAA NCDC Storm Events Database, NOAA lightning statistics, and National Severe Storms Laboratory (NSSL) web site • Review of FEMA's Multi-Hazard Identification and Risk Assessment • Review of Jefferson County's HAZNY • Input from the Core Planning Group	• Lightning is not one of the hazards included in the HAZNY. • Lightning is not considered as a discrete hazard in the NY State Hazard Mitigation Plan. • NOAA records that New York State as a whole has experienced the fourth most deaths and third most damages from lightning in the United States from 1959 to 1994. NOAA data also shows that Jefferson County is located in an area of the country that experiences an average of 20 to 30 thunderstorm days per year and one to two lightning flashes per square kilometer per year. For comparison, large areas of the country experience 40 to 70 or more thunderstorm days per year and more than 10 flashes per square kilometer annually. • While the NCDC database does not record any specific lightning events in Jefferson County since August 1950, Core Planning Group members have provided information regarding local vulnerabilities to lightning strikes. These sources report that some critical facilities such as communication towers, highway garages, and the County airport have suffered regular damaging lightning strikes, with damage to communications, lighting, and other electronic equipment. Lightning strikes at the airport have rendered instrument landing systems inoperable, while lightning strikes at the County highway garage have damaged fuel delivery systems.
Nor'easter	NO	• Review of NY State Hazard Mitigation Plan • Review of NOAA NCDC Storm Events Database • Review of FEMA's Multi-Hazard Identification and Risk Assessment • Review of Jefferson County's HAZNY • Input from the Core	• Nor'easters are not one of the hazards included in the HAZNY. • Nor'easters are discussed in the state plan as a common cause of flooding and snowstorms, particularly in the south eastern part of the state; however, nor'easters are occasionally large enough to encompass almost the entire state. • FEMA and SEMO records indicate that Jefferson County was not part of the area

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Natural Hazards Considered	Was this hazard identified as a significant hazard to be addressed in the plan at this time? (Yes or No)	How was this determination made?	Why was this determination made?
		Planning Group	covered by any major disaster or emergency declarations due to a Nor'easter – not even during the Blizzard of 1993, a nor'easter which was unusually large and impacted much of New York State.
Tornado	**YES**	• Review of NY State Hazard Mitigation Plan • Review of NOAA NCDC Storm Events Database and National Severe Storms Laboratory (NSSL) web site • Review of FEMA's Multi-Hazard Identification and Risk Assessment • Review of Jefferson County's HAZNY • Input from the Core Planning Group	• Tornadoes are not one of the hazards included in the HAZNY. • The state plan acknowledges that New York State has a definite vulnerability to tornadoes, with an average annual occurrence of approximately six tornadoes per year since 1952. • USGS mapping of tornado risk in the State Plan notes that Jefferson County lies well outside of the highest risk areas of New York State, though plan text notes that tornadoes are possible in any area of the country at any time of year. • While the County has no history of Federal Disaster Declarations due to tornadoes, tornadoes have occurred in Jefferson County in the past. NCDC reports three tornado events in Jefferson County since July 1959. These events have resulted in no deaths, but a recorded $2.5 million in property damage (primarily due to the event of August 1983) and one injury (also attributed to the 1983 event). Of the three recorded events, one was of magnitude F1 (moderate damage) on the Fujita scale and the other two were F2 (considerable damage). • NSSL tornado probability data indicate that while Jefferson County is in an area that experiences less than 0.2 tornado days per year (on a scale of 0 to 2 nationwide), life-threatening and damaging tornado events remain a possibility.
Winter Storm	**YES**	• Review of NY State Hazard Mitigation Plan • Review of FEMA's Multi-Hazard Identification and Risk Assessment • Review of NOAA NCDC Storm Events Database • New York State Climate Office web site • Review of Jefferson County's HAZNY • Input from the Core Planning Group	• Ice storms and severe winter storms were both ranked as moderately high hazards in the Jefferson County HAZNY. • Winter storms including heavy snow and ice storms are discussed in the state plan, which notes that Jefferson County averages approximately 124 inches of snowfall per year. This is nearly twice the statewide average of only 65 inches. Extreme southeastern portions of the County receive as much as 150 to 225 inches annually – some of the highest annual averages in the state. • The state plan ranks winter/ice storms as a

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Natural Hazards Considered	Was this hazard identified as a significant hazard to be addressed in the plan at this time? (Yes or No)	How was this determination made?	Why was this determination made?
			high risk in Jefferson County with extreme snowfall potential. • The NY State plan ranks Jefferson County 14th out of 62 counties in the state for most threatened by snow and vulnerable to snow losses. The plan also ranks Jefferson County 3rd out of 62 for most vulnerable to ice storms and ice storm losses. • NCDC reports that Jefferson County has been affected by 85 significant snow and ice events since January 1993. More than $87 million in property damages are attributed to these events, including damages occurring outside Jefferson County. • Accounts were found in local newspapers of significant ice storms which occurred in 1942, 1977, and 1991. • NCDC mapping shows Jefferson County to be located in an area with an average of 15-18 hours of freezing rain per year – some of the highest in the Country but about average within New York State. • According to NOAA, Jefferson County is located in an area where snow depths of approximately 40-80 inches have a 5% chance of being equaled or exceeded in any given year. This represents some of the highest snow depths in the country and also New York State. • FEMA records show that Jefferson County has been specifically included in one snow-related declared disaster, two ice-related declared disasters, and two snow emergencies in the last 30 years.
HYDROLOGIC HAZARDS			
Coastal Erosion	**YES *** ** Based on available data, as identified for Ellisburg only, where the state has mapped Coastal Erosion Hazard Areas (CEHAs).*	• Review of NY State Hazard Mitigation Plan • Review of FEMA's Multi-Hazard Identification and Risk Assessment • Review of the Jefferson County HAZNY • Input from the Core Planning Group	• Coastal erosion is not one of the hazards included in the HAZNY. • Coastal erosion is identified as a hazard and discussed in the NY State plan. • Storm-induced shore erosion is reported in the State Plan to be a major problem along the Great Lakes shorelines. It notes that property damage caused by erosion of Lake Ontario's shoreline during high water periods has been estimated in the millions of dollars. Jefferson County is bounded to the west by Lake Ontario. The County's underlying bedrock has through the years provided more embayments and islands than other areas of Lake Ontario, which work to

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Natural Hazards Considered	Was this hazard identified as a significant hazard to be addressed in the plan at this time? (Yes or No)	How was this determination made?	Why was this determination made?
			provide a certain degree of protection from shoreline erosion. • New York State currently has 86 municipalities under the CEHA program and where coastal erosion is of significant concern. Jefferson County has one CEHA community (Town of Ellisburg).
Dam Failure	**YES**	• Review of NY State Hazard Mitigation Plan • Review of New York State Department of Environmental Conservation (NYSDEC) Bureau of Flood Protection and Dam Safety web site and Dam Inventory • Review of Stanford University's National Performance of Dams Program (NPDP) web site • Review of FEMA's Multi-Hazard Identification and Risk Assessment • Review of Jefferson County HAZNY • Input from the Core Planning Group	• Dam failure is not one of the hazards included in the HAZNY. • Dam Failure is briefly discussed in the state plan as a potential cause of flooding. • The Stanford NPDP database lists 39 dams in Jefferson County. Of these, seven are designated "Significant" hazard, and 28 are "Low" hazard, and 4 are undefined. • According to USGS criteria, none of the dams in the project area qualifies as a "Major" dam by virtue of having a normal storage volume of more than 5,000 acre-feet. None of the dams in the project area qualify as "Major" dams by the other USGS storage criteria, i.e. featuring a dam height of more than 50 feet. • The NYS Dam Inventory lists 95 dams in Jefferson County. Of these, none qualify as "Major" dams by USGS criteria of either storage or dam height. Of the 95 dams in the NYS Dam Inventory for Jefferson County, 63 are low hazard where failure can only damage isolated farm buildings, vacant land or rural roads. Fourteen are moderate hazard where failure can damage homes, major roads, minor railroads, or interrupt use or service of relatively important public utilities. None are listed as high hazard dams, the failure of which could cause loss of life, serious damage to homes, industrial or commercial buildings, important public utilities, main highways or railroads. Eighteen are recorded as posing no hazard, meaning that it has breached or failed to the extent that it no longer functions as a dam. • Emergency Action Plans are available for four of the low hazard dams (A) and nine of the moderate hazard dams (B). • The NPDP database records two dam failure incidents in the project area since detailed records began in 1868. Both occurred in 1978. One site failed to the point where it now no longer functions as a dam (Brownville Dam on the Black River) while the second is still functioning and is ranked

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Natural Hazards Considered	Was this hazard identified as a significant hazard to be addressed in the plan at this time? (Yes or No)	How was this determination made?	Why was this determination made?
			by NYSDEC as Class B Moderate Hazard (Sewalls Island South Channel on the Black River).
Drought	**YES**	• Review of NY State Hazard Mitigation Plan • Review of FEMA's Multi-Hazard Identification and Risk Assessment • Review of NOAA NCDC Database • Review of National Drought Mitigation Center /NOAA web sites • Review of the Jefferson County HAZNY • Input from the Core Planning Group	• Drought is ranked as a moderately low hazard in the Jefferson County HAZNY. • Drought is discussed in the state plan, which describes only one statewide drought event to have affected Jefferson County since 1993. • According to the Palmer Drought Severity Index (PDSI) Map for the USA, Jefferson County is located in an area that experienced drought conditions for less than 10% of the period 1895 to 1995. • NCDC reports that Jefferson County has been affected by one drought event since 1993, occurring between August and December of that year. This event is recorded as having caused substantial crop damage (approximately $50 million) across the area of impact. While the NCDC database records Jefferson County in the area of impact, the New York State Plan does not (it notes that this event impacted only Albany, Columbia, Delaware, Dutchess, Greene, Otsego, Rensselaer, Schoharie, Sullivan, and Ulster counties). Feedback from the Core Planning Group regarding past drought events in Jefferson County would be greatly appreciated. • For the purposes of mitigation plans of this nature the primary impacts of drought are assumed to fall on agriculture. Forty percent of the County's land area is devoted to agricultural uses (ranked 3rd for land in farms in the state) and agriculture is economically significant in Jefferson County and could be severely impacted during a drought event.
Flood	**YES**	• Review of NY State Hazard Mitigation Plan • Review of NOAA NCDC Storm Events Database • Review of FEMA's Multi-Hazard Identification and Risk Assessment • Review of FEMA's National Flood Insurance Program (NFIP) Community Status Book and Community Rating	• Flooding is ranked as a moderately high hazard in the County HAZNY. • Flooding is described in the state plan as the primary natural hazard in the State of New York and is discussed in comprehensive detail. • Two of Jefferson County's five past Federal disaster declarations have involved flooding (January 1996 and March 1973). • NCDC records 9 flood events affecting Jefferson County since April 1994. One injury and nearly $2 million in property

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Natural Hazards Considered	Was this hazard identified as a significant hazard to be addressed in the plan at this time? (Yes or No)	How was this determination made?	Why was this determination made?
		System (CRS) • Review of FEMA Q3 flood data • Review of the Jefferson County HAZNY • Input from the Core Planning Group	damage was attributed to these events (including damage occurring outside the County boundaries). In addition, $15,000 in crop damage was reported. • According to data tabulated in the State Plan, based on FEMA's Q3 flood mapping, 5.5% of Jefferson County land and 4.1% of all residential properties lie within the identified 100-year floodplain. Jefferson County ranks as the 34th most threatened and vulnerable to flood loss out of the 62 counties in the state on this basis. • Of the 43 municipal jurisdictions covered by this plan, 41 participate in the NFIP but none participate in the CRS. According to data tabulated in the New York State Hazard Mitigation Plan Jefferson County ranks 37th out of 62 for the total number of NFIP policies and also 37th for the total dollar amount of NFIP coverage. Jefferson County ranks 39th in the state for the total number of NFIP claims since 1978, and 43rd for the total dollar amount of claims paid. • Jefferson County ranks 41st out of 62 for the number of repetitive loss properties (with seven).
Ice Jams	**YES**	• Review of NY State Hazard Mitigation Plan • Review of FEMA's Multi-Hazard Identification and Risk Assessment • USACE Cold Regions Research & Engineering Laboratory Ice Jams Database • Review of Jefferson County HAZNY • Input from the Core Planning Group	• Ice jams are not one of the hazards included in the HAZNY. • Ice jams are mentioned as a significant cause of flooding in the state plan and New York State has, overall, experienced more ice jam events than any other U.S. state except Montana in the period 1867 through 2007. • The USACE CRREL Ice Jams Database records three ice jam incidents in total on all watercourses in Jefferson County. One on the Oswegatchie River in Antwerp (Jan.-Feb. 1996) with associated backyard flooding and basement flooding of five structures. The second was on West Creek in Evans Mills in March 1989; that jam was located just upstream of the Rte. 12 bridge, but CRREL records seem to indicate no flooding or associated damages. The third jam is recorded on Sandy Creek in Adams (January 1979); records do not discuss impacts or damages. • The Flood Insurance Studies (FIS) for the Towns of Champion, LeRay, Pamelia, Rutland and Wilna mention that ice jams have often contributed to increased flood heights by impeding the flow of water at

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Natural Hazards Considered	Was this hazard identified as a significant hazard to be addressed in the plan at this time? (Yes or No)	How was this determination made?	Why was this determination made?
			bridges and culverts. The FIS for the Village of Philadelphia describes ice jams as the principal cause of flooding in that community. • In addition to USACE CRREL records and the Flood Insurance Studies, Core Planning Group members from five towns and villages report specific ice jam incidents or concerns in their municipalities. In the Town of Henderson, ice jams are reported to occur annually on small watercourses, causing road flooding and erosion of bridge footings. In the Town of Alexandria, ice jams and damage from floating ice has been recorded at several riverside locations. Non-specific ice jam problems or concerns were reported in the Town of Brownville, and the Villages of Dexter and Glen Park.
Storm Surge	NO	• Review of NY State Hazard Mitigation Plan • No USACE Sea, Lake, and Overland Surges from Hurricanes (SLOSH) model data was found to be available • Review of FEMA's Multi-Hazard Identification and Risk Assessment • Review of Jefferson County HAZNY • Input from the Core Planning Group	• Storm surge is not one of the hazards included in the HAZNY. • Storm surge is discussed in the state plan under flood hazard and hurricane/tropical storm hazard, but Jefferson County is not one of the counties identified as being impacted. • SLOSH mapping has not been prepared for Jefferson County (in New York State, it is only available for extreme southern New York State along the Hudson River, New York City and Long Island). • Storm surges can occur on both marine and lake shorelines. • CPG member feedback did not indicate that this hazard appears to be frequent or historically significant and therefore it is not judged to be a hazard of concern to be addressed in the plan at this time.
Wave Action	NO	• Review of NY State Hazard Mitigation Plan • Review of FEMA's Multi-Hazard Identification and Risk Assessment • Review of FEMA Q3 Flood Data • Review of the Jefferson County HAZNY • Input from the Core Planning Group	• Wave action is not one of the hazards included in the HAZNY. • While waves are discussed in the state plan under flood hazard, damage-causing waves are typically considered to be a coastal phenomenon. • FEMA's Q3 flood maps do not show any V-zones (areas along coasts subject to inundation by the 1-percent annual chance flood event with additional hazards associated with storm-induced waves) in Jefferson County.

Table 2.2
Documentation of the Hazard Evaluation Process

Natural Hazards Considered	Was this hazard identified as a significant hazard to be addressed in the plan at this time? (Yes or No)	How was this determination made?	Why was this determination made?
GEOLOGIC HAZARDS			
Earthquake	**YES**	• Review of NY State Hazard Mitigation Plan • Review of USGS Earthquake Hazards Program web site • Review of New York City Area Consortium For Earthquake Loss Mitigation website • Review of FEMA's Multi-Hazard Identification and Risk Assessment • Review of the Jefferson County HAZNY • Input from the Core Planning Group	• Earthquakes are included in the HAZNY and they have been estimated to be a moderately low hazard for the County. • Earthquakes are discussed extensively in the State Plan, which notes that earthquakes have occurred in and around the State of New York in the past. Jefferson County is located near a part of the state which is fairly active seismically. • The state plan ranks Jefferson County 26th out of 62 counties for potential annualized earthquake losses ($382,453) and 18th out of 62 for potential annualized earthquake loss per capita ($3.55). • According to USGS seismic hazard maps, the peak ground acceleration (PGA) with a 10% probability of exceedance in 50 years for Jefferson County is 3-6% of gravity, with the southern portion of the County exhibiting a lower PGA than the north. FEMA requires that earthquakes be further evaluated for mitigation purposes in areas with a PGA of 3%g or more. • USGS records show one significant earthquake of magnitude 3-3.9 epicentered on Jefferson County since 1737, where significant is defined as those that caused fatalities and/or property damage, or that were experienced by populations in the epicentral area. This event occurred in February 1910 and was centered in Watertown. It was reported that dishes and windows rattled violently but no damage was reported. The *New York Times* also reported a minor event occurred in January 1879 in Watertown as well. Nearby in Lowville (Lewis County), in March 1853, an earthquake of intensity VI (USGS estimated magnitude 4-4.9) was recorded in the New York State Plan which was strong enough to knock over machinery. Several larger events (magnitude 4.0 – 5.9) have been recorded in the greater area since 1737, many of which were felt in Jefferson County.
Expansive Soils	NO	• Review of NY State Hazard Mitigation Plan • Review of FEMA's Multi-Hazard Identification and Risk Assessment • US Department of	• Expansive soils are not identified as a hazard in the NY State plan or in the Jefferson County HAZNY. • According to FEMA and USGS sources, Jefferson County is located in an area of which less than 50% consists of clay with

Table 2.2
Documentation of the Hazard Evaluation Process

Natural Hazards Considered	Was this hazard identified as a significant hazard to be addressed in the plan at this time? (Yes or No)	How was this determination made?	Why was this determination made?
		Transport Federal Highway Administration (USDOT FHA) Geological Data • Review of USDA Natural Resources Conservation Service (NRCS) Soil Websites • Review of the Jefferson County HAZNY • Input from the Core Planning Group	slight to moderate swelling potential. A small portion of the northern part of the county contains little or no swelling clays. • According to USDOT FHA Report No. FHWA-RD-76-82, Jefferson County lies in an area mapped as non-expansive – the occurrence of expansive materials is extremely limited. • New York State building codes are based on the International Building Code (2000, with 2001 supplement), in which Chapter 18 includes provisions for building on expansive soils (through design, removal or stabilization) so that new construction will be protected.
Landslide	**YES**	• Review of NY State Hazard Mitigation Plan • Review of USGS Landslide Incidence and Susceptibility Hazard Map • Review of New York State Geological Survey GIS database of historic landslides in New York • Review of FEMA's Multi-Hazard Identification and Risk Assessment • Review of the Jefferson County HAZNY • Input from the Core Planning Group	• Landslides are not one of the hazards included in the HAZNY. • Landslides are discussed in the NY state plan, which notes that 39% of the County (westernmost region along the St. Lawrence and Lake Ontario) is moderately susceptible to landslides; however, incidence in this region has historically been low. The remaining 61% of the County has a low susceptibility and low incidence. • The New York State Geological Survey's Landslide Inventory Map of New York State does not show any historical events in Jefferson County for the period 1837-2007. • The State Plan gives Jefferson County a weighted rank of 14th out of 62 counties in the state for susceptibility to landslides, and 27th out of 62 for vulnerability to losses from landslides.
Land Subsidence	NO	• Review of NY State Hazard Mitigation Plan • Review of FEMA's Multi-Hazard Identification and Risk Assessment • Review of USGS Fact Sheet 165-00 Land Subsidence in the U.S • Review of the Jefferson County HAZNY • Input from the Core Planning Group	• Land subsidence is not one of the hazards included in the HAZNY. • The state plan delineates certain areas that are susceptible to land subsidence hazards in New York. Mapping in the state plan and from USGS indicates that roughly the southern half of the County is underlain by carbonate rock which is prone to void formation and no collapses that have resulted in structural damage have been recorded in the plan area (though it should be noted that the historical record is sparse). • Internet research notes iron ore mining in the Antwerp area, as well as talc mining in the County; land subsidence due to collapse of underground mines could be possible. Locations of old underground mines could

Table 2.2
Documentation of the Hazard Evaluation Process

Natural Hazards Considered	Was this hazard identified as a significant hazard to be addressed in the plan at this time? (Yes or No)	How was this determination made?	Why was this determination made?
			not be found. • Other mining operations under the oversight of the NYSDEC and included in the Division of Mineral Resources Mining Database are surficial and primarily for sand, gravel, clay, peat, limestone, etc. • USGS-165-00 indicates that Jefferson County is located in an area where subsidence caused by compaction of aquifers or drainage of organic soils is not likely. • CPG member feedback (particularly regarding underground mining) did not indicate that this hazard appears to be frequent or historically significant and therefore it is not judged to be a hazard of concern to be addressed in the plan at this time.
Tsunami	NO	• Review of NY State Hazard Mitigation Plan • Review of FEMA's Multi-Hazard Identification and Risk Assessment • Review of Jefferson County HAZNY • Input from the Core Planning Group	• Tsunamis are not discussed in the state plan nor are they included in the Jefferson County HAZNY. • Jefferson County has no ocean coastline. • FEMA mitigation planning guidance suggests that locations in the eastern U.S. north of Virginia have a relatively low tsunami risk and need not conduct a tsunami risk assessment at this time.
Volcano	NO	• Review of NY State Hazard Mitigation Plan • Review of USGS Volcano Hazards Program web site • Review of the Jefferson County HAZNY • Input from the Core Planning Group	• Volcanoes are not discussed in the state plan nor are they included in the Jefferson County HAZNY; this is because no volcanoes are located within approximately 2,000 miles of Jefferson County.
OTHER HAZARDS			
Wildfire	**YES**	• Review of NY State Hazard Mitigation Plan • Review of NOAA NCDC Storm Events Database • Review of NYSEMO and NYSDEC web sites • Review of FEMA's Multi-Hazard Identification and Risk Assessment • Review of the Jefferson County HAZNY • Input from the Core Planning Group	• Wildfires are not one of the hazards included in the HAZNY. • While NYSEMO and NCDC records do not record any significant wildfire events in Jefferson County since 1903, wildfires are discussed in the state plan as a hazard of concern. • Based on mapping included in the State Plan, eastern portions of the County are significantly forested and wildfires would pose the greatest risk where development interfaces with these forested lands.

Table 2.3
Summary Results of the Hazard Identification and Evaluation Process

ATMOSPHERIC

- ☐ Avalanche
- ☑ Extreme Temperatures
- ☑ Extreme Wind
- ☐ Hailstorm
- ☐ Hurricane and Tropical Storm
- ☑ Lightning
- ☐ Nor'easter
- ☑ Tornado
- ☑ Winter Storm

HYDROLOGIC

- ☑ Coastal Erosion
- ☑ Dam Failure
- ☑ Drought
- ☑ Flood
- ☑ Ice Jams
- ☐ Storm Surge
- ☐ Wave Action

GEOLOGIC

- ☑ Earthquake
- ☐ Expansive Soils
- ☑ Landslide
- ☐ Land Subsidence
- ☐ Tsunami
- ☐ Volcano

OTHER

- ☑ Wildfire

☑ = Hazard considered significant enough for further evaluation through the multi-jurisdictional hazard risk assessment.

SECTION 3a- RISK ASSESSMENT: HAZARD PROFILES

Overview

Detailed profiles of hazards identified in the previous section as worthy of further evaluation in the overall risk assessment are provided in this section. Each hazard profile includes a description of the hazard and its causes and impacts, the location and extent of areas subject to the hazard, known historical occurrences, and the probability of future occurrences. The profiles also include specific information noted by members of the planning committee and other stakeholders, including unique observations or relevant anecdotal information regarding individual historical hazard occurrences and individual jurisdictions.

The following table summarizes each hazard, and whether or not it has been identified as a hazard worthy of further evaluation for each of the 43 municipal jurisdictions in the County. Following Table 3a.1, Figure 3a.1 presents a map of Jefferson County for reference, including the most significant transport links and the location and boundaries of each participating jurisdiction.

Table 3a.1
Summary of Profiled Hazards by Municipality

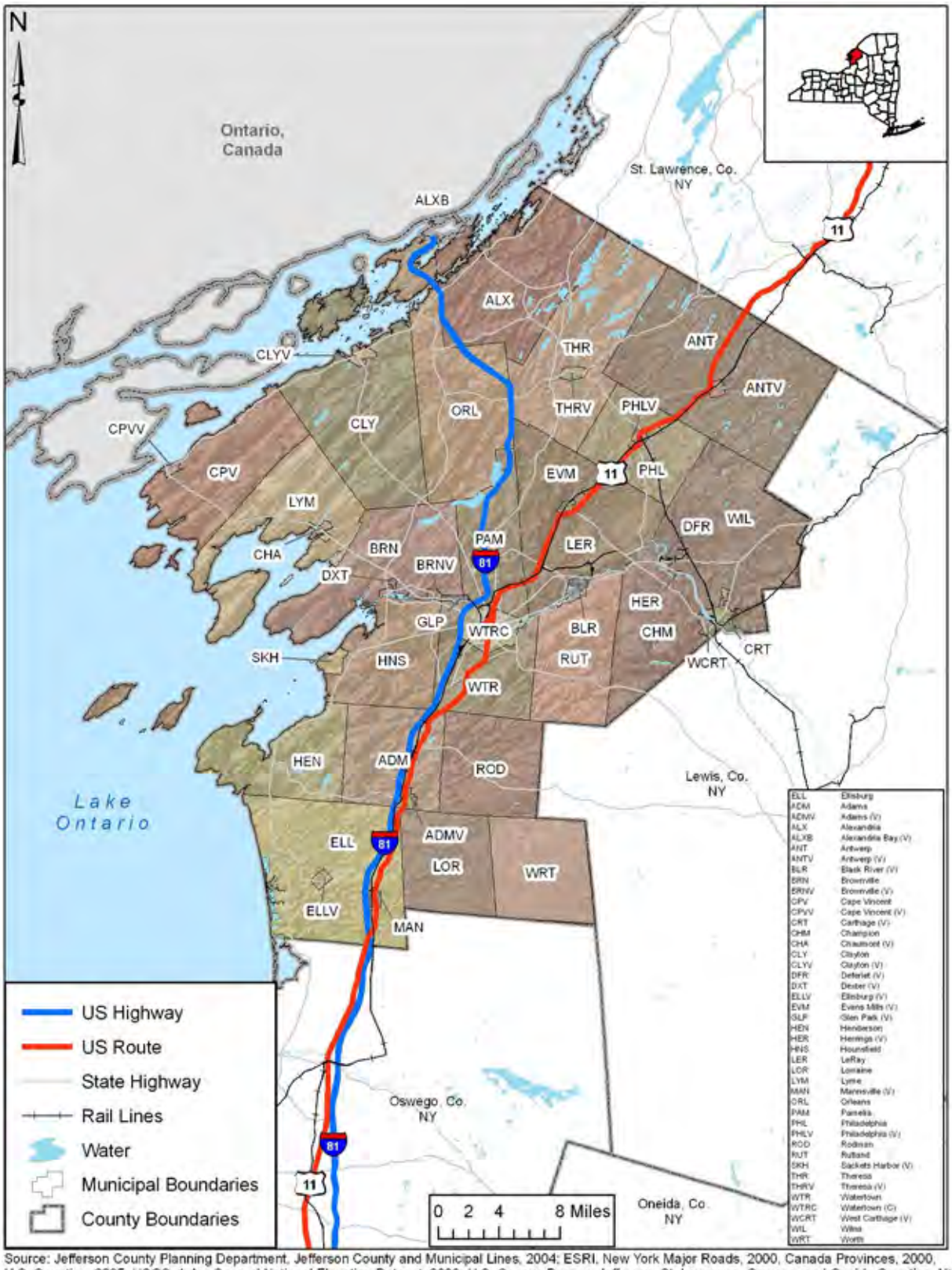
Jurisdiction	Extreme Temperatures	Extreme Wind	Tornado	Lightning	Winter Storm	Coastal Erosion[1]	Dam Failure[2]	Drought	Flood[3]	Ice Jam[4]	Earthquake	Landslide[5]	Wildfire[6]
Jefferson, County of	●	●	●	●	●	●	●	●	●	●	●	●	●
Adams, Town of	●	●	●	●	●			●	●	●	●	●	●
Adams, Village of	●	●	●	●	●			●	●		●		●
Alexandria, Town of	●	●	●	●	●			●	●	●	●	●	●
Alexandria Bay, Village of	●	●	●	●	●			●	●		●	●	●
Antwerp, Town of	●	●	●	●	●			●	●	●	●	●	●
Antwerp, Village of	●	●	●	●	●			●	●		●		●
Black River, Village of	●	●	●	●	●		●	●	●		●		●
Brownville, Town of	●	●	●	●	●			●	●	●	●	●	●
Brownville, Village of	●	●	●	●	●			●	●		●		●
Cape Vincent, Town of	●	●	●	●	●			●	●		●	●	●
Cape Vincent, Village of	●	●	●	●	●			●	●		●	●	●
Carthage, Village of	●	●	●	●	●		●	●	●		●		●
Champion, Town of	●	●	●	●	●		●	●	●	●	●		●
Chaumont, Village of	●	●	●	●	●			●	●		●	●	●
Clayton, Town of	●	●	●	●	●			●	●		●	●	●
Clayton, Village of	●	●	●	●	●			●	●		●	●	●
Deferiet, Village of	●	●	●	●	●		●	●	●		●		●
Dexter, Village of	●	●	●	●	●		●	●	●	●	●	●	●
Ellisburg, Town of	●	●	●	●	●	●	●	●	●		●	●	●
Ellisburg, Village of	●	●	●	●	●			●	●		●	●	●
Evans Mills, Village of	●	●	●	●	●			●	●	●	●		●
Glen Park, Village of	●	●	●	●	●			●	●	●	●		●
Henderson, Town of	●	●	●	●	●			●	●	●	●	●	●
Herrings, Village of	●	●	●	●	●		●	●	●		●		●
Hounsfield, Town of	●	●	●	●	●			●	●		●	●	●
Le Ray, Town of	●	●	●	●	●		●	●	●	●	●		●

Table 3a.1
Summary of Profiled Hazards by Municipality

Jurisdiction	Extreme Temperatures	Extreme Wind	Tornado	Lightning	Winter Storm	Coastal Erosion[1]	Dam Failure[2]	Drought	Flood[3]	Ice Jam[4]	Earthquake	Landslide[5]	Wildfire[6]
Lorraine, Town of	●	●	●	●	●			●	●	●	●		●
Lyme, Town of	●	●	●	●	●			●	●		●	●	●
Mannsville, Village of	●	●	●	●	●			●			●	●	●
Orleans, Town of	●	●	●	●	●			●	●		●	●	●
Pamelia, Town of	●	●	●	●	●			●	●	●	●		●
Philadelphia, Town of	●	●	●	●	●		●	●	●		●		●
Philadelphia, Village of	●	●	●	●	●		●	●	●	●	●		●
Rodman, Town of	●	●	●	●	●			●	●		●		●
Rutland, Village of	●	●	●	●	●		●	●	●	●	●		●
Sackets Harbor, Village of	●	●	●	●	●			●	●		●	●	●
Theresa, Town of	●	●	●	●	●		●	●	●		●	●	●
Theresa, Village of	●	●	●	●	●		●	●	●		●		●
Watertown, City of	●	●	●	●	●		●	●	●		●		●
Watertown, Town of	●	●	●	●	●		●	●	●		●		●
West Carthage, Village of	●	●	●	●	●		●	●	●	●	●		●
Wilna, Town of	●	●	●	●	●		●	●	●	●	●		●
Worth, Town of	●	●	●	●	●			●	●		●		●

1. Based on current Coastal Erosion Hazard Area Programs
2. Based on the presence of a moderate hazard dam (NYSDEC classification) either in the municipality or close upstream on a watercourse flowing through that municipality
3. Based on identification of improved property in mapped flood hazard zones (FEMA Q3 data)
4. Based on historical records, Flood Insurance Studies, and local information
5. Based on identification of improved property in mapped moderate landslide susceptibility zones
6. Based on identification of improved property in mapped wildfire hazard zones

Figure 3a.1: Jefferson County Base Map



Source: Jefferson County Planning Department, Jefferson County and Municipal Lines, 2004; ESRI, New York Major Roads, 2000, Canada Provinces, 2000, U.S. Counties, 2005; USGS, 1-Arc Second National Elevation Dataset, 2009; U.S. Census Bureau, Jefferson, St. Lawrence, Oswego, and Oneida Counties, NY. Area Hydrography, 2008, Census Railroads, New York State, 2001

Extreme Temperatures

Extreme temperatures principally affect the health and safety of the human population, although they can also impact livestock, agricultural crops, and may also cause damage to infrastructure and property. This section provides detailed profiles of both extreme high and extreme low temperatures.

Description – Extreme Temperatures

Extreme Cold

According to National Oceanic and Atmospheric Administration's (NOAA) National Weather Service (NWS), the term "extreme cold" constitutes different conditions in different parts of the country, ranging from near freezing in the South to temperatures well below zero in the North.

In the South, temperatures near or just below freezing can cause pipes to burst in homes that are poorly insulated or without heat. In the North, where most buildings are insulated to a degree that can protect against most common winter temperatures for the area, long spells of below zero temperatures can result in increased numbers of people using space heaters and fireplaces to stay warm, thus increasing the risk of household fires and carbon monoxide poisoning. In addition, extreme cold can cause rivers to freeze, and ice jams to form, leading to flooding. Regardless of location, freezing temperatures can cause severe damage to crops and other vegetation; increased strain on community shelter facilities providing refuge from the cold to homeless populations and others in need; and an increased likelihood that automobiles/buses will fail to start. Local sources also report that fire departments are called to a noticeably higher number of chimney fires during periods of extreme cold.

Extreme cold can have severe negative impacts on human beings, including frostbite (an injury to the body that is caused by freezing) and hypothermia (the unintentional lowering of the body's core temperature to below 95 degrees Fahrenheit, which typically causes uncontrollable shivering, memory loss, disorientation, incoherence, slurred speech, drowsiness, and apparent exhaustion). The NWS reports that extreme cold causes the death of roughly 26 people per year nationwide (based on a 10-year average). High winds during a period of extreme cold can exacerbate these affects, as the winds work to carry heat away from the body.

According to the New York State Climate Office, extreme cold events in New York State occur regularly, and are most common between October and March. They are most likely to occur in the northern and western portions of the state, and occur less often as one travels south toward New York City and Long Island. The record coldest temperature in New York State is -52° at Stillwater Reservoir (northern Herkimer County) on February 9, 1934 and also at Old Forge (also northern Herkimer County) on February 18, 1979. Some 30 communities have recorded temperatures of -40° or colder, most of them occurring in the northern one-half of the state and the remainder in the Western Plateau Division and in localities just south of the Mohawk Valley.

Extreme Heat

FEMA defines the term "extreme heat" as the condition whereby temperatures hover ten degrees or more above the average high temperature for a region, and last for several weeks. Extreme heat can also contribute to increased demand on energy supplies resulting from increased air conditioning usage, and an associated increased potential for power shortages or outages; and increased demand on medical offices,

hospitals, etc. as individuals suffering from various heat related health effects seek medical attention or shelter in air conditioned facilities.

The National Oceanic and Atmospheric Administration's (NOAA) National Weather Service (NWS) has reported that heat waves occur during most summers in at least some part(s) of North America. East of the Rocky Mountains, high temperatures are often combined with high humidity. Highest temperatures of record and average relative humidity would be sufficient to cause heat-related health effects in all states. Health effects associated with extreme heat can begin with air temperatures as low as 80 degrees Fahrenheit and concurrent relative humidity of at least 40 percent.

Extreme heat can have severe negative impacts on human beings, including heat-related illnesses such as sunburn, fatigue, and heat cramps, heat exhaustion, and heat strokes. The NWS reports that heat waves cause the death of roughly 175 people per year nationwide. High humidity levels during a period of extreme heat can exacerbate these affects. Similarly, periods of extreme heat in urban areas can also result in magnified impacts on human health. This is primarily due to the combined affects of pollutant concentrations, high temperatures/humidity, and poor air circulation.

According to the New York State Climate Office, extreme heat events in New York State occur regularly, and are most common between May and mid-September. They are least likely to occur in the northern and western portions of the state, and occur more often as one travels south toward New York City and Long Island. The New York City area and most of the Hudson Valley record an average of from 18 to 25 days with such temperatures during the warm season, but in the Northern and Southern Plateaus the normal quota does not exceed 2 or 3 days. While temperatures of 100° are rare, many long-term weather stations, especially in the southern one-half of the State, have recorded maximums in the 100° to 105° range on one or more occasions. The highest temperature of record in New York State is 108° at Troy on July 22, 1926. Temperatures of 107° have been observed at Lewiston, Elmira, Poughkeepsie, and New York City.

Location and Extent – Extreme Temperatures

Jefferson County is located in a region of the country that is susceptible to extreme heat and extreme cold. However, the frequency of these events is relatively low due to Jefferson County's proximity to Lake Ontario. The moderating effect of Lake Ontario results in milder winters and cooler summers, therefore reducing the likelihood of extreme temperatures. When extreme temperature conditions do occur, the effects will be felt over a widespread geographic area, and it is generally assumed that Jefferson County and all of its municipalities are uniformly exposed to extreme heat and extreme cold. The effects of extreme temperatures will be primarily limited to the elderly, with occasionally minor, sporadic property damages (i.e., bursting pipes) and damages to crops and other vegetation. According to estimated 2006 US Census data reported in the New York State Hazard Mitigation Plan (NYSHMP), the percentage of the population most susceptible to extreme temperatures (under 5yrs and over 65yrs) is 18.2%, which is slightly higher than the statewide average of 19.5%.

Historical Occurrence – Extreme Temperatures

The National Climatic Data Center (NCDC) at NOAA holds extreme temperature event data for Jefferson County starting in February 1993. According to this database, Jefferson County has been included in the area affected by 1 serious extreme temperature event. This was an extreme cold event occurring in February 1993 which resulted in $50,000 in property damage. No deaths or injuries were attributed to this event. The extreme cold event occurred during a time of year when extreme cold events are most common in the area. Additionally, the NCDC records one record heat event; the occurrence of

unseasonably high temperatures in October, 1993, to which no damages, injuries, or deaths were attributed. The NCDC has no record of extreme heat events occurring in the area of Jefferson County. New York State has received no Federal Disaster or Emergency Declarations due solely to extreme temperatures. It should be noted that while the NCDC records only one specific extreme cold event in the County, the NCDC records Jefferson County as affected by a much larger number of winter storms involving snowfall and ice accumulation. These events are discussed in detail in subsequent sections.

The single extreme temperature event specifically affecting Jefferson County as reported by the NCDC:

Extreme Cold

> **February 1-2, 1993**
> An Arctic high pressure center descended from the Upper Great Lakes Region and moved into northern New York early on February 2nd. A strong pressure gradient which was set up across the area on February 1st produced northerly winds of 15 to 30 mph. The strong winds coupled with temperatures between 5 below zero and 10 above zero resulted in wind chill readings of 30 to 40 below zero in many areas. Temperatures fell so fast in the Mohawk Valley that transmission lines snapped leaving 10,000 customers without power.

Probability of Occurrence – Extreme Temperatures

Extreme heat events and extreme cold events not involving other manifestations of severe winter weather will remain an infrequent occurrence in Jefferson County, and the probability of future occurrences in Jefferson County is low to certain, depending on the type of occurrence.

Based on historical records over the last 15 years, in New York State, extreme temperature events of all types can be expected to occur approximately 4.7 times per year. Of these, 3.2 are likely to be extreme cold events, and 1.5 are likely to be extreme heat events, making extreme cold events are likely to occur in any given year with double the frequency of extreme heat. Based on NCDC records for Jefferson County, this trend is different in the planning area, where, based on NCDC records of the last 15-16 years, only two extreme temperature events have occurred. However, it is possible that extreme temperature events in this area have been under-reported, since an examination of NCDC records for neighboring St. Lawrence County shows 17 extreme cold/wind chill events and four record/excessive heat events over the same period. It is also possible that extreme cold events in this area are more likely to have been recorded in the NCDC winter storm/ice storm categories, of which a much greater number have been recorded in Jefferson County (see later in this section). Overall, the available information suggests that while the probability of extreme heat events affecting Jefferson County is low, extreme cold events are essentially certain to occur in the future, most likely during events that also include heavy snowfall and freezing rain.

Extreme Wind

Description – Extreme Wind

Wind, as defined by the American Meteorological Society, is air that is in constant motion relative to the surface of the earth. Since vertical components of atmospheric motion are relatively small, especially near the surface of the earth, meteorologists use the term "wind" to denote almost exclusively the horizontal component. Extreme winds are most commonly the result of tornadoes, hurricanes, tropical cyclones, extratropical cyclones (northeasters), destructive wind, and thunderstorms, but can also occur in their absence as mere "windstorms".

Extreme wind events might occur over large, widespread areas or in a very limited, localized area. They can occur suddenly without warning. They can occur at any time of the day or night, at any location within Jefferson County. Extreme winds pose a significant threat to lives, property, and vital utilities due to flying debris, such as rocks, lumber, fuel drums, sheet metal and loose gear of any type that can be picked up by the wind and hurled with great force. Extreme winds also down trees and power lines, often resulting in power outages across an affected area."

(1) Tornadoes: Tornadoes are the most commonly known type of windstorm causing the most damage to property and life and all is due to severe winds. As researched by FEMA, there are, on average, 10 severe windstorms, classified as tornadoes, in the United States defined as F4 or F5 on the Fujita scale. (The Fujita scale reflects how much wind damage results from a tornado expressed in wind speeds. For example, wind speeds can vary between 50 and 250 mph in a typical F5 tornado.)

(2) Hurricanes: A hurricane is a tropical storm with winds that have reached a constant speed of 74 mph or more. Hurricane winds blow in a large spiral around a relative calm center known as the "eye." The "eye" is generally 20 to 30 miles wide.

(3) Coastal Storms: Coastal storms include both tropical cyclones and extratropical cyclones. The National Weather Service defines these terms as follows:

- Cyclone: An area of low pressure around which winds blow counterclockwise in the Northern Hemisphere. Also, the term used for a hurricane in the Indian Ocean and in the Western Pacific Ocean.

- Tropical Cyclone: A cyclone that forms over tropical or sub-tropical waters around centers of low barometric pressure. Tropical cyclones derive their energy from the ocean. Tropical cyclones can be further broken down according to maximum sustained winds, as follows:

Tropical Depression:	Winds < 39mph
Tropical Storm:	39 mph $\leq$ Winds < 74 mph
Hurricane: *	Winds ≥ 74 mph

***** *Note that "hurricanes" are tropical cyclones that develop over the Atlantic Ocean, northeast Pacific Ocean, or south Pacific Ocean. Similar storms that develop over the western North Pacific Basin are referred to as "typhoons" (or, if maximum sustained winds are at least 150 mph, "super typhoons").*

- Extratropical Cyclone: A non-tropical cyclone that forms around a center of low barometric pressure and derives its energy from the atmosphere. Extratropical cyclones are more commonly referred to as "winter storms." Extratropical storms can be experienced on both the East and West Coasts of the United States. On the East Coast, extratropical cyclones are often called "Nor'easters" due to the direction of the storm winds.

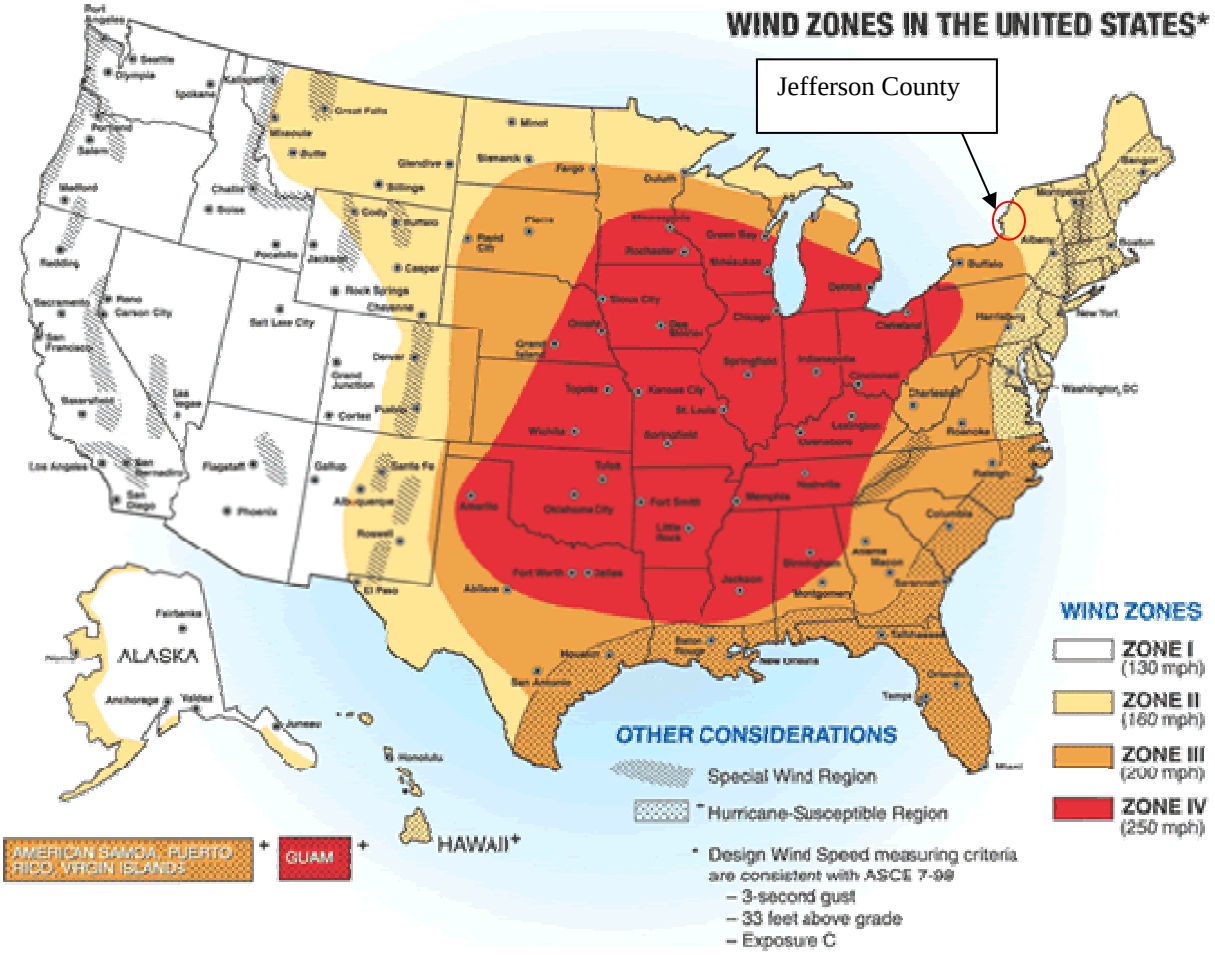
(4) Destructive Wind: Destructive wind is a windstorm that poses a significant threat to life and property and destroying everything in its path. Destructive wind can also cause damage by flying debris, such as rocks, lumber, fuel drums, sheet metal and loose gear of any type which can be picked up by the wind and hurled with great force.

(5) Thunderstorms: A thunderstorm is a combination of moisture, rapidly rising warm air and forceful winds capable of lifting air that's either warm or cold. They also contain lightning and thunder.

Location – Extreme Winds

Extreme wind events are experienced in every region of the United States. A useful tool for determining the location of the extreme wind hazard area in a jurisdiction is depicted in Figure 3a.2 - Wind Zones in the United States. This map of design wind speeds was developed by the American Society of Civil Engineers. It divides the United States into four wind zones, geographically representing frequency and magnitude of potential extreme wind events. The figure shows that Jefferson County and its jurisdictions are within a single wind zone; Zone II, with a design wind speed for shelters of 160 miles per hour.

Figure 3a.2 - Wind Zones in the United States



Extent – Extreme Winds

The severity of a severe wind event depends upon the maximum sustained winds experienced in any given area. Extreme winds pose a significant threat to lives, property and infrastructure due to direct wind forces but also flying debris, such as rocks, lumber, fuel drums, sheet metal and loose gear of any type that can be picked up by the wind and hurled with great force. Extreme winds also down trees and power lines that often result in power outages across an affected area. Table 3a.2 illustrates the severity and typical effects of various wind speeds, as obtained from the NOAA NCDC web site.

Table 3a.2
Severity and Typical Effects of Various Speed Winds

Maximum Wind Speeds	Equivalent Saffir-Simpson Scale* (Hurricanes)	Equivalent Fujita Scale (Tornadoes)	Severity	Typical Effects
40-72 mph *(35-62 kt)*	Tropical Storm = 39-73 mph	F0	Minimal	Some damage to chimneys; breaks twigs and branches off tress; pushes over shallow-rooted trees; damages signboards; some windows broken; hurricane wind speed begins at 73 mph.
73-112 mph *(63-97 kt)*	Cat 1 = 74-95mph Cat 2 = 96-110 mph Cat 3 = 111-130 mph	F1	Moderate	Peels surfaces off roofs; mobile homes pushed off foundations or overturned; outbuildings demolished; moving autos pushed off the roads; trees snapped or broken.
113-157 mph *(98-136 kt)*	Cat 3 = 111-130 mph Cat 4 = 131-155 mph Cat 5 > 155 mph	F2	Considerable	Roofs torn off frame houses; mobile homes demolished; frame houses with weak foundations lifted and moved; boxcars pushed over; large trees snapped or uprooted; light-object missiles generated.
158-206 mph *(137-179 kt)*	Cat 5 > 155 mph	F3	Severe	Roofs and some walls torn off well-constructed houses; trains overturned; most trees in forests uprooted; heavy cars lifted off the ground and thrown; weak pavement blown off roads.
207-260 mph *(180-226 kt)*	? Cat 5 > 155 mph	F4	Devastating	Well constructed homes leveled; structures with weak foundations blown off some distance; cars thrown and disintegrated; large missiles generated; trees in forest uprooted and carried some distance away. The maximum wind speeds of hurricanes are not likely to reach this level.
261-318 mph *(227-276 kt)*	N/A	F5	Incredible	Strong frame houses lifted off foundations and carried considerable distance to disintegrate; automobile-sized missiles fly through the air in excess of 300 ft (100 m); trees debarked; incredible phenomena will occur. The maximum wind speeds of hurricanes are not expected to reach this level.
Greater than 319 mph *(277 kt)*	N/A	F6	N/A	The maximum wind speeds of tornadoes are not expected to reach this level. The maximum wind speeds of hurricanes are not expected to reach this level.

** The Saffir-Simpson Scale is a five-category wind speed / storm surge classification scale used to classify Atlantic hurricane intensities. The Saffir-Simpson values range from Category 1 to Category 5. The strongest SUSTAINED hurricane wind speeds correspond to a strong F3 (Severe Tornado) or possibly a weak F4 (Devastating Tornado) value. Whereas the highest wind gusts in Category 5 hurricanes correspond to moderate F4 tornado values, F5 tornado wind speeds are not reached in hurricanes.*

Previous Occurrences – Extreme Winds

Jefferson County has experienced numerous damaging extreme wind events in the past including severe thunderstorms and tornadoes.

According to NOAA's NCDC, 78 recorded high wind events have affected Jefferson County between July 1958 and December 2008 (data includes wind events greater than 50 knots (57.5mph), with the exception of tornado events which are addressed separately within this section). It should be noted that detailed recording for this event category appears to have started in the late 1990s - only six of these events are recorded before 1997. Although these incidents resulted in a reported total of three deaths and 14 injuries across the region which they affected, none were recorded in Jefferson County. Some notable high wind events to have affected Jefferson County recorded by NCDC or provided by local sources include the following:

July 15, 1995
Microburst: a fast-moving storm accompanied by winds in excess of 80mph knocked out power across Jefferson and Lewis Counties. The highest recorded wind speed was 84mph at Fort Drum in the east of Jefferson County. Three main transmission lines were downed and service was disrupted for 75-80,000 customers for two to three days. Debris removal costs were estimated at $750,000 and removal activities took several weeks. A total of 527 homes were reported damaged by this event, including 61 which were destroyed and 123 which suffered major damage. Aircraft at Maxon Airfield in Alexandria Bay suffered $150-200,000 in damage, and several businesses in Alexandra Bay, Champion, Clayton, and Lafargeville suffered severe damage. Local emergency rooms reported 142 storm-related injuries.

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 structure damage in some locations tearing off roofs and sidings and collapsing walls.

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 gusts up to 76 mph recorded. The strong winds downed trees and utility lines throughout the region. Several hundred thousand customers were without power. Roads were blocked by downed trees. There were reports from Carthage, Jefferson County and other municipalities of property damage from the winds, mostly from trees falling on buildings and cars.

September 24, 2001
A line of thunderstorms crossed Jefferson County during the early afternoon hours. Jefferson County Sheriffs reported power and phone lines down by the thunderstorm winds in the Town of Henderson.

October 15, 2003
Low pressure over Ohio deepened as it moved across eastern Lake Erie and then across Lake Ontario. High winds buffeted the area downing trees and power lines and poles. Sustained winds of 30 to 40 mph with gusts to 70 mph were recorded.

June 9, 2004
A cold front moving south across the area was accompanied by showers and strong thunderstorms during the afternoon hours. The thunderstorm winds downed trees and power lines in Carthage and near Alexandria Bay.

July 13, 2005
Scattered thunderstorms developed in a warm, moist southwest flow off Lake Ontario during the early morning hours. The thunderstorm winds downed trees and limbs in Adams, where scattered power outages occurred when the winds also downed power lines**.**

February 17, 2006
Low pressure deepened as it tracked northeast into southern Ontario. The strong winds associated with the low downed trees and power lines throughout western New York and the North Country. Damage from falling trees to buildings and automobiles was extensive. In Jefferson County, eight foot surges on the St. Lawrence River damaged docks and boathouses and flooded streets in Cape Vincent, Clayton and Alexandria Bay.

November 16, 2006
Thunderstorms moved across the north country during the late afternoon hours. Winds gusting to 60 mph downed trees and power lines. Several thousand lost power during the storm. Firefighters were called out in the Town of Cape Vincent to pump out flooded cellars. A section of Route 12 in Clayton was closed because utility poles were leaning over the highway. Damage was reported specifically in Adams, Champion, Cape Vincent, Natural Bridge and Clayton.

August 3, 2007
Strong thunderstorms over the eastern end of Lake Ontario moved onshore during the overnight hours. An isolated thunderstorm produced damaging winds, estimated approaching 60 mph, which downed trees and power lines in the south side of the City of Watertown

January 9, 2008
A powerful cold front crossed the region during early morning hours. The thunderstorms that accompanied the front produced damaging wind gusts measured to 75 mph. Trees and power lines were downed by the winds throughout the region**.** Several homes and automobiles sustained damage by falling trees and limbs. In Watertown, a roof was blown off a building.

April 12, 2008
A line of severe thunderstorms moved through the area in the wee hours of the morning of the 12th. In addition to hail up to three-quarters of an inch in diameter, downburst winds brought down trees and power lines. As the storms moved further east, the downburst winds took down several trees in the Jefferson county Town of Adams where winds were estimated at 60 to 65 mph.

August 18, 2008
Thunderstorms accompanied the passage of a strong cold front across the area during the evening hours. The storms produced damaging winds, estimated near 60 mph, which downed trees and power lines in parts of Jefferson County. Scattered power outages were reported in Chaumont and Clayton.

September 15, 2008
The low center that was the remnants of Hurricane Ike reached the lower Great Lakes region during the late evening of the 14th and brought high winds to the area as it lifted from Indiana across southern Ontario. Wind gusts were measured to 66 mph. The winds downed trees and power lines throughout the area, and also caused a house fire in the Village of Dexter. In the Town of Adams, part of the Senior High School was blown off. Schools were closed at various locations in the County and a bumper crop of late season corn was damaged. It was estimated in Jefferson and Lewis Counties that nearly 70% of the crop was flattened. In Chaumont Bay several boats were grounded when a dock broke adrift.

December 28, 2008
A complex area of low pressure developed over the midsection of the nation and strengthened as it moved into the western Great Lakes region then into Quebec. Winds accompanying the system increased rapidly across the area ranging from 30 to 40 mph. sustained readings with the strongest gusts downwind of Lakes Erie and Ontario. Close to 100,000 customers in the region lost power during the storm and nearly 90,000 were without phone service The Thousand Islands Bridge was closed for five hours after wind gusts flipped two southbound trucks.

May 9, 2009
Strong thunderstorms accompanied the passage of a cold front during the afternoon hours. The thunderstorms produced hail up to one inch in diameter in Wayne county and strong winds that downed trees and power lines in Jefferson and Lewis counties. The annual Military Appreciation Day at Fort Drum had to be cut short for safety reasons.

In addition to the events above that were recorded by the NCDC, according to JCOFEM the County also experienced a major wind storm in October 2008 which resulted in a major power loss across parts of the County.

Probability of Occurrence – Extreme Winds

Extreme wind events will remain a very frequent occurrence in Jefferson County, and the probability of future occurrences in Jefferson County is certain. The entire planning area is susceptible to a limited range of recurring events that cause extreme wind conditions including severe thunderstorms (most frequent), and tornadoes. Other extreme wind events, such as hurricanes, tropical storms and nor'easters have never been recorded by the NCDC as significantly impacting Jefferson County and are therefore not addressed in this plan at this time. Table 3a.3 illustrates a summary of wind-related events in both New York and Jefferson County based on historic occurrences reported in NOAA's NCDC Storm Events Database during the period from 1958 to 2008, and provides an associated average annual number of storms. It shows an average annual number of events which featured wind in excess of 50 knots (57.5mph), in Jefferson County of 1.2 based on historical occurrences. Table 3a.3 does not include tornadoes, which are addressed later in this section.

Table 3a.3
Average Annual Number of High Wind Events (Statewide vs. Jefferson County)
(Source: NOAA's NCDC Storm Events Database for the period July 28, 1958 – December 31, 2008)

Event Type	Total Number of Events in New York State	Total Number of Events in Jefferson County	Average Annual Number of Events in New York State	Average Annual Number of Events in Jefferson County
Thunderstorm and High Wind Events	9,122	78	182	1.5

Extreme winds can occur in Jefferson County during tornadoes, destructive wind, and thunderstorms, but can also occur in their absence as mere "windstorms." Extreme winds have a history of occurrence throughout Jefferson County, and are highly likely to occur in the future on at least an annual basis.

Tornado

Description – Tornado Events

The American Meteorological Society "Glossary of Meteorology" defines a tornado as violently rotating column of air that has contact with the ground and extends downward from a cumulonimbus cloud. Tornado wind speeds can range from as low as 40 mph to as high as 318 mph. Tornadoes often accompany thunderstorms and hurricanes. Tornadoes can occur at any time of the year but are more prevalent during the spring and summer months. The hazard associated with a tornado event is high winds. The non-tornado high wind hazard is addressed specifically elsewhere in the plan. Tornado events are discussed in the remainder of this section.

Location – Tornado Events

Tornadoes can occur anywhere in the US. They have struck in all 50 states, with the highest concentration on the central plains and in the southeastern states, such as Oklahoma, Texas, and Florida. Over 350 tornados have struck New York State since 1952. No one jurisdiction within Jefferson County is any more likely to have a tornado touch down within its borders than any other location. The hazard associated with tornado events (high winds) have distinct hazard area locations, discussed in other sections of this report.

Extent – Tornado Events

The magnitude or severity of a tornado is dependent upon wind speed and is categorized by the Fujita Scale, presented in Table 3a.4. Tornadoes are typically considered to be "significant" for F2 or F3 on the Fujita Scale and "violent" for F4 and F5.

Table 3a.4
The Fujita Scale: Tornado Magnitude
(Source: NOAA)

Scale	Wind Estimate (mph)	Damage Type	Damage Description
F0	< 73	Light	Some damage to chimneys; branches broken off trees; shallow-rooted trees pushed over; sign boards damaged.
F1	73 - 112	Moderate	Peels surface off roofs; mobile homes pushed off foundations or overturned; moving autos blown off roads.
F2	113 - 157	Considerable	Roofs torn off frame houses; mobile homes demolished; boxcars overturned; large trees snapped or uprooted; light-object missiles generated; cars lifted off ground.
F3	158 - 206	Severe	Roofs and some walls torn off well-constructed houses; trains overturned; most trees in forest uprooted; heavy cars lifted off the ground and thrown.
F4	207 - 260	Devastating	Well-constructed houses leveled; structures with weak foundations blown away some distance; cars thrown and large missiles generated.
F5	261 - 318	Incredible	Strong frame houses leveled off foundations and swept away; automobile-sized missiles fly through the air in excess of 100 meters (109 yards); trees debarked; incredible phenomena will occur.

Previous Occurrences – Tornado Events

NOAA's NCDC records tornado event data for Jefferson County from July 1959 to December 2008, and records three tornados in the county in this period. The damage caused by these events resulted in more than $2.5 million in property damage and one injury. The details recorded for these events are as follows:

July 1, 1959
A tornado of magnitude F1 was recorded touching down in the Town of Adams which caused $25,000 in property damage.

August 28, 1983
A tornado of magnitude of F1 was recorded in Jefferson County which caused $2,500,000 in property damage and one recorded injury. This tornado touched down in the vicinity of Southwick Beach State Park in the Town of Ellisburg and travelled almost six miles in an easterly direction, passing close to the Village of Ellisburg before ending northwest of the Village of Mannsville.

August 5, 2003
Thunderstorms during the late morning and early afternoon hours produced downburst winds to 60 mph. The winds downed trees and power lines and a weak tornado briefly touched down on the Fort Drum Military Base in Jefferson County. Only minimal damage to forest area occurred.

Probability of Occurrence – Tornado Events

The historic record suggests that a tornado occurrence in Jefferson County is of low probability, since only three tornado events have been definitively recorded by NOAA in Jefferson County in the last 50 years. The National Severe Storms Laboratory has published data which suggests that the annual probability of tornado occurrence in the Jefferson County area is between zero and 0.2 per year, as shown in Figure 3a.3 on the next page. This is supported by the New York State plan, which includes a figure sourced from the U.S. Geological Survey mapping tornado risk across the continental United States. This figure (reproduced below as Figure 3a.4) indicates that Jefferson County lies outside the areas of "High Risk" within the continental USA.

Based on the available data, it can be stated that while tornados of magnitude F0 or F1 may occur within Jefferson County within the foreseeable future, the probability of occurrence is significantly less than one per year, and most likely to be in the order of one every 15 years or so.

Figure 3a.3: National Severe Storms Laboratory Tornado Probability

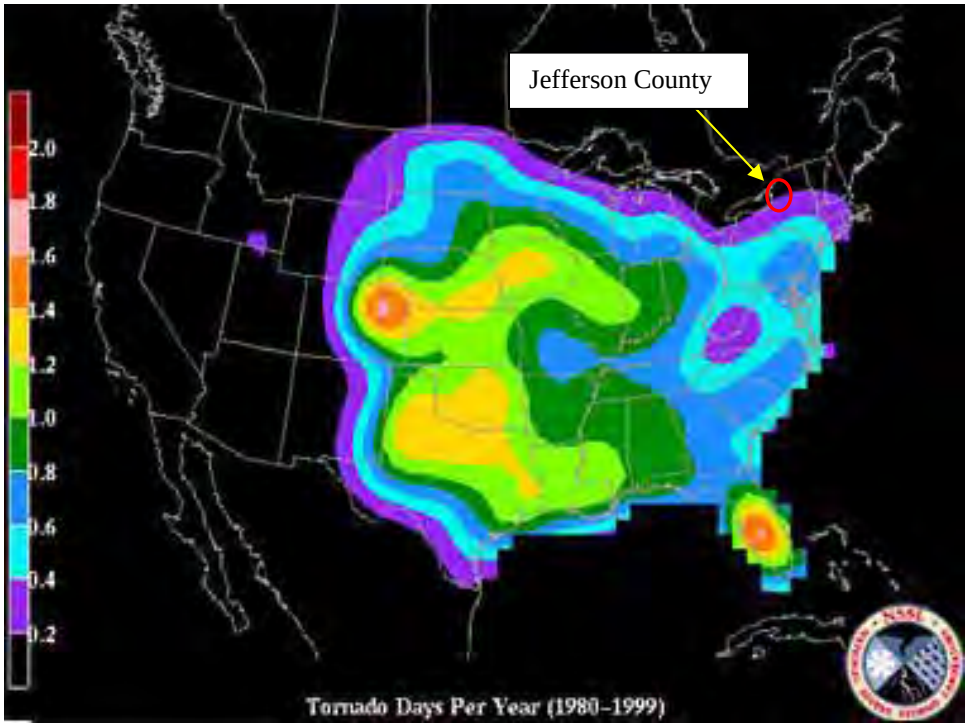
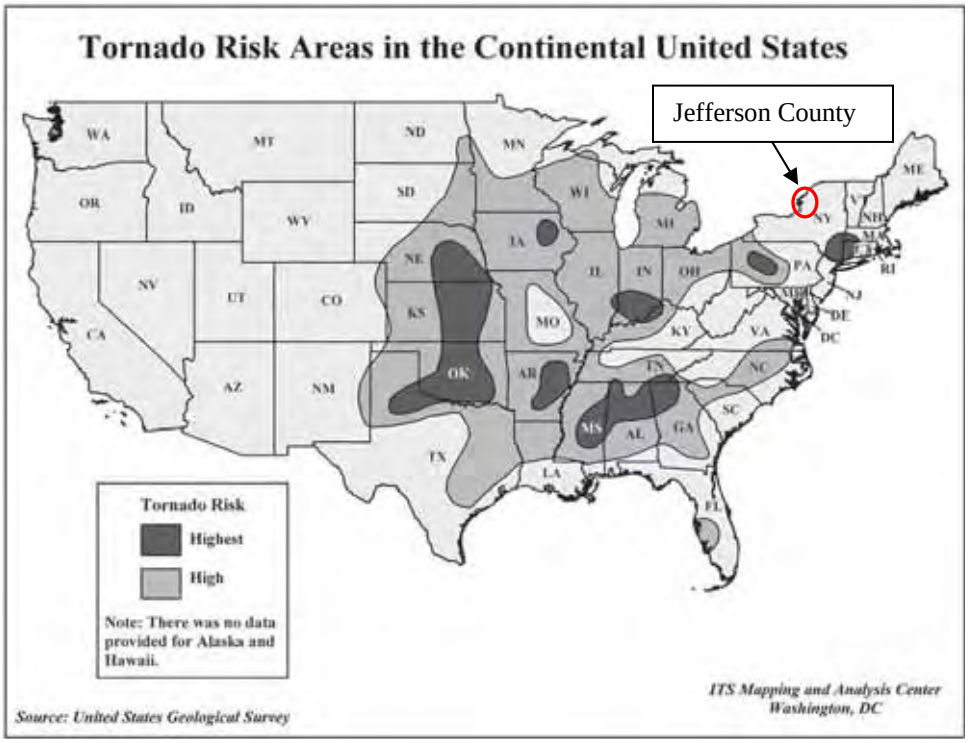


Figure 3a.4: Tornado Risk Areas in the Continental USA



Lightning

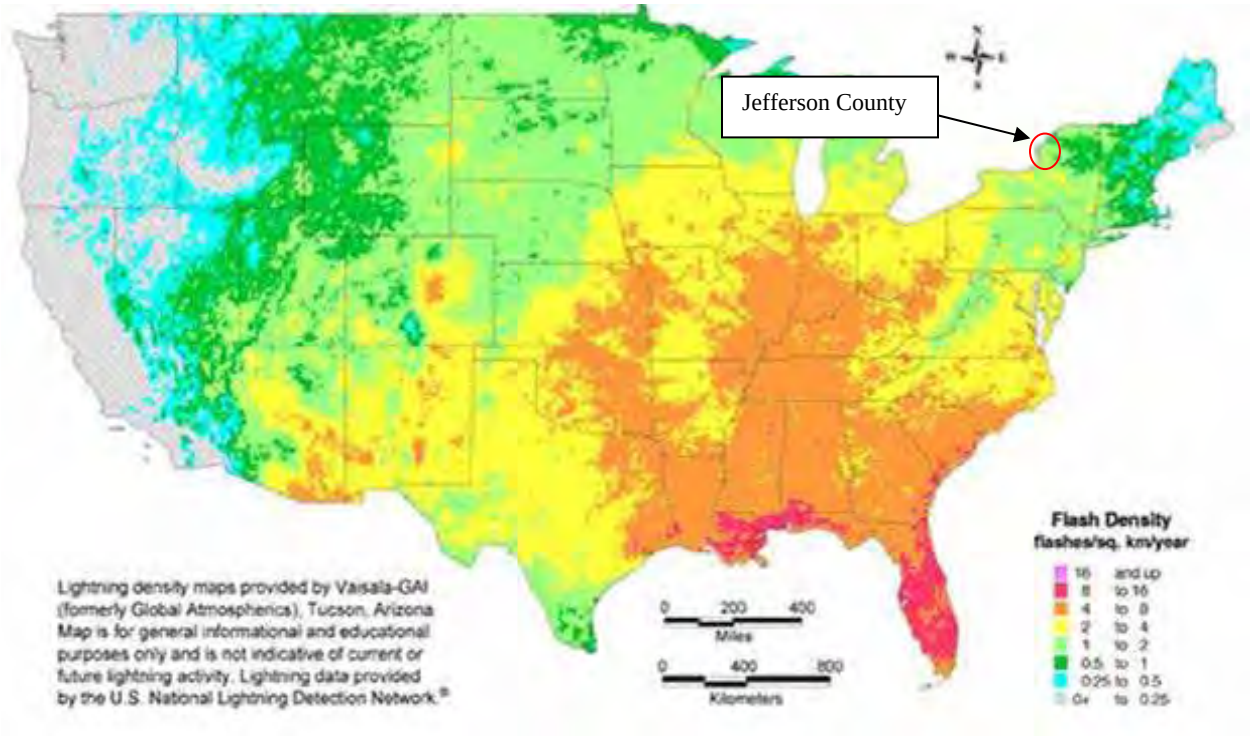
Description – Lightning

Lightning is a discharge of electrical energy resulting from the buildup of positive and negative charges within a thunderstorm, creating a "bolt" when the buildup of charges becomes strong enough. This flash of light usually occurs within the clouds or between the clouds and the ground. A bolt of lightning can reach temperatures approaching 50,000 degrees Fahrenheit. Lightning rapidly heats the sky as it flashes, but the surrounding air cools following the bolt. This rapid heating and cooling of the surrounding air causes thunder. On average, 73 people are killed each year by lightning strikes in the United States.

Location - Lightning

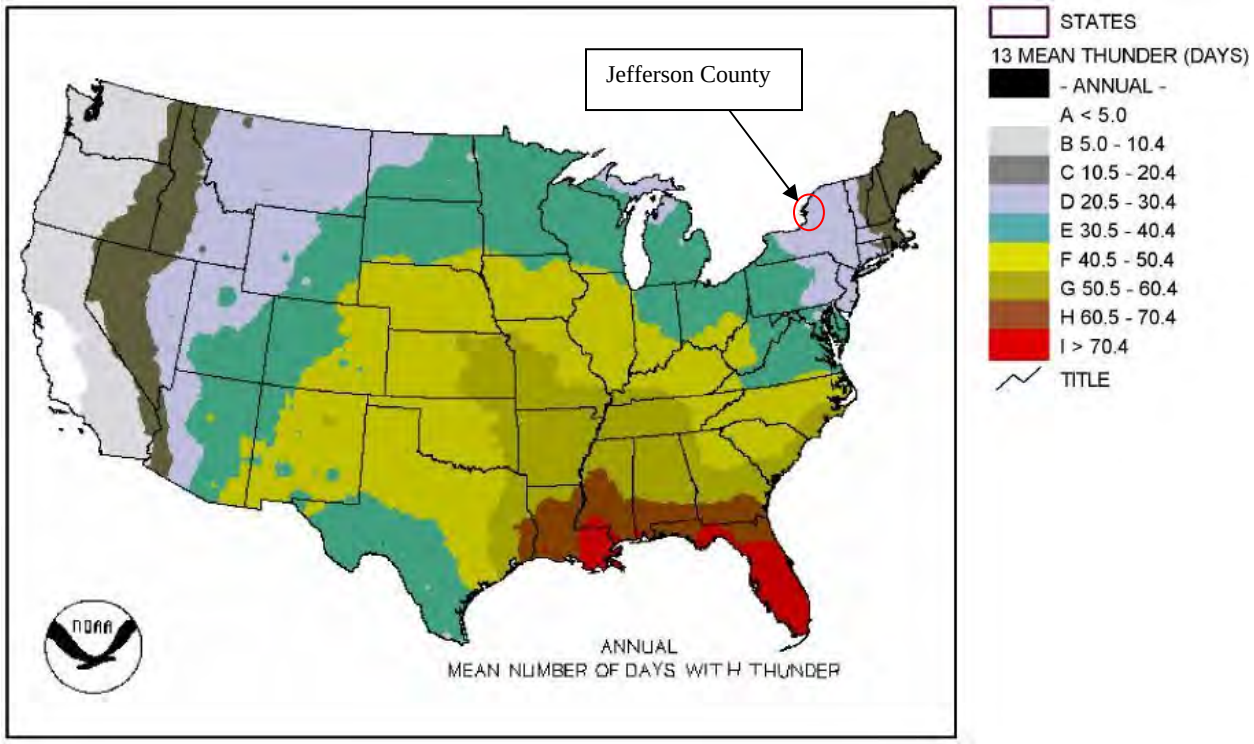
Jefferson County is located in a region of the country that is susceptible to lightning strikes, though not as susceptible as southeastern states. Figure 3a.5 shows a lightning flash density map for the years 1996-2000 based upon data provided by Vaisala's U.S. National Lightning Detection Network (NLDN®). The map indicates that the planning area can expect approximately 1-2 lightning flashes per square kilometer per year (approximately 3-5 lightning flashes per square mile).

Figure 3a.5: Lightning Flash Density – Contiguous United States



NOAA mapping presented in Figure 3a.6 also shows that Jefferson County is located in a region that experiences approximately 20 to 30 thunderstorm days per year. By comparison, approximately one third of the contiguous United States experience fewer thunder days, while some areas of the southeastern United States experience more than 70 thunder days per year.

Figure 3a.6: Mean Annual Thunder Days – Contiguous United States



Extent - Lightning

Essentially all areas of Jefferson County are considered equally susceptible to lightning strike. While lightning occurs randomly anywhere and anytime, the most common location for lightning fatalities and injuries to people is in open areas such as parks, beaches, golf courses and other recreational areas. Jefferson County remains susceptible to lightning deaths and injuries due to the large number of people who engage in outdoor activities, particularly more so along the shoreline of its coastal jurisdictions.

Previous Occurrences – Lightning

NOAA records that New York State has experienced the fifth most deaths from lightning in the United States from 1959 to 1994.

While the NCDC database does not record any specific lightning events in Jefferson County since August 1950, Core Planning Group members have provided information regarding local vulnerabilities to lightning strikes. These sources report that some critical facilities such as communication towers, highway garages, and the County airport have suffered regular damaging lightning strikes, with damage to communications, lighting, and other electronic equipment. Lightning strikes at the airport have rendered instrument landing systems inoperable, while lightning strikes at the County highway garage have damaged fuel delivery systems.

Lightning strikes have also been specifically mentioned as a hazard of concern by representatives of the Towns of Brownville and Henderson, and the Villages of Dexter and Glen Park.

Probability of Future Occurrences – Lightning

The probability of occurrence for future lightning events in the planning is certain. According to NOAA, Jefferson County is located in an area of the country that experiences an average of 1-2 lightning flashes per square kilometer (3 to 5 lightning flashes per square mile per year - in the order of 5,000 to 10,000 strikes per year over the 43 jurisdictions in the planning area). Given this frequency of occurrence, it can be expected that future lightning events will continue to threaten life and cause damage to property and communications equipment throughout the County.

Winter Storm / Ice Storm

Hazards Associated with Winter Storm / Ice Storm

Severe winter storms are particular types of events. They are characterized by the hazards of high winds, extreme cold, heavy precipitation (in the form of snow and/or ice), and sometimes wave action, coastal erosion and flooding. Winter storm and ice storm events are discussed in general terms in this section of the document; while specific hazards such as flooding and erosion are discussed elsewhere in the plan.

Description – Winter Storms / Ice Storms

Winter storms consist of cold temperatures and heavy snow or ice. Because winter storms are regular, annual occurrences in Jefferson County, they are considered hazards only when they result in damage to specific structures and/or overwhelm local capabilities to handle disruptions to traffic, communications, and electric power.

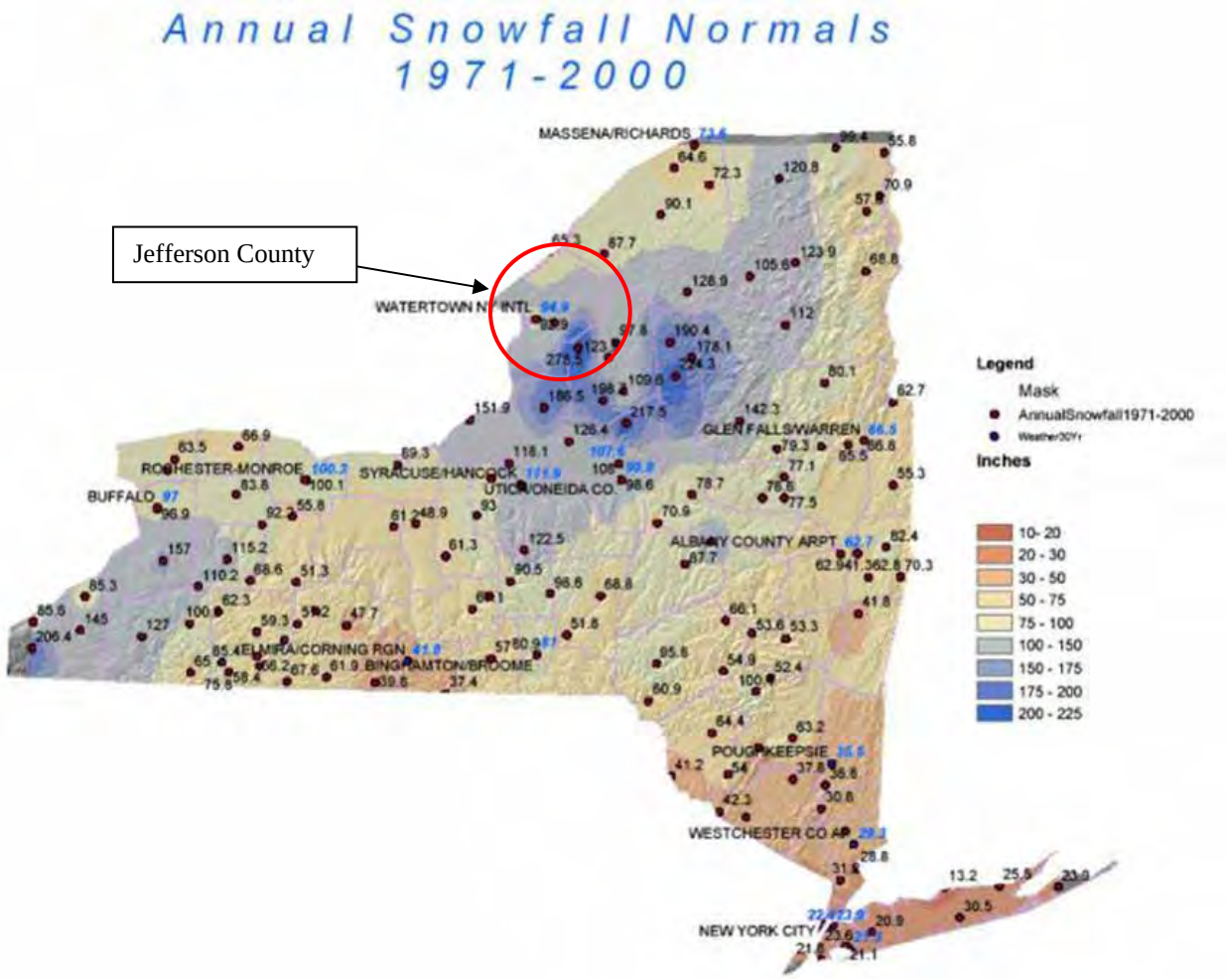
Winter storms and ice storms typically occur in New York from late October until mid-April. Peak months for these events for Jefferson County and its jurisdictions are December through March.

Lake-effect snow is one type of winter storm that is common in Jefferson County. Lake-effect snow is produced during the winter when cold winds move across long expanses of warmer lake water, picking up water vapor which freezes and is deposited on the windward shores. In Jefferson County this phenomenon is most common in southern parts of the county due to the proximity to Lake Ontario. Lake-effect snows on the Tug Hill Plateau, which overlaps the south eastern corner of the County, frequently set the daily records for snowfall in the Unites States.

Statewide, according to NOAA data average annual snowfall ranges from a low of approximately 10 – 20 inches in the New York City / Long Island area, to over 200 inches in the north of the State, in the Adirondack Mountains. For Jefferson County, average annual snowfall ranges from 75 to 100 inches per year in the northern parts of the county to over 200 inches per year on the Tug Hill Plateau in the south east (see Figure 3a.7). The NYSHMP reports that the average annual snowfall for the County is 123 inches. This can vary greatly from one year to the next, particularly if several major extended-period storms impact the area (during which snowfall totals can approach or exceed annual averages), the NYSHMP goes on to note that the County has the potential for extreme snowfall.

Freezing rain is another common manifestation of winter storms: This occurs when precipitation that begins as snow at high altitude melts as it falls through zones with an air temperature above freezing, before encountering a colder layer prior to ground impact, causing it to freeze on contact with any object it encounters at ground level. Freezing rain frequently causes travel problems on roadways, breaks off tree limbs and brings down power and telephone cables. Jefferson County lies within an area which experiences an average of 15 to 21 hours of freezing rain per year, which is a typical amount for areas of northern New York State (See Figure 3a.8). Freezing rain is comparatively uncommon in the USA outside the northeastern states.

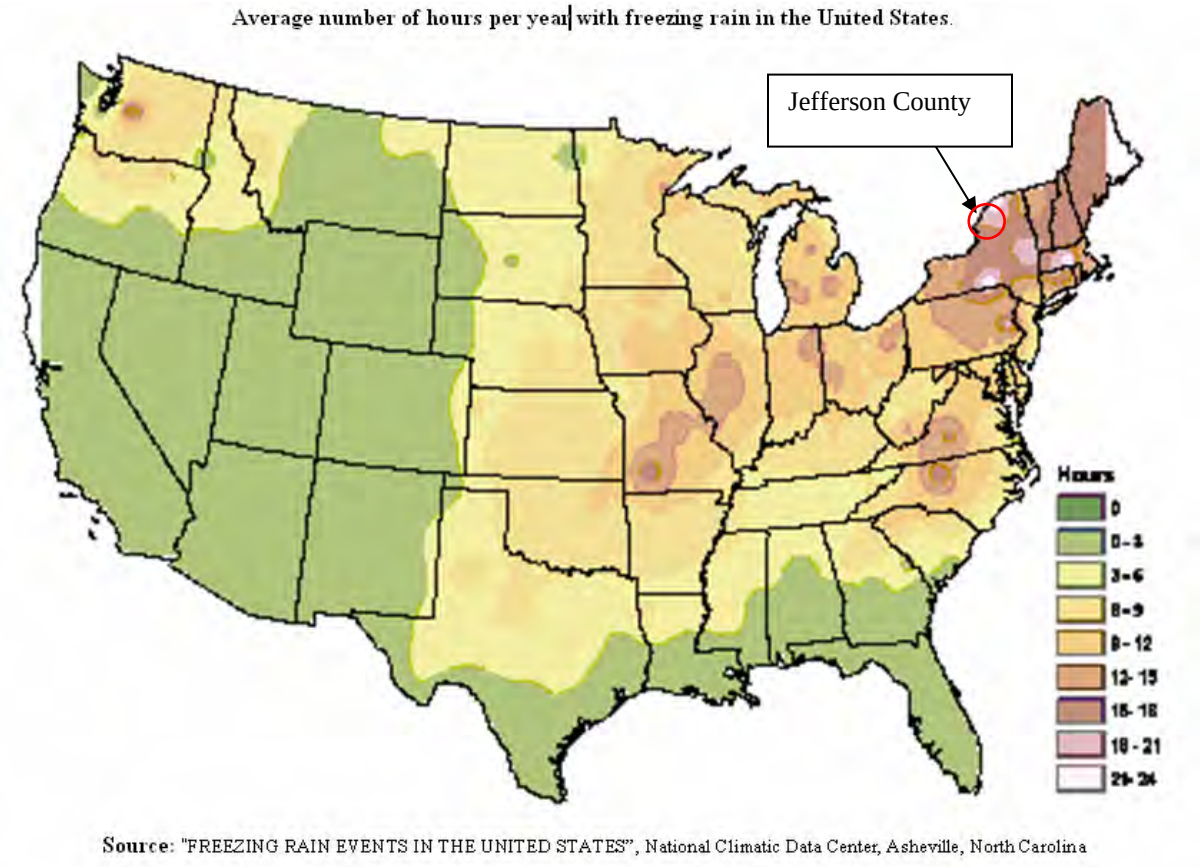
Figure 3a.7: New York State Snowfalls



Location – Winter Storms / Ice Storms

All of Jefferson County is exposed to winter storms and ice storms; however the extent to which individual municipalities are affected varies. Figure 3a.7 shows annual snowfalls between 1971 and 2000. It is evident from the figure that municipalities in the south-eastern portion of the county, in the vicinity of the Tug Hill Plateau, receive greater amount of snow than other parts of the County. Figure 3a.8 shows that all of Jefferson County receives a relatively high amount of freezing rain per year, with northern municipalities experiencing slightly greater amounts than other areas of the County.

Figure 3a.8: Freezing Rain Zones Nationwide



Source: "FREEZING RAIN EVENTS IN THE UNITED STATES", National Climatic Data Center, Asheville, North Carolina

Extent – Winter Storms / Ice Storms

A severe winter storm can adversely affect roadways, utilities, business activities and can cause loss of life, frostbite, or freezing. The most common effect of winter storms and ice storms is traffic accidents, interruptions in power supply and communications; and the failure of inadequately designed and/or maintained roofing systems. Power outages and temperatures below freezing for extended periods of time can cause pipes to freeze and burst. Heavily populated areas tend to be significantly impacted by losses of power and communications systems due to downed lines. Distribution lines can be downed by the weight of snow or ice, or heavy winds. When limbs and lines fall on roadways, transportation routes can be adversely affected and buildings and automobiles can be damaged. Heavy snow loads can cause roof collapse for residential, commercial, and industrial structures in cases of inadequate design and/or maintenance. Severe winter storms can also cause extensive coastal flooding, coastal erosion, and wave damage. If significant snowfall amounts melt quickly, inland flooding can occur as bankfull conditions are exceeded or in areas of poor roadway drainage.

The severity of the effects of winter storms and ice storms increases as the amount and rate of precipitation increase. In addition, storms with a low forward velocity are in an area for a longer duration and become more severe in their affects. Storms that are in full force during the morning or evening rush hours tend to have their affects magnified because more people are out on the roadways and directly exposed. Storms that arrive at high tide can also have exacerbated affects in coastal areas.

The magnitude of a severe winter storm or ice storm can be qualified into five main categories by event type, as shown below:

- Heavy Snowstorm: Accumulations of four inches or more of snow in a six-hour period, or six inches or more of snow in a twelve-hour period.
- Sleet Storm: Significant accumulations of solid pellets which form from the freezing of raindrops or partially melted snowflakes causing slippery surfaces posing hazards to pedestrians and motorists.
- Ice Storm: Significant accumulations of rain or drizzle freezing on objects (tress, power lines, roadways, etc.) as it strikes them, causing slippery surfaces and damage from the sheer weight of ice accumulation.
- Blizzard: Wind velocity of 35 miles per hour or more, temperatures below freezing, considerable blowing snow with visibility frequently below one-quarter mile prevailing over an extended period of time.
- Severe Blizzard: Wind velocity of 45 miles per hour, temperatures of 10 degrees Fahrenheit or lower, a high density of blowing snow with visibility frequently measured in feet prevailing over an extended period of time.

Previous Occurrences – Winter Storms / Ice Storms

In Jefferson County, severe winter snow and ice storms are normal and expected. A review of the New York State Hazard Mitigation Plan in conjunction with data from NOAA and FEMA shows that Jefferson County has been specifically included in three snow- or ice-related declared disasters and two snow- or ice- related emergency declarations, as detailed in Table 3a.5.

Table 3a.5
Winter Storm Disaster/Emergency Declarations Affecting Jefferson County
(Source: NYSEMO / FEMA)

Disaster/ Emergency #	Description: Eligible Assistance for Jefferson County	Declared Date (and Incident Period)	Eligible Assistance for Jefferson County
EM-3136	Snow Emergency	1/15/1999 (1/1/1999 – 1/15/1999)	PA
DR-1196	Ice Storm	1/10/1998 (1/5/1998 – 1/17/1998)	PA, IA
DR-0898	Ice Storm:	3/21/1991	PA
DR-0527	Snow Storm	2/5/1977 (1/27/1977 – 1/29/1977)	PA, IA
EM-3027	Snow Storm:	1/29/1977 (1/27/1977 – 1/29/1977	PA

In addition to this information, the NCDC database holds detailed snow and ice events for Jefferson County from January 1993 (when detailed NCDC records begin) to December 2008, and a review of the NCDC database yielded 85 significant snow and ice events reported as having affected Jefferson County during this period. These events are reported as being responsible for property damage totaling more than $87 million, although this includes damage reported in counties besides Jefferson County that were affected by the same events. Details and descriptions for some of the events recorded by NCDC and others gleaned form local sources are as follows:

1942
Local newspaper reporting on the ice storm of January 1998 made reference to an ice storm in 1942 which caused power outages lasting two weeks.

January 31, 1977
Jefferson and Lewis Counties were included in federal emergency declaration EM-3027 following a blizzard which dumped more than five feet of snow on areas east of Lake Ontario. In addition to the snowfall, powerful winds gusting at 53 mph pounded the area for more than two days. More than 32,000 residents of Jefferson, Lewis, and St. Lawrence Counties experienced power outages. At least 2,000 people were reported stranded by the storm for up to five days, and five deaths were directly attributed to the blizzard, including a senior member of the City of Watertown Public Works Department. Failure and stranding of local assets meant that heavy equipment had to be brought in from as far away as Schenectady to tackle the conditions. Jefferson County farmers were estimated to have lost $8 million, predominantly due to the disruption of milk production, livestock deaths, and damage to barns.

March 3, 1991
A severe storm system of freezing rain and ice resulted in loss of power to more than 350,000 customers across northern and eastern New York State, with approximately 40,000 in Jefferson County. Winds up to 25 mph combined with heavy icing on trees resulted in widespread downed trees and power lines, broken poles, open circuits on major transmission lines, and problems at substations. Live, dangling wires were widespread. Many roads were completely impassable, hampering emergency response efforts. A State Disaster Emergency was declared for an area encompassing Jefferson County. Restoration of power took up to five days, during which it was estimated by the Cornell Cooperative Extension that dairy farms in Jefferson County suffered $228,000 in lost milk sales. Red Cross volunteers, fire departments, and other local organizations set up 35 emergency shelters across Jefferson County, which accommodated around 6,400 people in total. The only areas of Jefferson County not completely paralyzed by the storm were in the vicinity of the Lake Ontario shoreline.

January 31, 1993
An Alberta Clipper moved across northern New York on the 31st of January as another low pressure formed along the New England Coast. Heavy snow fell across much of northern New York on the 31st with amounts ranging from 6 to 14 inches. Many accidents were reported across the area as a result of the heavy snow.

December 31, 1993
A cold westerly flow across Lakes Erie and Ontario produced snow squalls which persisted for nearly two days. The squalls resulted in near-blizzard conditions. Travel was treacherous in the squall areas and numerous accidents were blamed on the storm. Some areas in Oswego County to the south of Jefferson County recorded 15 inches of snowfall.

January 19, 1994
Low pressure moved from the Upper Great Lakes east to the Canadian Maritime Provinces. Snow from the system was enhanced by a southwest flow over Lake Ontario. Snowfall reports ranged from 10 to 14 inches. A northwest flow of arctic air after the passage of the low resulted in lake effect squalls which dumped an additional two to three feet of snow.

January 4, 1996
A major winter storm brought heavy snowfall to the area. In general 12-20 inches of snow fell across the area. School closings were the rule. The winter road conditions were blamed for many automobile accidents.

December 19, 1996
Arctic air crossing the warm waters of Lake Ontario produced intense lake effect snows. Snowfall rates of four inches per hour were reported. Total snowfall accumulations ranged from 12 to 24 inches over areas including southern Jefferson County. Portions of I-81 were closed. Numerous accidents were blamed on the heavy snow and whiteouts.

January 10, 1997
An intense band of lake effect snow brought unprecedented amount of snow to the eastern Lake Ontario region. Snowfall rates of three to six inches per hour were received. Snow totals for the four day event ranged from five to seven feet. Isolated areas exceeded 84". Specific snow totals for the storm included 28 inches in Mannsville.

January 8, 1998
A devastating ice storm paralyzed Jefferson County and parts of Lewis County. The freezing rain accumulated ice of an inch to two inches thick. The ice coated trees, power lines, and poles and sent them crashing to the ground. Below freezing temperatures and additional precipitation persisted for several days, hampering recovery efforts. Hundreds of thousands of customers were without power for several days to over a week, including 52,000 in Jefferson and Lewis Counties. In Jefferson County, 75% of the County was without power at some point. Hundreds of National Guard troops were deployed to the County to assist with recovery efforts, along wit utility crews from as far away as Long Island and Pennsylvania. Watertown High School and 25 fire department buildings throughout the County were set up as shelters by Red Cross officials, accommodating more than 1,200 people. The power outages impacted water and wastewater treatment capabilities at some locations, and the local dairy industry was significantly affected. The storm resulted in Disaster Declaration DR-1196, under which Jefferson County was eligible for both Public and Individual Assistance funds.

December 22, 1999
The season's first lengthy lake effect episode began late on the 21st following a cold front. East of Lake Ontario, a single intense band remained nearly stationary from the morning of the 22nd through the night of the 23rd-24th. A narrow area along the Jefferson-Oswego county line received over three feet of snow. Storm totals included: 37 inches at Mannsville**.** Damages were estimated at $5 million across Lewis, Jefferson, and Oswego Counties.

December 27, 2001
During the night of the 26th and daytime hours of the 27th, lake effect snowbands intensified over northern Jefferson County. On the 28th the snowband settled south across southern Jefferson and Lewis counties. Thunder and lightning were reported during the evening with snowfall rates of two to four inches per hour. The band oscillated north and south across southern Jefferson and Lewis counties through the 28th. Jefferson County snowfalls included 30 inches at Watertown 36 inches at Alexandria Bay, 43 inches at Mannsville, 46 inches at Redwood, and 54 inches at Carthage.

February 23, 2003
An ice storm deposited one-half- to three-quarter- inch of ice at various locations in the north country. The ice downed tree limbs and power lines. As many as 7,000 customers were without power at the peak of the storm. Hardest hit were the communities of Clayton, Cape Vincent, Alexandria Bay, Theresa, LaFargeville and Chaumont. The Red Cross set up an emergency shelter in Theresa and nearly two dozen took refuge there.

February 19, 2006
A long lasting lake effect snow event brought significant snowfalls to the north country region. Lake effect snows began to develop Saturday and continued through early Tuesday morning as a steady cold, westerly flow continued across Lake Ontario. Storm totals included 30 inches at Worth.

January 14, 2007
Low pressure centered over southern Indiana tracked northeast and spread freezing rain across the area. Up to a half-inch of ice accumulated on trees and wires. The weight brought down some power lines with outages scattered throughout the area. Heavy icing was reported in the Town of Henderson.

Probability of Occurrence – Winter Storms / Ice Storms

This plan aims to assess the probability of future occurrences of severe snowfalls and ice storms in terms of frequency based on historical events. Using the historical data presented above, and the primary generic descriptions of the events recorded by the NCDC as having affected Jefferson County, Table 3a.6 summarizes the occurrence of winter storm events and their annual occurrence: Jefferson County and its municipal jurisdictions have experienced 85 recorded significant winter storms / ice storms between 1993 and 2008, – an average of 5.7 events per year.

Table 3a.6
Occurrence of Winter Storms/Ice Storms, Jefferson County (1993 – 2008)
(Source: NOAA's NCDC Storm Events Database)

Type	Total Number of Events	Average Annual Number of Events
Heavy Snow	69	4.6
Heavy Snow Squalls	2	0.1
Snow Squall	1	0.07
Ice Storm	2	0.07
Winter Storm	10	0.1
Freezing Rain	1	0.7
Total	85	5.7

Winter storm events will remain a very frequent occurrence in Jefferson County, and the probability of future occurrences in the County is certain, but the impacts of snow and ice storms are more likely to be major disruptions to transportation, commerce and electrical power as well as significant overtime work for government employees, rather than large scale property damages and/or threats to human life and safety.

Coastal Erosion

Description - Coastal Erosion

Erosion is defined as the group of natural processes by which material is worn away from the earth's surface. According to the U.S. Geological Survey, high waves and strong ocean currents work to erode coastlines. Waves work to suspend smaller particles, and dislodge larger particles. These particles then work with the waves to mechanically wear down other surfaces. Note that while wave action is a cause of erosion, it is also a unique hazard, addressed separately in this plan.

Coastal erosion processes are expedited during storm periods, when wave action is high and water levels and coastal currents tend to increase rapidly. Over time, erosive forces acting upon coastal shorelines may result in a landward retreat of the shoreline.

Erosion is only one factor contributing to net shoreline change over time. At the same time that erosion is working to wear away a shoreline, the process of accretion (the deposition of sediments) works to build it back up. When erosion rates exceed accretion rates, a horizontal retreat of the shoreline is observed. The converse is also true. And, when erosion rates and accretion rates are equal, the shoreline is said to be 'stable.'

Erosion rates vary over time. When considering erosion hazards at any location, it is important to note that any year's observed erosion rate could be reflective of a high occurrence of severe storms in that particular year. A beach that may have been eroding one year could accrete the next. For a more accurate representation of whether the overall trend in shoreline change at any location is eroding, accreting, or is stable, it is important to expand the period of observation and consider long-term rates.

Location – Coastal Erosion

Storm-induced shore erosion is reported in the New York State Hazard Mitigation Plan to be a major problem along the Great Lakes shores, caused primarily by storm-induced wave action and longshore currents. Jefferson County is bounded to the west by Lake Ontario, with more than 400 miles of shoreline along Lake Ontario and the St. Lawrence River, including islands.

The New York State Department of Environmental Conservation Coastal Erosion Management Unit administers the state's Coastal Erosion Hazard Area (CEHA) management and regulatory programs. According to the New York State Hazard Mitigation Plan (2005), DEC has estimated that a significant portion of Long Island's coastline is in high erosion hazard areas. Due to the erosion-prone nature of parts of the New York coastline, the Coastal Erosion Hazard Areas Act (CEHA) (Article 34 of the Environmental Conservation Law) regulates construction in areas where buildings and structures could be damaged by erosion and flooding. New York Codes, Rules and Regulations (NYCRR) Part 505 provides procedural requirements for development, new construction, and erosion protection structures.

The responsibilities for NYSDEC regarding towns, counties, and regulation of coastal erosion hazard areas are defined by these regulations. Towns within an area determined by NYSDEC are required to submit erosion hazard area ordinances for approval and public review. Counties can submit erosion hazard area regulations upon failure of a town to do so. NYSDEC enforces the regulations if the city and county do not provide CEHA regulations. The standards and criteria for erosion protection structures are based on a 30-year life of the structure or system. The Commissioner of NYSDEC is required to review the CEHA maps every 10 years and after the occurrence of major events, both human and natural,

including coastal storms. If the CEHA boundary changes by 25 feet or more, the maps must be revised. In addition, NYSDEC has the authority to revoke certification of local CEHA management programs, if local administration is not consistent with statewide minimum standards, and to assert regulatory jurisdiction over these areas.

There are two categories of areas regulated by the CEHA: Natural Protective Features (NPFs) and Structural Hazard Areas (SHAs).

- NPFs include: the nearshore, beaches, bluffs, primary dunes, and secondary dunes.
- SHAs include: areas landward of the NPFs and are found on shorelines which have a demonstrated long-term average annual recession rate of one foot per year or greater. The SHA is determined by multiplying the recession rate times 40 and is measured from the landward limit of the NPF. If the recession rate is less than one foot per year or cannot be accurately established, then there is no SHA. The NYSDEC Permit Profile for CEHAs specifically notes the absence of accurately established recession rates for the barrier islands of Long Island's south shore.

Both regulated areas are depicted on CEHA maps, which depict the landward limit of the NPFs and SHAs and indicate the recession rate in feet per year, where applicable.

Historically, the bedrock underlying Jefferson County has provided many embayments and islands along the western shore. This has afforded much of the County a certain degree of protection from shoreline erosion. However, the town of Ellisburg, which borders Lake Ontario in the southern portion of the County, lacks the embayments and islands characteristic of most of the Jefferson County shore and is the municipality identified by NYSDEC with the most exposure to the effects of coastal erosion from Lake Ontario.

CEHA maps for the Town of Ellisburg were obtained from the New York State Department of Environmental Conservation, Division of Water, Coastal Erosion Management Section. The maps are dated 1988. CEHA maps were available only in hard copy format, and for the purposes of this hazard mitigation plan, an attempt was made to georeference the maps to NAD 1983 New York State Plane Central (Feet) using National Aerial Photography Program (NAPP) aerial photos. By matching identical surface objects on both the CEHA map and the NAPP aerial photos, an approximate location of the CEHA was obtained. This was not a formal translation of the hard copy data into GIS format, and the resulting shape file should be considered for hazard mitigation planning purposes only. It does not serve as official digital representation of the CEHA boundary in the Town of Ellisburg. For the Town of Ellisburg, the CEHA boundary was drawn at the location of the landward limit of the NPFs; CEHA maps did not include any mapped SHAs (areas with demonstrated long-term average annual recession rates of one foot per year or greater).

While Figure 3-7 in the New York State Hazard Mitigation Plan (January 2008) appears to identify lengths of shoreline in the Town of Henderson as also vulnerable to the effects of erosion, NYSDEC has confirmed that despite preliminary studies indicating an erosion hazard in this area, the hazard was found to be not sufficient to justify an additional CEHA program.

Figure 3a.9 illustrates the location of mapped Coastal Erosion Hazard Areas in the Town of Ellisburg. The New York State Hazard mitigation Plan records that the CEHA program in the Town of Ellisburg is administered locally, rather than by the NYSDEC.

Figure 3a.9: NYSDEC Coastal Erosion Hazard Areas in the Town of Ellisburg

Source: Jefferson County Planning Department, Jefferson County and Municipal Lines, 2004; ESRI, New York Major Roads, 2000, U.S. Counties, 2005; USGS, 1-Arc Second National Elevation Dataset, 2009; U.S. Census Bureau, Jefferson County, NY, Area Hydrography, 2008; NYSDEC, Coastal Erosion Hazard Area Map Town Of Ellisburg, Jefferson County, NY, 1988 (Georeferenced and Digitized by URS)

Extent – Coastal Erosion

Generally, coastal erosion in Jefferson County is most severe for communities in the Town of Ellisburg along Lake Ontario. It is less severe for northern communities because of the protective effects of islands and embayments where the wide, open waters of Lake Ontario narrow to become the St. Lawrence River.

The Town of Ellisburg's lake shoreline is exposed to erosion and wave action from Lake Ontario and is characterized by a system of barrier beaches and dunes, which front a chain of wetlands and ponds. Rear areas are sheltered from direct wave action by an elevated shorefront. The CEHA runs for approximately 10 miles along the shore of Ellisburg. The area is "open coast" shore which can be severely damaged by prevailing westerly winds in the event of a storm as well as fluctuating water levels.

Fluctuations in water levels in the Great Lakes and other non-tidal areas are the result of several natural factors and may also be influenced by human activities. These factors operate on a time-scale that varies from hours to years. The levels of the Great Lakes depend on their storage capacity, outflow characteristics of the outlet channels, operating procedures of the regulatory structures, and the amount of water supply received by each lake. The primary natural factors affecting lake levels include precipitation on the lakes, run-off from the drainage basin, evaporation from the lake surface, inflow from upstream lakes, and outflow to the downstream lakes. Man-made factors include diversions into or out of the basin, consumption of water, dredging of outlet channels and the regulation of outflows. Water levels on Lake Ontario are largely regulated by the Moses-Saunders Dam located along the St. Lawrence River at Massena, New York. This dam controls the outflow of water from Lake Ontario. The International Joint Commission (IJC), an independent organization established by the U.S and Canada to resolve disputes over the use and quality of boundary waters, is currently re-evaluating the operational procedures of this dam.

According to the Canadian Hydrographic Service, Central and Arctic Region, there are three types of water level fluctuations on Lake Ontario:

- Long-term (multi-year) - These fluctuations result from persistent low or high net basin supplies. They result in extremely low levels such as were recorded on some lakes in 1926, the mid-1930s and mid-1960s, or in extremely high levels such as in 1952, 1973 and 1985-86. More than a century of records in the Great Lakes basin indicate no regular, predictable cycle. The ranges of levels on Lake Ontario reflect not only the fluctuation in supplies from their own basins, but also the fluctuations of the inflow from upstream lakes
- Seasonal (one-year) - These fluctuations of the Great Lakes levels reflect the annual hydrologic cycle. This is characterized by higher net basin supplies during the spring and early summer and lower net basin supplies during the remainder of the year. On Lake Ontario, the maximum level usually occurs in June and the minimum level usually occurs in December. Based on the monthly average water levels, the magnitudes of seasonal fluctuations are quite small, averaging about 0.6 meters on Lake Ontario. However, in any one season Lake Ontario has varied from 0.22 meters to 1.10 meters.
- Short Period - These fluctuations, lasting from a less than an hour to several days, are caused by meteorological conditions. The effect of wind and differences in barometric pressure over the lake surface create temporary imbalances in the water level at various locations. Storm surges are largest at the ends of an elongated basin, particularly when the long axis of the basin is aligned with the wind. In deep lakes such as Lake Ontario, the surge of water level rarely exceeds 0.5 meter.
- Waves - Superimposed on all three categories of water-level fluctuations are wind-induced waves. Surface waves can be a hazard to navigation and are also the main cause of shore erosion.

Surface waves start small, but as they travel more or less downwind, the waves grow in height, become longer and move faster.

The vulnerability to erosion within the Town of Ellisburg has been quantified via GIS analysis using County parcel data and the digitized CEHA extent described above and presented in Figure 3a.9. The results of this analysis are presented in Table 3a.7.

Table 3a.7
Affected Parcels and Improved Property in the NYSDEC Mapped CEHA

Community	Total Improved Property Value	Estimated Number of CEHA-affected Improved Parcels	Estimated Acreage of CEHA-affected Improved Parcels	Estimated Value of Improved Property in CEHA-affected Parcels	Estimated % of Total Improved Property in CEHA-affected Parcels
Ellisburg	$138,555,517	197	94	$11,804,547	9%

Coastal erosion becomes most severe during storm periods, when water levels, wave action, and coastal currents tend to increase rapidly. The degree of severity can be marked, but will vary based upon several factors, including: soil properties, orientation of the shoreline, distance from the storm center, storm-surge heights, wave characteristics, direction of storm movement, angle of wave approach, forward speed and duration of the storm, and tidal stage during storm landfall. The New York State Hazard Mitigation Plan notes that the coastal erosion along the Lake Ontario becomes critical when high lake levels have submerged beaches which protect adjoining upland areas that are highly erosion-prone.

Previous Occurrences - Coastal Erosion

While coastal erosion is an ongoing process, its affects are exacerbated during storm events, the NCDC database contains no records of previous occurrences of coastal erosion in Jefferson County from 1950 to the present, and while no further specific instances have been uncovered during general internet research, local sources report that the Lake shoreline in the Towns of Henderson and Sackets Harbor has experienced some erosion during storms and heavy ice flows.

Probability of Occurrence – Coastal Erosion

The probability of occurrence of specific erosion events in Jefferson County was not readily available at the time of this report, and data regarding long/short term erosion rates was not readily available. Erosion rates vary greatly over even short distances and long-term erosion rates and short-term (or storm) erosion rates can differ greatly. The absence of any SHAs on the CEHA map implies the lack of "areas landward of the NPFs…which have a demonstrated long-term average annual recession rate of one foot per year or greater." There are, however, 94 acres of improved land that are within the landward extent of the NPFs and thus considered by the State of New York to be susceptible to coastal erosion. This information will be updated during future maintenance cycles of the plan if information becomes available.

Severe storms can erode large quantities of sand in a relatively short amount of time. However, severe storms do not necessarily cause all beaches to erode. Some beaches will erode, and others will have sand deposited on them. Detailed short-term storm erosion rates for specific communities are not available at this time, but any property that is within the CEHA should be considered at risk for short-term (storm-induced) coastal erosion.

Dam Failure

Description – Dam Failure

Dam failure is the breakdown, collapse or other failure of a dam structure characterized by the uncontrolled release of impounded water that results in downstream flooding. In the event of a dam failure, the energy of the water stored behind even a small dam is capable of causing loss of life and severe property damage if development exists downstream. There are varying degrees of failure, and an unexpected or unplanned dam breach is considered one type of failure. A breach is an opening through a dam which drains the water impounded behind it. A controlled breach is a planned, constructed opening and not considered a dam failure event, while an uncontrolled breach is the unintentional discharge from the impounded water body and considered a failure.

Dam failure can result from natural events, human-induced events or a combination of the two. Natural occurrences that may cause dam failure include hurricanes, floods, earthquakes and landslides; human-induced actions may include the deterioration of the foundation or the materials used in dam construction. In recent years, dams have also received considerably more attention in the emergency management community as potential targets for terrorist acts.

Dam failure presents a significant potential for disaster, in that significant loss of life and property would be expected in addition to the possible loss of power and water resources. The most common cause of dam failure is prolonged rainfall that produces flooding. Failures due to other natural events such as hurricanes, earthquakes or landslides are significant because there is generally little or no advance warning. The best way to mitigate dam failure is through the proper construction, inspection, maintenance and operation of dams, as well as maintaining and updating Emergency Action Plans for use in the event of a dam failure.

The New York State Department of Environmental Conservation (NYSDEC), the body responsible for dam safety and regulation in the State of New York, classifies the hazard potential of dams using four categories, shown in Table 3a.8.

Table 3a.8
Dam Hazard Potential Classifications

NYSDEC Classification	Description
Class "C" or "High Hazard"	A dam failure may result in widespread or serious damage to home(s); damage to main highways, industrial or commercial buildings, railroads, and/or important utilities, including water supply, sewage treatment, fuel, power, cable or telephone infrastructure; or substantial environmental damage; such that the loss of human life or widespread substantial economic loss is likely.
Class "B" or "Moderate Hazard"	A dam failure may result in damage to isolated homes, main highways, and minor railroads; may result in the interruption of important utilities, including water supply, sewage treatment, fuel, power, cable or telephone infrastructure; and/or is otherwise likely to pose the threat of personal injury and/or substantial economic loss or substantial environmental damage. Loss of human life is not expected.
Class "A" or "Low Hazard"	A dam failure is unlikely to result in damage to anything more than isolated or unoccupied buildings, undeveloped lands, minor roads such as town or county roads; is unlikely to result in the interruption of important utilities, including water supply, sewage treatment, fuel, power, cable or telephone infrastructure; and/or is otherwise unlikely to pose the threat of personal injury, substantial economic loss or substantial environmental damage.
Class "D" or "Negligible or No Hazard"	"A dam that has been breached or removed, or has failed or otherwise no longer materially impounds waters, or a dam that was planned but never constructed. Class "D" dams are considered to be defunct dams posing negligible or no hazard. The department may retain pertinent records regarding such dams.

Location and Extent– Jefferson County Dams

The NYSDEC records 95 dams in Jefferson County, of which none are classified as High Hazard Potential (C), 14 are classified as Moderate Hazard Potential (B), 63 are classified as Low Hazard Potential, and the remainder are Negligible, or No Hazard Potential (Class D - dams classified as 'No Hazard' indicate dams that are not built or no longer function as dams). Table 3a.9 presents details for all dams in Jefferson County classified as of moderate hazard by the NYSDEC. The location of all dams recorded in the NYSDEC inventory of dams is presented in Figure 3a.10.

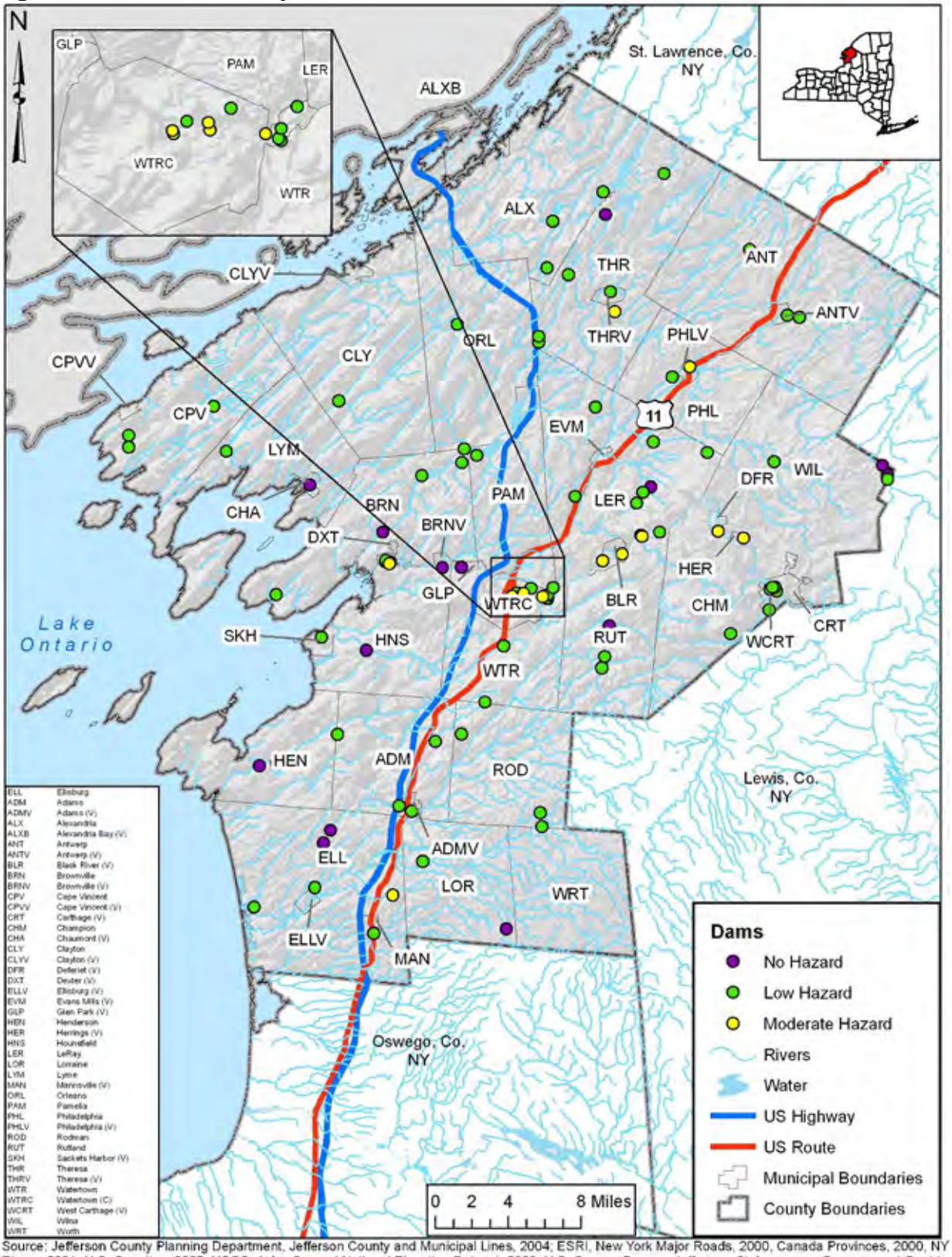
Table 3a.9
Moderate Hazard Potential Dams – Jefferson County
(Source: NYSDEC)

Dam Name	Municipality	River/Stream	Owner	Maximum Storage (Acre-Feet)	Dam Height (Feet)	NYSDEC Hazard Potential	EAP on File
Bear Creek Dam	Ellisburg	Bear Creek	Queens Farms Dairy Inc	103	28	B	No
Beebee Island Diversion Dam*	Watertown (City)	Black River	Brascan Power Corp.	57	22	B	Yes
Beebee Island Main Dam*	Watertown (City)	Black River	Brascan Power Corp.	182	18	B	Yes
Watertown Municipal Power Dam*	Watertown (City)	Black River	City of Watertown	241	12	B	Yes
Sewalls South Channel Dam	Watertown (City)	Black River	Brascan Power Corp.	388	16	B	No
Upper North Channel Dam*	Watertown (City)	Black River	Brascan Power Corp.	75	24	B	Yes
Black River Power Dam*	LeRay	Black River	Brascan Power Corp.	372	34	B	Yes
Dexter South Channel Dam*	Hounsfield	Black River	Enel North American Inc.	120	18	B	Yes
Kamargo Dam*	Black River (Village) / LeRay	Black River	Brascan Power Corp.	620	34	B	Yes
Herrings Dam*	Champion	Black River	Brascan Power Corp.	1288	25	B	Yes
Felts Mills Dam	Rutland	Black River	Felts Mills Energy Partners	12	20	B	No
Deferiet Dam*	Champion	Black River	Brascan Power Corp.	864	24	B	Yes
Riverside Mill Dam	Philadelphia (Village)	Indian River	Village of Philadelphia	545	5	B	No
Village Powerhouse Dam	Theresa	Indian River	Indian Falls Hydro Inc.	430	11	B	No

Of the 14 moderate hazard potential dams in Jefferson County, none have been classified by USGS as a "major" dam, which represents the most significant hazard risk based on the potential consequences of a dam failure. According to USGS, major dams are described as 50 feet or more in height, or with a normal storage capacity of 5,000 acre-feet or more, or with a maximum storage capacity of 25,000 acre-feet or more. The largest dam in the County measured by storage is the Stone Mills Dam in the Town of Brownville, with a maximum storage volume of 4,770 acre-feet. This dam is classified by NYSDEC as of Low Hazard Potential.

The standard method of estimating exposure to and potential losses from dam failure hazard uses data produced through detailed dam failure inundation studies. These studies are often prepared by the owners of dam facilities as part of their own Emergency Action Plans (EAPs) and are kept on file by NYSDEC. Although such plans have been previously completed for nine of the moderate hazard dams in Jefferson County listed in Table 3a.9, actual inundation mapping was not readily available or was not of sufficient clarity to facilitate meaningful estimates of the numbers and values of structures potentially exposed to inundation following dam failure or breach.

Figure 3a.10: Jefferson County Dams



Source: Jefferson County Planning Department, Jefferson County and Municipal Lines, 2004; ESRI, New York Major Roads, 2000, Canada Provinces, 2000, NY Rivers, 2001, U.S. Counties, 2005; USGS, 1-Arc Second National Elevation Dataset, 2009; U.S. Census Bureau, Jefferson, St. Lawrence, Oswego, and Oneida Counties, NY, Area Hydrography, 2008; NYSDEC, Inventory of Dams, 2007

It is recommended that Jefferson County and any municipality potentially exposed to flooding caused by dam failure investigate the development of inundation mapping and response plans for dams where none are available or where the existing mapping is outdated or lacking in detail as part of their future hazard mitigation strategies.

Historical Occurrences – Dam Failure

In addition to the NYSDEC inventory, detailed information on dams nationwide is compiled by the National Performance of Dams Program (NPDP) at Stanford University. While the NPDP database records much the same information as NYSDEC, it also includes a performance and event history for each dam which includes descriptions of any safety-related incidents that have occurred.

The NPDP database reports 15 dam safety incidents occurring at Jefferson County dams since January 1978. None of these incidents are narrated in any detail, beyond simple generic descriptions: Of the 15 reported incidents, 13 are described as "Inflow flood – hydrologic event", one as "Seepage", and one "Not known". Of the 13 "Inflow flood" events, 10 are recorded on or around the date of the devastating ice storm that hit Jefferson County in December 1998. Only two "Inflow Flood" events are reported as having caused dam failure, but further descriptions of the mechanism, impacts, damages and response could not be found:

- Brownville Dam: Located on the Black River in the center of the Village of Brownville according to NYSDEC, this dam is recorded by NPDP as experiencing failure on March 31, 1978. This structure may have been demolished or not rebuilt, since the NYSDEC database currently gives this dam a storage volume of zero and a hazard classification of D (No hazard).
- Sewalls Island South Channel Dam: located on the Black River in the City of Watertown, this dam is recorded by NPDP as experiencing failure on an unspecified date in 1978. This structure is still existent and has a NYSDEC hazard code of B (Moderate Hazard).

Concerns have also been expressed by JCOFEM staff about dams in neighboring counties: There are several dams further upstream on rivers that feed into Jefferson County, failure of which could cause potential flood problems in municipalities such as the Villages of Carthage and West Carthage on the Black River in the west of Jefferson County. Of particular concern are several dams along the Beaver River (a tributary of the Black River) in Lewis County, and, on the same river, the Stilllwater Reservoir in Herkimer County, which is more than 40 miles upstream of the Jefferson County boundary.

Probability of Occurrence – Dam Failure

The probability of a dam failure occurrence in Jefferson County is relatively low due to routine inspection, repair and maintenance programs carried out by the NYSDEC, which serves to ensure the safety and integrity of dams in New York and, thereby, protect people and property from the consequences of dam failures. However, the possibility of a future failure event is likely increasing due to aging dam structures that may be in need of repair or reconstruction, and occasional problems related to private dam owners' degree of cooperation with State regulatory agencies.

Drought

Description – Drought

The general term "drought" is defined by the US Geological Survey (USGS) as, "a prolonged period of less-than-normal precipitation such that the lack of water causes a serious hydrologic imbalance." As stated in FEMA's, "Multi-Hazard Identification and Risk Assessment" (1997), drought is the consequence of a natural reduction in the amount of precipitation expected over an extended period of time, usually a season or more in length.

According to the National Oceanic and Atmospheric Administration's (NOAA's) Drought Information Center, there are four types of drought:

- Meteorological Drought – A measure of precipitation departure from normal.
- Agricultural Drought – When the amount of moisture in soil does not meet the needs of a particular crop.
- Hydrological Drought – When both surface and subsurface water supplies are below normal.
- Socioeconomic Drought - When a water shortage begins to affect people.

Meteorological droughts are typically defined by the level of "dryness" when compared to an average, or normal amount of precipitation over a given period of time. Agricultural droughts relate common characteristics of drought to their specific agricultural-related impacts (when the amount of moisture in soil does not meet the needs of a particular crop). Hydrological drought is directly related to the effect of precipitation shortfalls on surface and groundwater supplies. Human factors, particularly changes in land use, can alter the hydrologic characteristics of a basin. Socio-economic drought is the result of water shortages that affect people and limit the ability to supply water-dependent products in the marketplace.

Drought conditions typically do not cause property damages or threaten lives, but rather drought effects are most directly felt by agricultural sectors. At times, drought may also cause community-wide impacts as a result of acute water shortages (regulatory use restrictions, drinking water supply and salt water intrusion). The magnitude of such impacts correlates directly with local groundwater supplies, reservoir storage and development densities. In general, impacts of drought can include significant adverse consequences to:

- Public water supplies for human consumption
- Rural water supplies for livestock consumption and agricultural operations
- Water quality
- Natural soil water or irrigation water for agriculture
- Water for forests and for fighting forest fires
- Water for navigation and recreation.

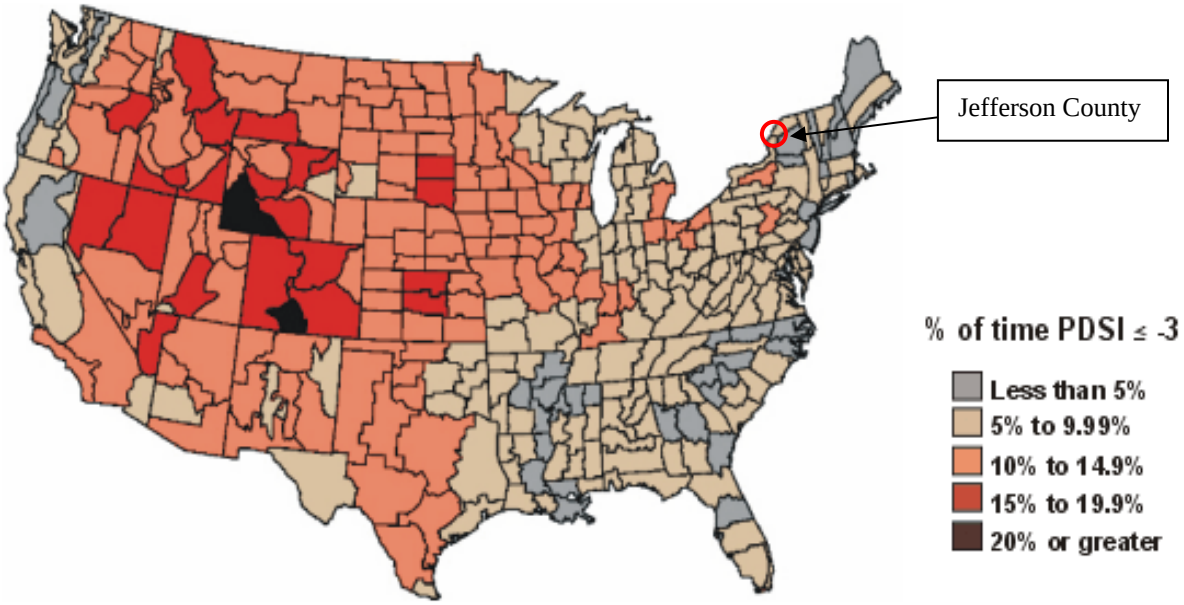
The severity of these impacts depends not only on the duration, intensity, and geographic extent of a specific drought event, but also on the demands made by human activities and vegetation on regional water supplies.

Location and Extent – Drought

Droughts occur in all parts of the country and at any time of year, depending on temperature and precipitation over time. Arid regions are more susceptible to long-term or extreme drought conditions, while other areas (including Jefferson County) tend to be more susceptible to short-term, less severe droughts.

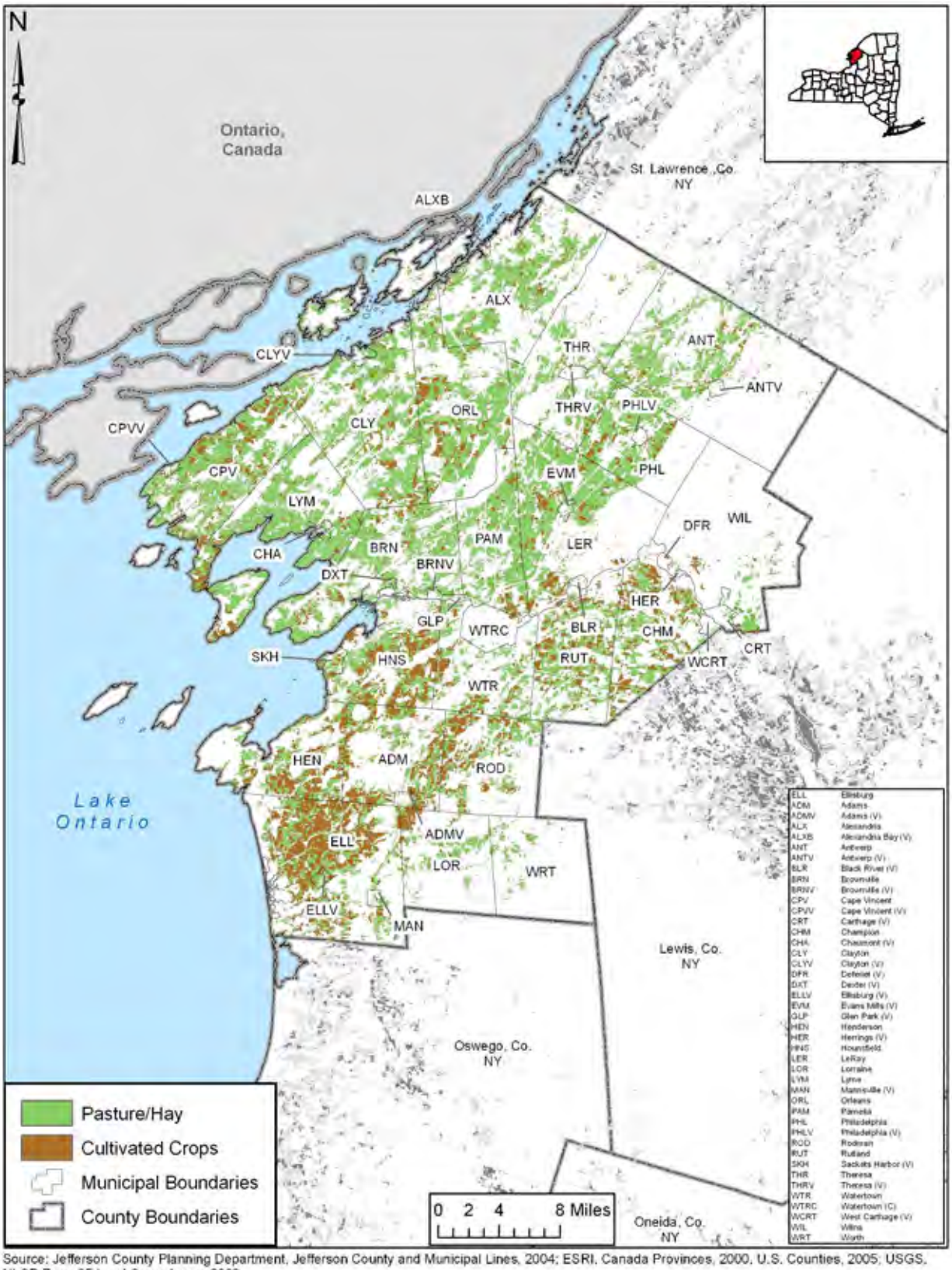
Figure 3a.11 shows the Palmer Drought Severity Index (PDSI) Summary Map for the United States from 1895 to 1995. PDSI drought classifications are based on observed drought conditions and will range from -0.5 (incipient dry spell) to -4.0 (extreme drought). According to the PDSI map, Jefferson County is in two PDSI zones. The western part of the County experienced severe drought conditions between 5 and 10 percent of the 100-year period during 1895 to 1995, while the rest of the County experienced severe drought conditions less than 5 percent of the same 100-year period. It can therefore be assumed that severe drought conditions are a relatively low risk for Jefferson County. However, short term droughts of less severity are more common and may occur several times in a decade.

Figure 3a.11: Palmer Drought Severity Index Summary Map for the United States



While the extent of drought impacts for Jefferson County may include all of the issues listed above, some of the most immediately quantifiable effects of drought in the County are likely to be experienced by farmers, who can suffer heavy financial losses due to crop damage or loss. Figure 3a.12 shows the extent, location and distribution of agricultural land across Jefferson County, and Table 3a.10 presents a breakdown of agricultural land by municipality based on land cover GIS data. It is evident from the figure that a significant proportion of municipality areas are devoted to agriculture in some form. According to the USDA Agricultural Census of 2007, there are 885 farms in Jefferson County, with a market production value of almost $140 million. More than 75% of this value is accounted for by milk and other dairy products, with total crop sales accounting for only 12%. The most significant recorded category of produce other than hay and feed crops is grains, oilseeds, beans and peas which in 2007 contributed more than $6.6 million to the total market production value. The County's 885 farms occupy approximately 262,300 acres (around 32% of the County), of which 166,200 acres are classified as cropland by the USDA Agricultural Census.

Figure 3a.12: Jefferson County Agricultural Land



Source: Jefferson County Planning Department, Jefferson County and Municipal Lines, 2004; ESRI, Canada Provinces, 2000, U.S. Counties, 2005; USGS, NLCD Zone 65 Land Cover Layer, 2003

Table 3a.10
Distribution of Agricultural Land in Jefferson County
USGS NLCD Land Cover 2003, Lamont-Doherty Earth Observatory (Crop/Pastureland Areas)

Municipality	Total Area (Acres)	Cultivated Cropland (Acres)	Cultivated Cropland (%)	Pasture Land* (Acres)	Pasture Land (%)
Adams, Town of	26,240	4,482	17.1%	5,310	20.2%
Adams, Village of	891	118	13.2%	177	19.9%
Alexandria, Town of	47,333	1,668	3.5%	13,588	28.7%
Alexandria Bay, Village of	492	29	5.8%	3	0.6%
Antwerp, Town of	68,717	1,695	2.5%	11,877	17.3%
Antwerp, Village of	661	11	1.7%	106	16.1%
Black River, Village of	1,208	79	6.6%	182	15.1%
Brownville, Town of	37,170	2,117	5.7%	15,073	40.6%
Brownville, Village of	409	21	5.1%	128	31.4%
Cape Vincent, Town of	35,696	4,413	12.4%	14,583	40.9%
Cape Vincent, Village of	475	33	7.0%	95	20.1%
Carthage, Village of	1,736	21	1.2%	152	8.7%
Champion, Town of	27,853	4,713	16.9%	7,116	25.5%
Chaumont, Village of	643	19	3.0%	225	35.0%
Clayton, Town of	52,449	3,615	6.9%	18,527	35.3%
Clayton, Village of	1,077	37	3.4%	207	19.2%
Deferiet, Village of	482	15	3.2%	3	0.7%
Dexter, Village of	460	0	0.0%	168	36.4%
Ellisburg, Town of	53,521	13,465	25.2%	9,981	18.6%
Ellisburg, Village of	641	162	25.3%	331	51.7%
Evans Mills, Village of	522	23	4.4%	172	32.9%
Glen Park, Village of	480	13	2.7%	165	34.3%
Henderson, Town of	26,754	4,851	18.1%	4,910	18.4%
Herrings, Village of	186		0.0%	12	6.6%
Hounsfield, Town of	30,123	6,365	21.1%	6,744	22.4%
Le Ray, Town of	46,268	3,272	7.1%	15,180	32.8%
Lorraine, Town of	24,980	1,193	4.8%	3,109	12.4%
Lyme, Town of	35,339	2,435	6.9%	15,916	45.0%
Mannsville, Village of	595	31	5.1%	82	13.8%
Orleans, Town of	46,157	3,755	8.1%	15,215	33.0%
Pamelia, Town of	22,692	1,464	6.5%	9,612	42.4%
Philadelphia, Town of	23,479	1,536	6.5%	7,900	33.6%
Philadelphia, Village of	609	7	1.2%	98	16.0%
Rodman, Town of	27,083	3,638	13.4%	5,047	18.6%
Rutland, Village of	28,482	4,129	14.5%	8,077	28.4%
Sackets Harbor, Village of	1,485	235	15.8%	501	33.7%
Theresa, Town of	44,075	839	1.9%	7,513	17.0%
Theresa, Village of	847	35	4.1%	52	6.1%
Watertown, Town of	22,935	2,141	9.3%	5,266	23.0%
Watertown, City of	5,972	77	1.3%	111	1.9%
West Carthage, Village of	896	7	0.8%	115	12.9%
Wilna, Town of	48,096	557	1.2%	1,775	3.7%
Worth, Town of	27,455	126	0.5%	1,326	4.8%
Jefferson County Total	823,662	73,442	8.9%	206,731	25.1%

Note: Some hay- or forage-producing pastureland is classified as cropland by the USDA Agricultural Census

Figure 3a.16 and Table 3a.14 indicate that the impact of drought would be experienced most significantly for crop farmers in the south western portion of the County, where several municipalities have 15 to 25% of their land areas given over to cultivated cropland, and for dairy farmers the impact would be most significant in the northern half of the County, where several municipalities have 30-45% of their land areas given over to pastureland. According to the USDA census, more farms in Jefferson County are dairy farms (231 / 26%) than any other type.

Previous Occurrences – Drought

Historical occurrences of drought in Jefferson County have been identified using the NOAA NCDC database. The NCDC database records one significant drought event which specifically list Jefferson County as an affected area since August 1993, the point at which NCDC drought records begin in New York State:

> **August – December, 1993:**
> A prolonged period of drought starting in the summer of 1993 decimated much of the agriculture in southern and eastern New York State. Estimates of feed grain losses in affected counties were well over 40 percent and in some cases nearly 100 percent. Especially hard hit were hay and corn crops as well as fruits and vegetables. Total crop damages were estimated at $50 million across the affected area.

Also the *New York Times* reported in May 1903 that drought conditions were causing "inestimable" damage to dairy farming interests in Jefferson County. The New York State Hazard Mitigation Plan also makes reference to a "Statewide" drought event in October 1994, although no further details are given other than that this month equaled the driest month on record at Albany.

Probability of Occurrence – Drought

Based on NCDC records, Jefferson County has directly experienced 1 significant drought during the 15 year period from 1993 through 2008, or an average of 0.07 drought events per year. This is consistent with Figure 3a.11 which suggests Jefferson County is less prone to drought conditions than other parts of the region. However, Jefferson County may experience an increase in the frequency of drought conditions in the foreseeable if some of the current predictions regarding climate change prove to be accurate.

Floods

Description – Floods

FEMA's National Flood Insurance Program (NFIP) defines the term "flooding" as "a general and temporary condition of partial or complete inundation…from overflow of inland or tidal waters, unusual and rapid accumulation or runoff of surface waters from any source, or a mudflow." According to FEMA's *NFIP Floodplain Management Requirements: a Study Guide and Desk Reference for Local Officials* (FEMA-480), most floods fall into the following three categories:

- **Riverine Flooding – Flooding that occurs along a channel** (where a "channel" is defined as a feature on the ground that carries water through and out of a watershed, whether natural channels such as rivers and streams, or man-made channels such as drainage ditches).
    - Overbank flooding occurs along a channel as excess flows overflow channel banks. Overbank flooding occurs when downstream channels receive more rain or snowmelt from their watershed than normal, or a channel is blocked by an ice jam or debris.
    - Flash floods are a type of riverine flooding typically caused when a significant amount of rainfall occurs in a very short duration. Flash flooding is characterized by a rapid rise in water level and high velocity flows. Flash floods can also be caused by ice jams (ice jam flooding, which can be upstream of an intact jam or downstream of a jam that has broken downstream) or dam breaks.
- **Coastal Flooding – Flooding that occurs along the coasts of oceans, the Gulf of Mexico, and large lakes** (i.e., the Great Lakes). Hurricanes and severe storms cause most coastal flooding, including "Nor'easters" which are severe storms that occur in the Atlantic basin that are extratropical in nature with winds out of the northeast.
    - Storm surge is one characteristic of coastal flooding caused as persistent high winds and changes in air pressure work to push water on shore, often on the order of several feet.
- **Shallow Flooding – Flooding that occurs in flat areas where a lack of channels means water cannot drain away easily.**
    - Sheet flow occurs when there are inadequate or no defined channels, and floodwaters spread out over a large area at a somewhat uniform depth. Sheet flow occurs after intense or prolonged rainfalls during which rain cannot soak into the ground.
    - Ponding occurs when runoff collects in a depression and cannot drain out. Ponding floodwaters do not move or flow away; they will remain until the water infiltrates into the soil, evaporates, or is pumped away.
    - Urban drainage flooding occurs when the capacity of an urban drainage system is exceeded. An urban drainage system comprises the ditches, storm sewers, retention ponds and other facilities constructed to store runoff or carry it to a receiving stream, lake or the ocean. Urban drainage flooding can also occur in areas protected by levees, as water collects on the protected side of the levee when pump capacities are exceeded during severe storms.

Floods are considered hazards when people and property are affected. Historically, development in floodplains was often a necessity, as water bodies provided a means of transportation, electricity, water supply, and often supported the livelihood of local residents (i.e., fishing, farming, etc.). Today, development in floodplains is more often spurred by the aesthetic and recreational value of the floodplain. Flooding is widely regarded as the most common major natural hazard in New York State.

The **National Flood Insurance Program (NFIP)** was established by Congress with the passage of the National Flood Insurance Reform Act of 1968. Through this program, Federally-backed flood insurance is made available to homeowners, renters, and businesses in a community if that community adopts and enforces a floodplain management ordinance to reduce future flood damages within its floodplains. This includes not only preventative measures for new development, but also corrective measures for existing development. FEMA also administers the Community Rating System (CRS), a program under which communities choosing to implement floodplain management actions that go beyond the minimum requirements of the NFIP become eligible for discounts on flood insurance premiums for properties within that community. At present, every individual municipality in Jefferson County is an active member of the NFIP except for the Town of Lorraine and the Village of Mannsville (See Table 3a.13), although none have so far become eligible for the CRS.

In addition to providing flood insurance, the NFIP also studies and maps the nation's floodplains, preparing its findings in Flood Insurance Rate Maps (FIRMs) and Flood Insurance Studies (FISs). FEMA also prepares digital Q3 Flood Data files, which contain digital flood hazard mapping. Using GIS, these digital maps can be overlaid upon a community's existing GIS base map. FEMA Q3 Flood Data and the Jefferson County GIS formed the basis of this analysis of the flood hazard for Jefferson County.

Location and Extent – Floods

Jefferson County and its jurisdictions experience several types of flooding. Jefferson County is located on Lake Ontario of the Great Lakes, but due to minimal tides (1 to 4cm) on the lake, the lake does not flood the surrounding communities. Basically, flooding in Jefferson County is caused by from riverine flooding, shallow flooding resulting from urban drainage issues, and occasional ice jams.

The extent of flooding associated with a 1 percent probability of occurrence – the "100-year flood" or "base flood" – is used as regulatory boundaries by a number of federal, state and local agencies. Also referred to as the "special flood hazard area", this boundary is a convenient tool for assessing vulnerability and risk in flood prone. FEMA's Q3 Flood Data was used to identify the location of flood hazard areas in Jefferson County. According to the Q3 data, high/moderate flood risk zones exist in most Jefferson County Municipalities. Figure 3a.13 illustrates the mapped flood risk using FEMA zone designations, which are explained in more detail below:

High Risk Areas	Zones A, AE, V, and VE: These are areas with a 1% chance of being flooded in any given year (the "100-year" floodplain). AE zones are those areas where the Base Flood Elevation (BFE – the "100-year flood) has been determined analytically. A Zones are areas where the base floodplain has been mapped by approximate methods and the BFE has not been determined. V/VE Zones are coastal areas with a 1% annual chance of being flooded which are also susceptible to a velocity hazard (i.e. wave action).
Moderate Risk Areas	Zone X500 (Zone B on older maps): These are areas lying between the "100-year" and "500-year" (0.2% annual chance of flooding) floodplain limits. They also include areas of shallow flooding with average depths of less than one foot, or drainage areas less than one square mile.
Low Risk Areas	Zone X (Zone C on older maps): These are areas outside of the 500-year floodplain, where the flood hazard is minimal. They may include areas of ponding or with local drainage problems not significant enough to warrant detailed study or designation as base floodplain.

Possible Risk Areas Zone D: Areas where there are possible but undetermined flood hazards. There are two Zone D areas in Jefferson County, although they essentially cover undeveloped lands along the coast.

The mapped Q3 flood data is not exact, and in some cases flood hazard area boundaries may not match landform boundaries. While limitations in the data should be recognized, this represents best readily available GIS data at the time of the study and is generally deemed suitable for mitigation planning purposes. Jefferson County is currently not on the list of counties to be included in FEMA's Map Modernization Program and therefore, Digital Flood Insurance Rate Maps (DFIRMs) were not available for this initial version of the plan and are not currently scheduled to be developed in the immediate future. When and if DFIRMs become available for Jefferson County at some point in the future, sections of the plan dealing with flooding should be revised accordingly and incorporated into the next plan update.

FEMA's Q3 flood mapping was overlaid upon the Jefferson County GIS parcel mapping to identify the flood risk areas for all municipalities in Jefferson County, and the collated data is presented in Tables 3a.11 and 3a.12. In the absence of GIS size and location data for individual structures, impacted improved property values were calculated by adjusting the structure values according to the percentage of the improved parcel intersected by the flood risk zone. A more detailed breakdown of property exposed to the flood hazard by land use types is presented in Appendix A.

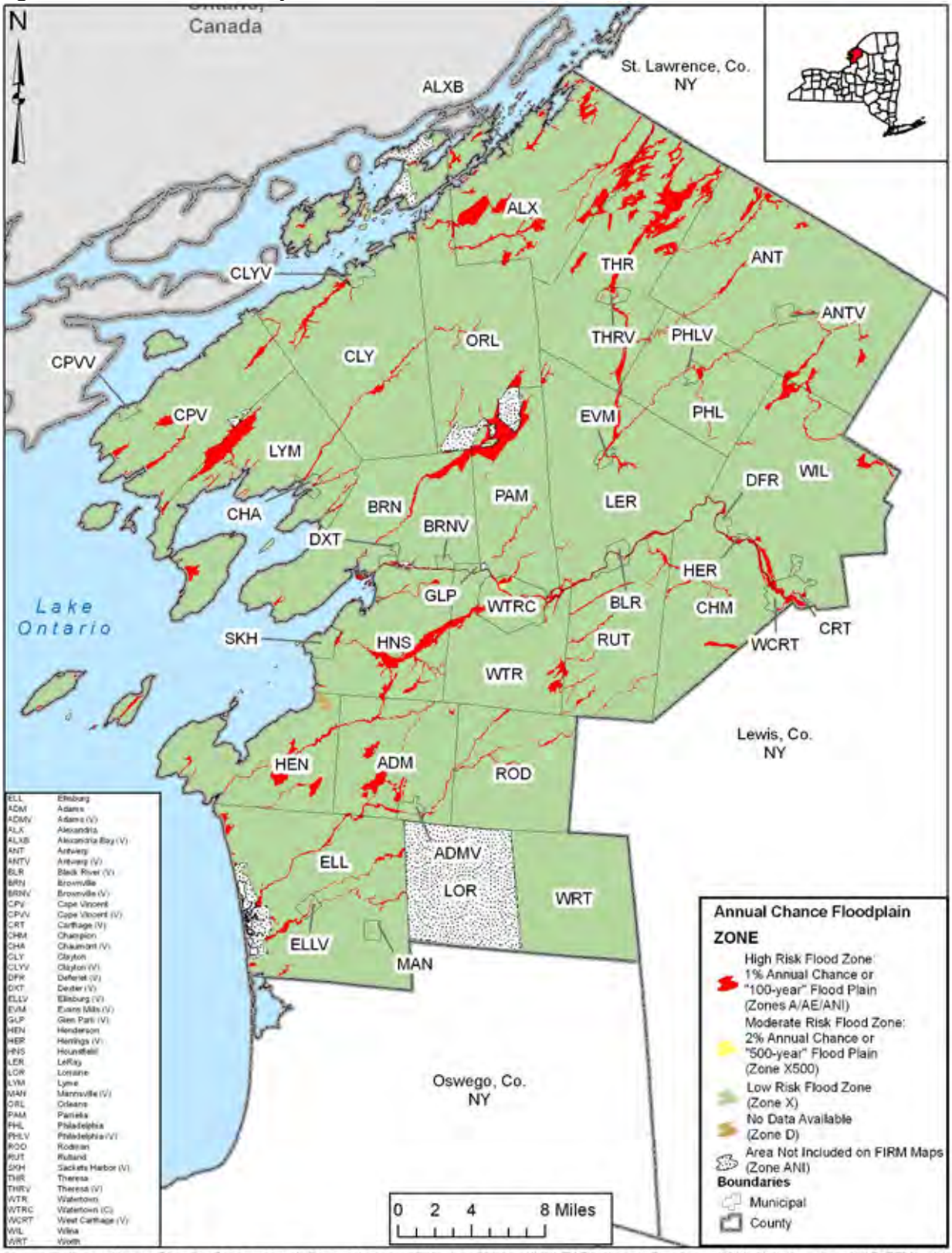
In total only 9.6% of the County area lies within high or moderate flood risk zones, according to current Q3 mapping data. The Town of Loraine has the highest proportion of its area within a high flood risk zone, followed by the Village of Herrings. The Village of Evans Mills has the highest proportion of land within moderate flood risk zones, followed by the City of Watertown, although the amount of land in this area is relatively low, 3.3% and 1.2% respectively.

The GIS analysis indicates that the Town of Lorraine and the Village of Herring have the greatest proportions of improved property values in high flood risk zones, while the Village of Evans Mills and City of Watertown have the highest proportions of improved property values in moderate flood risk zones. However, the Town of Alexandria and City of Watertown have the greatest dollar amounts of improved property within high and moderate flood risk zones respectively.

Appendix 1 of the New York State Hazard Mitigation Plan of January 2008 contains estimates of improved property values in the 100-year floodplain for all municipalities derived from Q3 data similar to those presented in Table 3a.12 and Appendix A. The analyses presented in this plan have used more up to date improved property data sourced directly from the County and the latest local equalization rates from the State office of Real Property Services. Minor differences in analysis methodology* notwithstanding, this approach is considered to result in a more accurate and up to date depiction of the exposure to the flood hazard than that presented in the January 2008 State Plan. Figure 3-55 from the New York State Plan, which summarizes residential property exposure in the 100-year floodplain, has been included in Appendix J for reference. Some additional discussion of the methodology used to analyze the value of improved property exposed to delineable hazards is included in Section 3b.

*Note: The methodology used to compile the State Plan figures differed from that used in this plan in that it was based on the inclusion of the full improved value of all parcels whose center points fell inside the Q3 flood hazard zones, while the analyses presented in Table 3a.12 counted all parcels which were intersected at any point by the hazard area shape files and applied the percentage of the parcel area within the hazard area to the total improved value associated with that value to account for the uncertainty regarding the location of the structure(s) within each parcel, since without building footprint data it cannot be automatically assumed that all improvements lie exactly at the center of their associated parcels. However, the total value of residential property in the 100-year floodplain calculated for this plan varies from that calculated for the State Plan by only 2% ($270,505,719 versus $265,002,519).

Figure 3a.13: Jefferson County Flood Hazard Areas



Source: Jefferson County Planning Department, Jefferson County and Municipal Lines, 2004; ESRI, Canada Provinces, 2000, U.S. Counties, 2005; FEMA, Q3 Flood Data, 1998

Table 3a.11
Summary of FEMA Q3 Flood Data by Municipality: Land in Hazard Areas

Municipality	Total Land Area (Acres)	High Flood Risk (Acres)		Moderate Flood Risk (Acres)	Low Flood Risk (Acres)	Possible But Undetermined Risk (Acres)	Land in High Flood Risk %		Land in Moderate Flood Risk %
		VE	A, AE	X500	X	D	VE	A, AE	X500
Adams, Town of	26,240		1,914	0	24,320	0		7.3%	0.0%
Adams, Village of	891		45	0	846	0		5.1%	0.0%
Alexandria, Town of	47,333		6,123	0	41,201	0		12.9%	0.0%
Alexandria Bay, Village of	492		58	0	434	0		11.8%	0.0%
Antwerp, Town of	68,717		2,365	0	66,352	0		3.4%	0.0%
Antwerp, Village of	661		9	0	652	0		1.3%	0.0%
Black River, Village of	1207		87	0	1121	0		7.2%	0.0%
Brownville, Town of	37,170		1,490	0	35,681	0		4.0%	0.0%
Brownville, Village of	409		8	0	400	0		2.0%	0.0%
Cape Vincent, Town of	35,696		2,110	0	33,300	0		5.9%	0.0%
Cape Vincent, Village of	475		23	0	452	0		4.9%	0.0%
Carthage, Village of	1,736		437	1	1,298	0		25.2%	0.0%
Champion, Town of	27,853		864	0	26,988	0		3.1%	0.0%
Chaumont, Village of	643		53	0	590	0		8.3%	0.0%
Clayton, Town of	52,449		2,109	0	50,336	0		4.0%	0.0%
Clayton, Village of	1,077		91	3	962	0		8.5%	0.0%
Deferiet, Village of	482		9	0	473	0		1.9%	0.0%
Dexter, Village of	460		45	0	415	0		9.8%	0.0%
Ellisburg, Town of	53,521		1,802	7	48,820	0		3.4%	0.0%
Ellisburg, Village of	641		43	0	597	0		6.8%	0.0%
Evans Mills, Village of	522		64	17	441	0		12.3%	0.0%
Glen Park, Village of	480		6	0	383	0		1.3%	0.0%
Henderson, Town of	26,754		1,855	53	24,531	315		6.9%	1.2%
Herrings, Village of	186		76	2	108	0		41.0%	0.0%
Hounsfield, Town of	30,123		3,115	0	27,008	0		10.3%	0.0%
Le Ray, Town of	46,268		1,091	0	45,176	0		2.4%	0.0%
Lorraine, Town of	24,980		0	0	11	0		0.0%	0.0%

Table 3a.11
Summary of FEMA Q3 Flood Data by Municipality: Land in Hazard Areas

Municipality	Total Land Area (Acres)	High Flood Risk (Acres)		Moderate Flood Risk (Acres)	Low Flood Risk (Acres)	Possible But Undetermined Risk (Acres)	Land in High Flood Risk %		Land in Moderate Flood Risk %
		VE	A, AE	X500	X	D	VE	A, AE	X500
Lyme, Town of	35,339		3,420	0	31,910	0		9.7%	0.0%
Mannsville, Village of	595		0	0	595	0		0.0%	0.0%
Orleans, Town of	46,157		2,037	11	38,416	0		4.4%	0.0%
Pamelia, Town of	22,692		1,519	20	21,093	0		6.7%	0.0%
Philadelphia, Town of	23,479		465	0	23,014	0		2.0%	0.0%
Philadelphia, Village of	609		135	0	474	0		22.2%	0.0%
Rodman, Town of	27,083		509	0	26,560	0		1.9%	0.0%
Rutland, Village of	28,482		1,149	0	27,333	0		4.0%	0.0%
Sackets Harbor, Village of	1,485		47	0	1,438	0		3.1%	0.0%
Theresa, Town of	44,075		6,551	0	37,524	0		14.9%	0.0%
Theresa, Village of	847		119	0	729	0		14.0%	0.0%
Watertown, Town of	22,935		892	8	22,035	0		3.9%	0.0%
Watertown, City of	5,972		573	73	5,327	0		9.6%	0.0%
West Carthage, Village of	896		174	0	723	0		19.4%	0.0%
Wilna, Town of	48,096		1,654	0	46,442	0		3.4%	0.0%
Worth, Town of	27,455		0	0	27,220	0		0.0%	0.0%
Total	*823,662*		45,136	*196*	*743,727*	*315*		5.5%	*0.0%*

Does not include areas designated ANI: Area not included on FIRMs

Table 3a.12
Summary of FEMA Q3 Flood Data by Municipality: Improved Property Values in Hazard Areas

Municipality	Total Improved Value	Improved Value in High Flood Risk Areas		Improved Value in Moderate Flood Risk Areas	Improved Value in Low Flood Risk Areas	Improved Value in High Flood Risk Areas %		Improved Value in Moderate Flood Risk Areas %
		VE	A, AE	X500	X	VE	A, AE	X500
Adams, Town of	$175,730,094		$2,631,318		$173,098,196		1%	0%
Adams, Village of	$75,977,600		$1,705,425		$74,272,176		2%	0%
Alexandria, Town of	$259,310,598		$59,520,417		$199,789,192		23%	0%
Alexandria Bay, Village of	$102,359,250		$15,844,095		$86,515,148		15%	0%
Antwerp, Town of	$35,680,827		$1,374,989		$34,305,838		4%	0%
Antwerp, Village of	$22,782,543		$9,257		$22,773,286		0%	0%
Black River, Village of	$69,017,493		$2,147,263		$66,870,230		3%	0%
Brownville, Town of	$195,286,898		$10,798,566		$184,488,330		6%	0%
Brownville, Village of	$44,738,926		$213,356		$44,525,570		0%	0%
Cape Vincent, Town of	$262,362,672		$36,156,737		$224,099,106		14%	0%
Cape Vincent, Village of	$54,387,216		$4,163,549		$50,223,667		8%	0%
Carthage, Village of	$148,112,520		$13,611,110	$13,124	$134,488,286		9%	0.01%
Champion, Town of	$158,423,000		$3,292,265		$155,130,735		2%	0%
Chaumont, Village of	$40,576,245		$878,306		$39,697,939		2%	0%
Clayton, Town of	$269,994,120		$32,844,260		$237,149,745		12%	0%
Clayton, Village of	$138,078,500		$9,146,257	$12,322	$128,861,671		7%	0.01%
Deferiet, Village of	$26,850,800		$1,190,608		$25,660,192		4%	0%
Dexter, Village of	$46,324,924		$5,261,962		$41,062,962		11%	0%
Ellisburg, Town of	$138,555,517		$12,708,373	$23,451	$125,367,490		9%	0.02%
Ellisburg, Village of	$7,411,700		$895,705		$6,515,995		12%	0%
Evans Mills, Village of	$27,725,000		$1,266,829	$523,131	$25,935,040		5%	1.9%
Glen Park, Village of	$59,893,013		$1,898,431		$54,342,134		3%	0%
Henderson, Town of	$191,012,823		$20,609,715	$631,351	$167,355,278		11%	0.3%
Herrings, Village of	$7,954,100		$4,679,084	$12,410	$3,262,606		59%	0.2%
Hounsfield, Town of	$125,487,625		$8,538,570		$116,945,863		7%	0%
Le Ray, Town of	$1,180,782,881		$9,869,013	$368	$1,170,913,500		1%	0%

Table 3a.12
Summary of FEMA Q3 Flood Data by Municipality: Improved Property Values in Hazard Areas

Municipality	Total Improved Value	Improved Value in High Flood Risk Areas		Improved Value in Moderate Flood Risk Areas	Improved Value in Low Flood Risk Areas	Improved Value in High Flood Risk Areas %		Improved Value in Moderate Flood Risk Areas %
		VE	A, AE	X500	X	VE	A, AE	X500
Lorraine, Town of	$27,780,851		$0		$364,222		0%	0%
Lyme, Town of	$196,346,342		$29,588,837		$166,757,506		15%	0%
Mannsville, Village of	$19,161,884		$0		$19,161,884		0%	0%
Orleans, Town of	$307,380,200		$40,989,346	$301,716	$258,573,881		13%	0.1%
Pamelia, Town of	$199,473,646		$7,515,693	$1,488,576	$190,466,969		4%	0.7%
Philadelphia, Town of	$74,670,470		$840,466		$73,830,004		1%	0%
Philadelphia, Village of	$53,296,960		$4,112,718		$49,184,242		8%	0%
Rodman, Town of	$38,203,936		$989,127		$37,208,841		3%	0%
Rutland, Village of	$87,650,231		$3,073,957		$84,576,274		4%	0%
Sackets Harbor, Village of	$100,401,726		$2,200,926		$98,200,800		2%	0%
Theresa, Town of	$89,173,551		$9,098,318		$80,075,233		10%	0%
Theresa, Village of	$33,167,705		$1,831,677		$31,336,028		6%	0%
Watertown, Town of	$475,544,391		$2,112,855	$206,510	$473,224,478		0%	0.04%
Watertown, City of	$1,234,445,882		$29,566,015	$11,075,416	$1,193,804,455		2%	0.9%
West Carthage, Village of	$77,658,900		$3,351,111		$74,307,789		4%	0%
Wilna, Town of	$70,683,576		$2,690,731		$67,992,845		4%	0%
Worth, Town of	$9,376,136		$0		$9,258,937		0%	0%
Totals	$6,959,233,272		$399,217,236	$14,288,375	$6,501,974,562		6%	0.2%

Previous Occurrences – Floods

Floods have occurred in Jefferson County's communities in the past, and will continue to do so in the future. Jefferson County and its component municipalities have generally been impacted by riverine flooding and shallow flooding. A picture of the flooding history of Jefferson County in terms of damage to private property over the last three decades or so can be derived from the recorded flood losses and payments data from the NFIP. This data is presented in Table 3a.13, along with the total number of current policies, the total coverage values, and key dates associated with the municipalities' participation in the NFIP. The policy and loss data presented in Table 3a.13 is accurate as of April 30, 2009. At the time of writing, none of the municipalities in Jefferson County were eligible for participation in FEMA's Community Rating System (CRS), under which municipalities implementing and enforcing floodplain management measures above beyond the NFIP minimum requirements are rewarded with discounted flood insurance premiums.

The table shows that Jefferson County NFIP insured flood losses have totaled more than $865,000 since the 1970s, or approximately $35,000 per year (given that most municipalities entered the NFIP in the mid 1980s). Actual property flood losses community-wide are likely to be higher, since this value only includes NFIP payouts and does not include losses incurred on properties the owners of which do not participate in the NFIP, losses for which a claim was not submitted, or losses for which payment on a claim was denied. FEMA records also record include a further 50 flood damage claims against the NFIP in Jefferson County for which no payment was made.

The average individual paid NFIP loss for the County overall was approximately $7,200 per event, with an average coverage of more than $150,000 per policy. The municipalities with the greatest number of paid losses are the Village of Carthage, the City of Watertown, and the Towns of Adams and Henderson. The highest average payment per loss in any single municipality is in the Town of Brownville, where payments have been more than $54,000 per loss event. Of the 41 municipalities participating in the NFIP, four do not have mapped High Flood Risk Areas within their boundaries, and 12 have not experienced any flood damage resulting in NFIP payments.

Table 3a.13 also includes the position or title of the person in the administrative structure of each municipality to which the responsibilities of Floodplain Administrator are delegated by each locally adopted floodplain management ordinance, where this information is on file at the Jefferson County Department of Planning. The names and contact details as currently held on record by Jefferson County (with supplemental information from FEMA Region 2) are included in Appendix F.

Table 3a.13
FEMA NFIP Policy and Claim Information for Jefferson County Jurisdictions
Source: www.fema.gov/cis/NY, www.bsa.nfipstat.com, as of 1/31/2009, and Jefferson County Planning Department

NFIP Participating Communities in Jefferson County, NY	Community Number	Date Entered NFIP*	Current Effective FIRM Date	Position/Title of Floodplain Administrator	NFIP Policies In Force	Insurance in Force ($)	Total Number of Paid Losses	Total Payments ($)
Adams, Town of	360324	6/5/85	6/5/85	Code Enforcement Officer / Building Inspector	1	$280,000	10	$174,922
Adams, Village of	360325	6/19/85	6/19/85	Code Enforcement Officer	1	$280,000	3	$21,945
Alexandria, Town of	360326	10/15/85	10/15/85	Zoning Enforcement Officer	32	$4,892,000	3	$12,973
Alexandria Bay, Village of	360327	4/3/78	4/3/78	Zoning Inspector	7	$1,477,500	1	$4,534
Antwerp, Town of	361560	4/15/86	4/15/86	Land Use Enforcement Officer	2	$155,000	4	$26,942
Antwerp, Village of	361554	+5/31/74	NSFHA	Not recorded	0	$0	0	$0
Black River, Village of	361525	6/5/89	6/5/89	Zoning Enforcement Officer	16	$1,887,600	0	$0
Brownville, Town of	361063	6/5/85	6/2/92	Not recorded	24	$3,399,400	5	$271,068
Brownville, Village of	361576	3/18/86	3/18/86	Zoning Officer	4	$2,597,300	0	$0
Cape Vincent, Town of	361062	1/1/88	6/2/92	Zoning Enforcement Officer	30	$3,615,400	4	$10,691
Cape Vincent, Village of	361574	4/17/85	4/17/85	Village Planning Board	3	$523,300	3	$8,518
Carthage, Village of	360995	1/3/86	6/17/91	Code Enforcement Officer	38	$4,770,600	15	$60,809
Champion, Town of	360328	7/16/82	6/2/93	Zoning Enforcement Officer	7	$1,564,000	1	$18,929
Chaumont, Village of	360329	8/5/85	9/8/99	Building Inspector	7	$831,100	4	$7,659
Clayton, Town of	360330	6/19/85	4/2/86	Zoning Enforcement Officer	6	$925,100	5	$12,371
Clayton, Village of	360331	12/1/77	12/1/77	Building Inspector	7	$1,591,000	4	$18,121
Deferiet, Village of	360332	+10/18/74	NSFHA	Not recorded	0	$0	0	$0
Dexter, Village of	360333	6/5/85	6/15/94	Building Inspector	1	$27,000	2	$4,528
Ellisburg, Town of	360334	8/15/78	5/18/92	Zoning Enforcement Officer	13	$2,496,200	4	$36,331
Ellisburg, Village of	360335	6/19/85	6/19/95	Not recorded	0	$0	3	$7,631
Evans Mills, Village of	360337	2/5/86	1/2/92	Code Enforcement Officer	4	$540,200	0	$0
Glen Park, Village of	360336	+3/29/74	NSFHA	Not recorded	1	$105,000	1	$367
Henderson, Town of	360338	3/16/81	5/18/92	Zoning Enforcement Officer	35	$4,049,100	10	$18,491
Herrings, Village of	360339	12/18/85	12/18/85	Village Board	0	$0	0	$0
Hounsfield, Town of	360340	3/18/87	5/18/92	Zoning Enforcement Officer	6	$1,069,900	0	$0

Table 3a.13
FEMA NFIP Policy and Claim Information for Jefferson County Jurisdictions
Source: www.fema.gov/cis/NY, www.bsa.nfipstat.com, as of 1/31/2009, and Jefferson County Planning Department

NFIP Participating Communities in Jefferson County, NY	Community Number	Date Entered NFIP*	Current Effective FIRM Date	Position/Title of Floodplain Administrator	NFIP Policies In Force	Insurance in Force ($)	Total Number of Paid Losses	Total Payments ($)
Le Ray, Town of	360341	7/3/85	2/2/2002	Zoning Enforcement Officer	14	$3,172,900	2	$14,497
Lorraine, Town of	*Not Currently Participating in the NFIP*							
Lyme, Town of	360343	4/15/86	9/2/93	Zoning Enforcement Officer	45	$6,724,300	1	$3,924
Mannsville, Village of	*Not Currently Participating in the NFIP*							
Orleans, Town of	360345	3/1/78	3/1/78	Not recorded	18	$3,751,300	3	$4,070
Pamelia, Town of	360346	7/30/82	1/2/92	Zoning Officer	3	$436,500	2	$4,699
Philadelphia, Town of	360347	6/5/89	6/5/89	Not recorded	0	$0	0	$0
Philadelphia, Village of	360348	2/15/85	9/15/93	Building Inspector	9	$1,154,500	0	$0
Rodman, Town of	360349	7/3/85	7/3/85	Not recorded	2	$560,000	0	$0
Rutland, Village of	360350	6/5/85	8/18/92	Zoning Enforcement Officer	4	$243,000	1	$3,135
Sackets Harbor, Village of	360351	11/15/85	5/2/94	Not recorded	5	$1,446,700	1	$1,115
Theresa, Town of	360352	10/15/85	10/15/85	Zoning Enforcement Officer / Building Inspector	5	$442,800	0	$0
Theresa, Village of	360353	10/15/85	10/15/85	Zoning Enforcement Officer / Building Inspector	0	$0	1	$2,000
Watertown, City of	360354	10/15/85	8/2/93	City Engineer	48	$6,880,300	12	$51,665
Watertown, Town of	360355	6/5/85	8/2/93	Building Inspector	5	$357,900	4	$9,048
West Carthage, Village of	360356	9/28/90	9/28/90	Code Enforcement Officer	2	$392,000	2	$9,539
Wilna, Town of	360357	5/15/86	1/16/92	Code Enforcement Officer	9	$1,195,000	9	$44,838
Worth, Town of	361409	+1/17/75	NSFHA	Not recorded	0	$0	0	$0
Jefferson County Totals					*414*	*$63,833,900*	*120*	*$865,360*

* i.e. Initial Firm identified
\+ Initial FHBM identified (no FIRM)
NSFHA: No Special Flood Hazard Area – all Zone C (determined to be outside the 500-year floodplain)

Repetitive Losses

FEMA defines a Repetitive Loss (RL) property as any insurable building for which two or more claims of more than $1,000 were paid by the NFIP within any rolling 10-year period, since 1978. A repetitive loss property may or may not be currently insured by the NFIP. Currently there are over 122,000 repetitive loss properties nationwide, and approximately 7,000 in New York State. According to FEMA's repetitive loss property records, there were seven "non-mitigated" repetitive loss properties located in Jefferson County as of February 28, 2009. These properties are associated with a total of 16 individual losses and almost $330,000 in claims payments under the NFIP since April 1979 (the earliest recorded date of loss).

The distribution of RL properties throughout the County is presented in Figure 3a.14, while the approximate locations of individual RL properties are plotted in Figures 3a.15 to 3a.18. Figure 3a.14 does not include one RL property in the Town of Lorraine, for which address data was not reliable. Of the seven recorded RL properties, four are single family residential structures, two are non-residential, and one is "other residential", i.e. multi-family or apartments. More details regarding these properties are presented in Table 3a.14.

More specific data regarding the exact locations of these structures is subject to the 1974 Privacy Act. This legislation prohibits the public release of any information regarding individual NFIP claims or information which may lead to the identification of associated individual addresses and property owners. However, while this information is not available to the general public, municipal authorities may obtain comprehensive RL property data directly from FEMA Region 2 for the purposes of targeted mitigation of RL areas or individual RL structures, on the condition that all such data is treated as strictly confidential and the required privacy procedures are strictly followed.

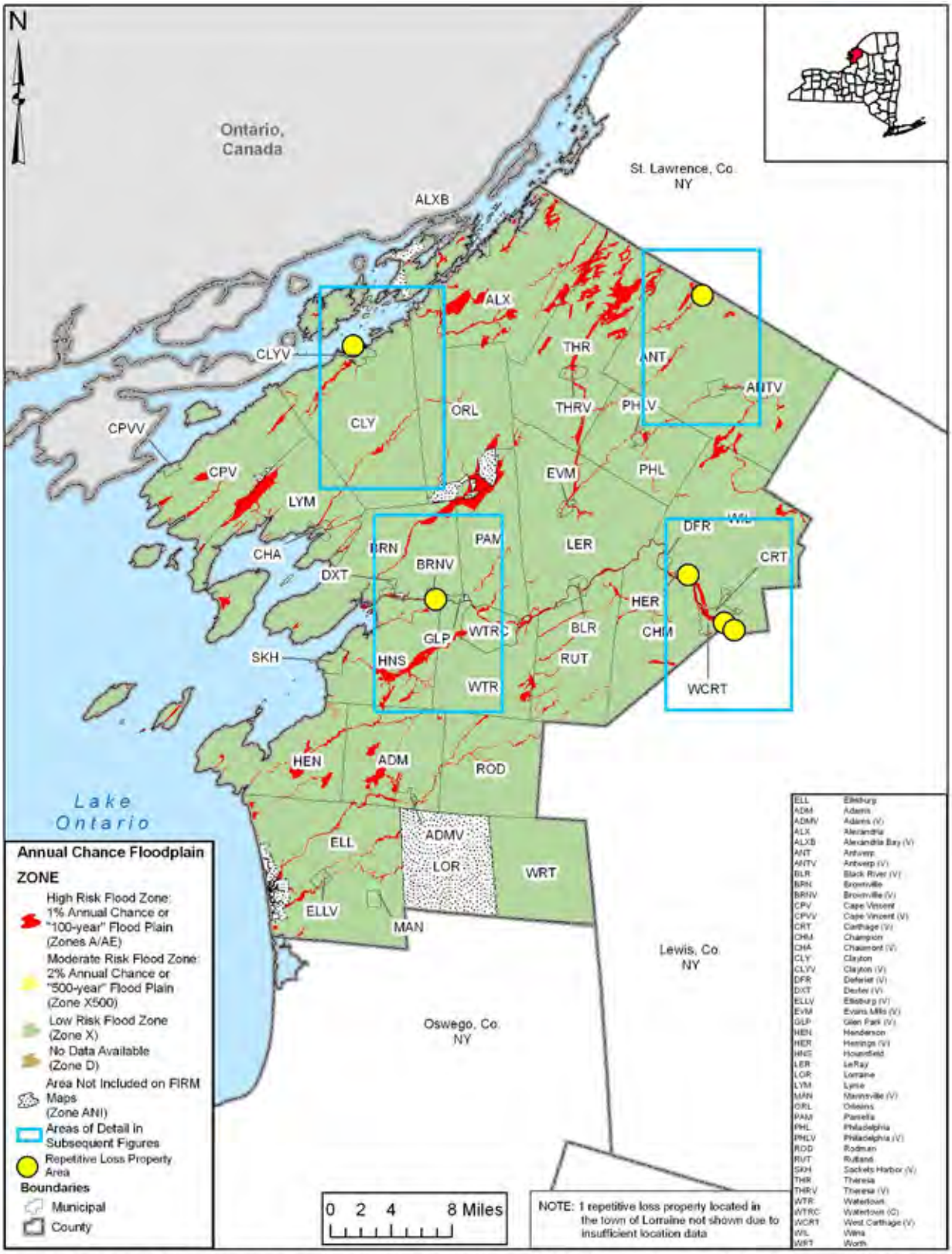
Table 3a.14
NFIP Repetitive Loss Properties in Jefferson County
(Source: FEMA Region 2)

Municipality		Property Type	Flood Hazard Zone	Paid Losses	Total Paid Losses	Average Paid Loss
Antwerp	Town	Single-Family Residential	A	3	$14,649	$4,883
Brownville	Village	Non-Residential	A	2	$264,797	$132,398
Carthage	Village	Other Residential	A	3	$11,205	$3,735
Clayton[2]	Village	Non-Residential	A	2	$6,298	$3,149
Lorraine[1]	Town	Single-Family Residential	X	2	$9,185	$4,592
Wilna	Town	Single-Family Residential	A	2	$10,451	$5,226
Wilna	Town	Single-Family Residential	A	2	$4,328	$2,164
Totals				*16*	*$320,912*	*$20,057*

1. Listed as Town of Lorraine in RL data supplied by FEMA Region 2, but address given is not in Jefferson County.
2. Building has been demolished.

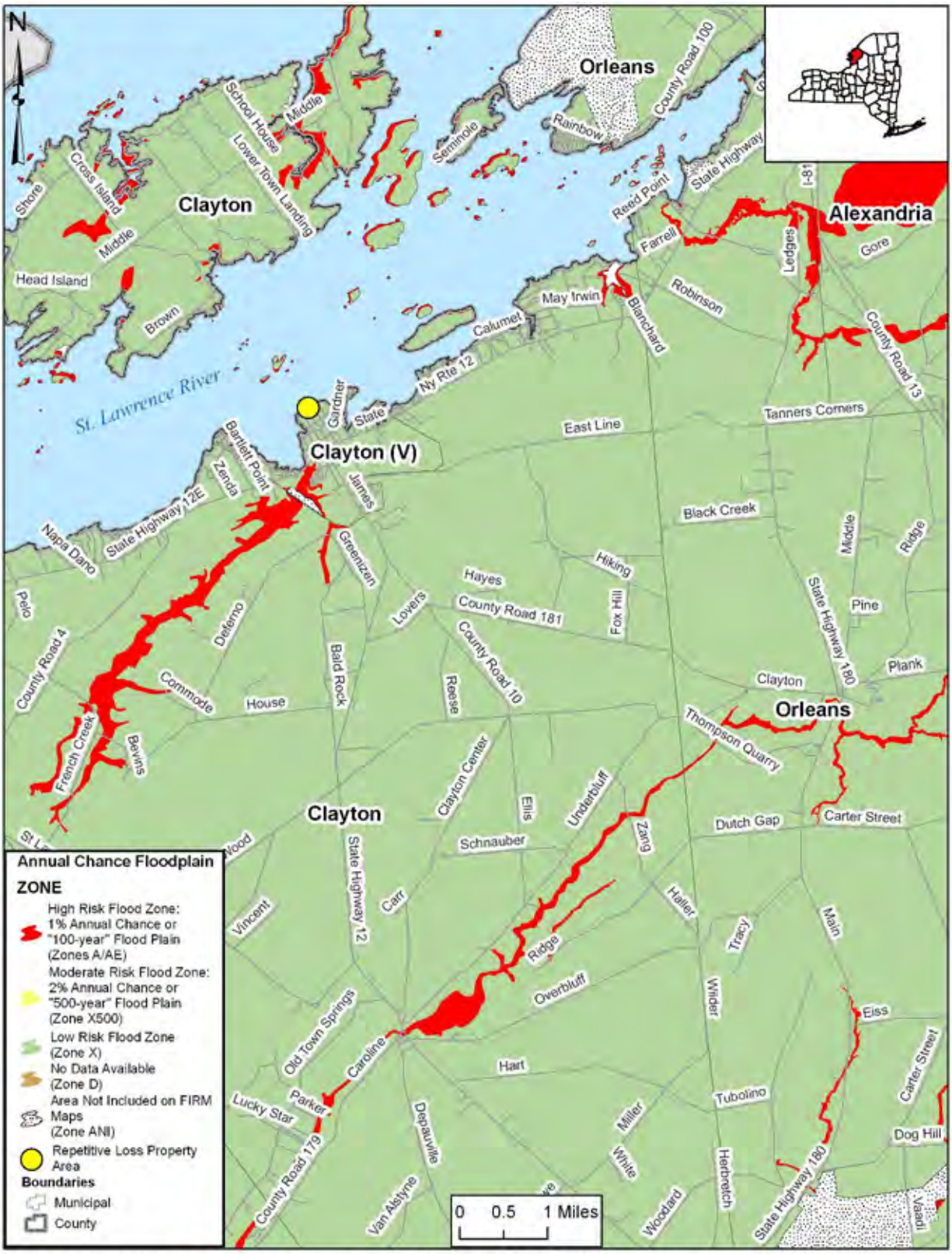
The average repetitive loss property in Jefferson County has experienced 2.3 loss events, with an average paid claim of just over $20,000 for each event. To summarize the analysis of Repetitive Loss Properties, the data suggests that 37% of all the NFIP payments in Jefferson County may be attributable to just 4% of insured properties in the County (depending on how many of these properties remain insured by the NFIP). Figures 3a.15 through 18 are intended to illustrate the general extent of areas in which RL properties are particularly concentrated, to act as pointers to areas where flooding of structures may be the most severe. It is possible that in these areas there also exist other properties that suffer significantly from flooding but, for a variety of possible reasons do not meet RL criteria or have not participated in the NFIP, and which may also benefit from mitigation actions.

Figure 3a.14: Jefferson County NFIP Repetitive Loss Properties



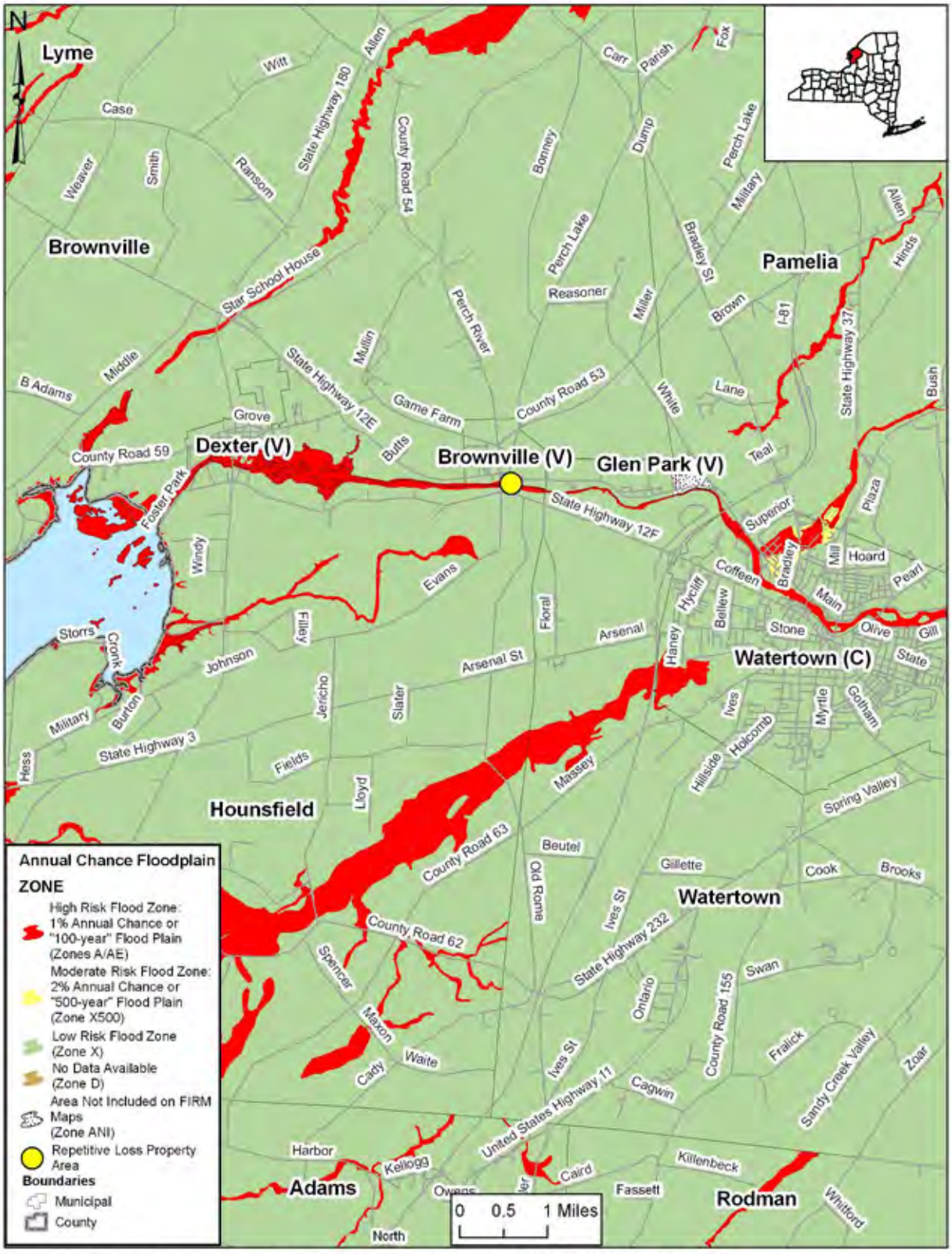
Source: Jefferson County Planning Department, Jefferson County and Municipal Lines, 2004; ESRI, Canada Provinces, 2000, U.S. Counties, 2005; Q3 Flood Data, 1998

Figure 3a.15: NFIP Repetitive Loss Property Location – Village of Clayton



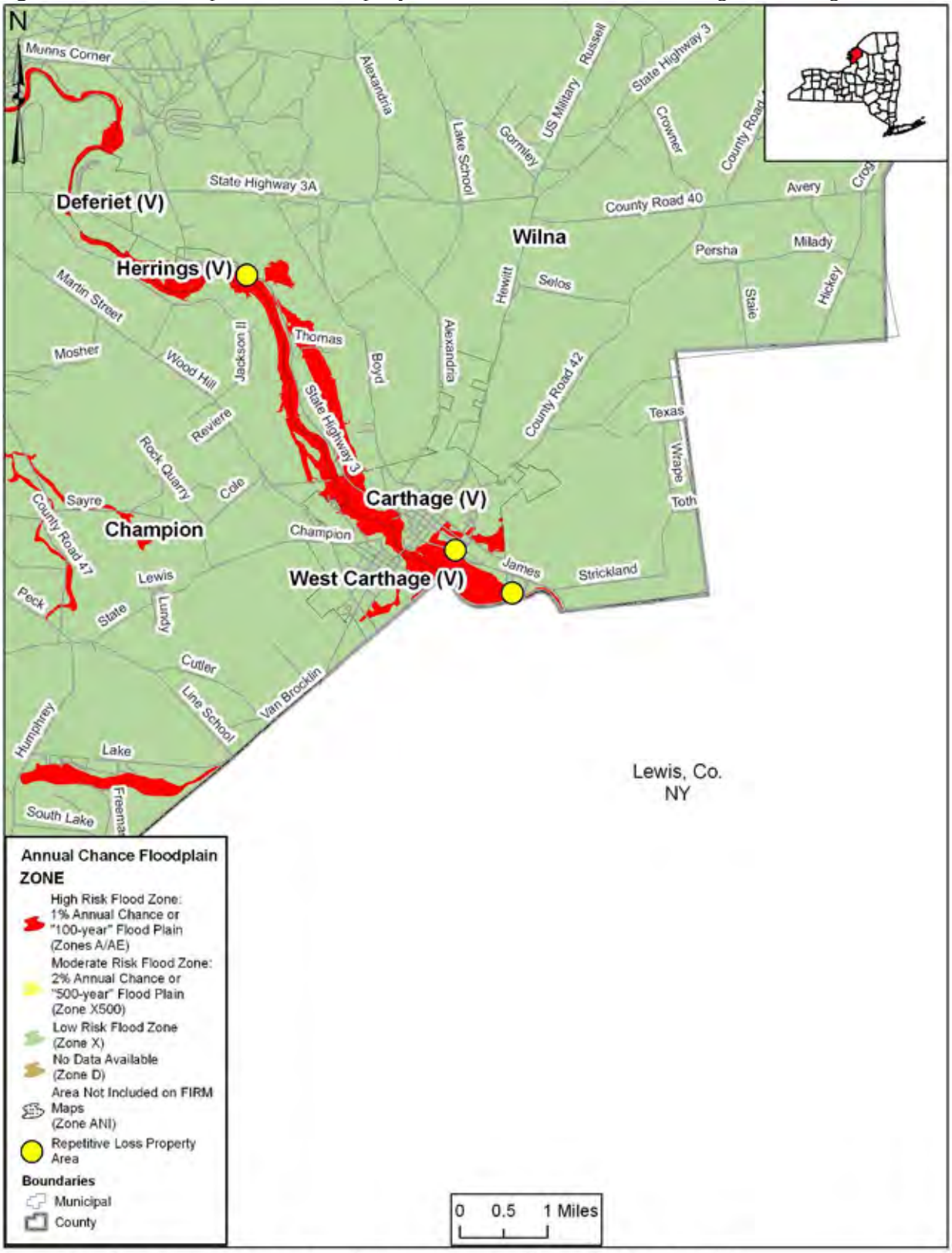
Source: Jefferson County Planning Department, Jefferson County and Municipal Lines, 2004; FEMA, Q3 Flood Data, 1998

Figure 3a.16: NFIP Repetitive Loss Property Location – Village of Brownville



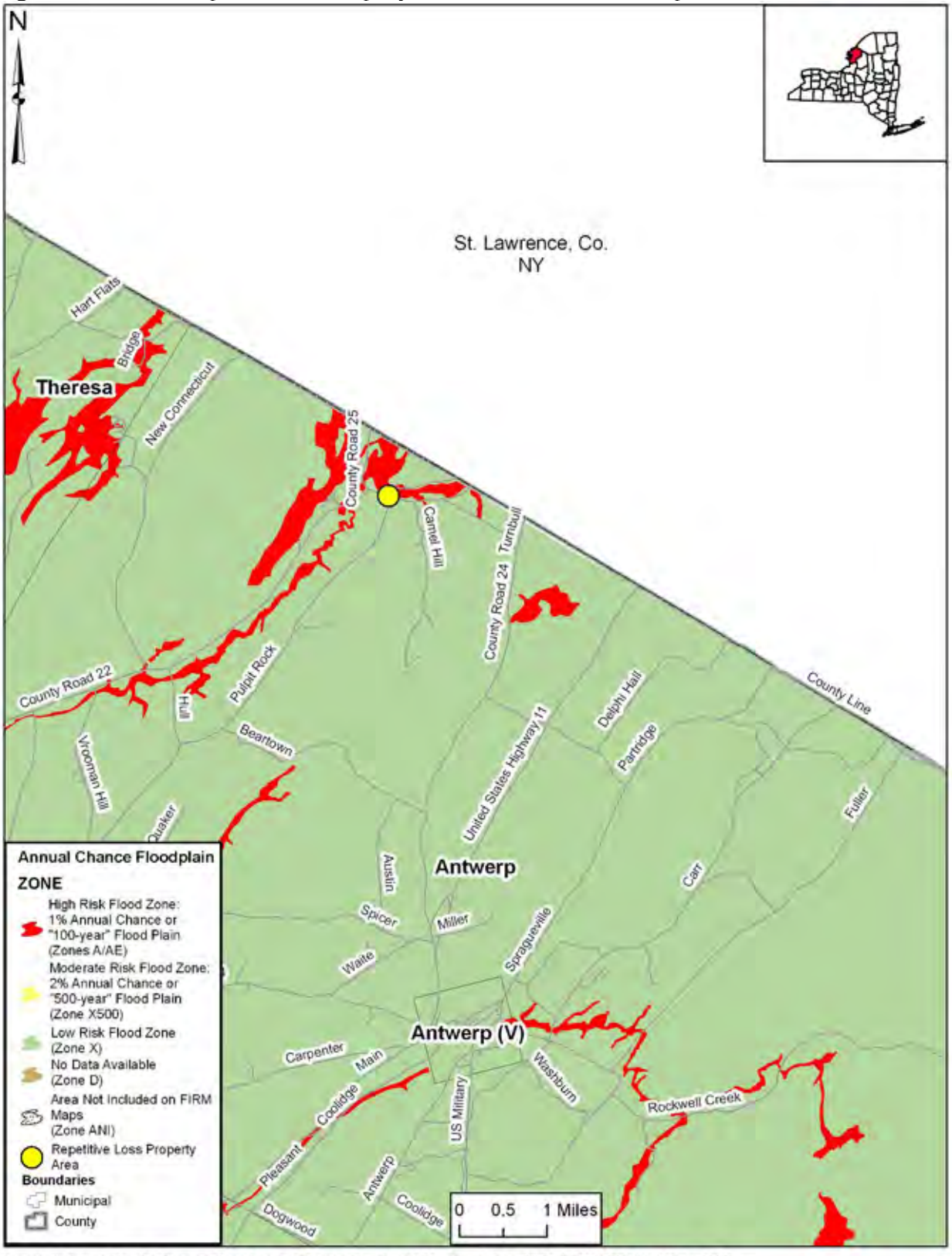
Source: Jefferson County Planning Department, Jefferson County and Municipal Lines, 2004; FEMA, Q3 Flood Data, 1998

Figure 3a.17: NFIP Repetitive Loss Property Locations – Town of Wilna/Village of Carthage



Source: Jefferson County Planning Department, Jefferson County and Municipal Lines, 2004; FEMA, Q3 Flood Data, 1998

Figure 3a.18: NFIP Repetitive Loss Property Location – Town Of Antwerp



Source: Jefferson County Planning Department, Jefferson County and Municipal Lines, 2004; FEMA, Q3 Flood Data, 1998

None of the seven Repetitive Loss Properties listed in Jefferson County have been identified as "Severe" Repetitive Loss Properties, where a Severe RLP is defined by FEMA as a residential property:

(a) That has at least four NFIP claim payments (including building and contents) over $5,000 each, and the cumulative amount of such claims payments exceeds $20,000; or

(b) For which at least two separate claims payments (building payments only) have been made with the cumulative amount of the building portion of such claims exceeding the market value of the building.

For both (a) and (b) above, at least two of the referenced claims must have occurred within any ten-year period, and must be greater than 10 days apart.

Flood Disaster and Emergency Declarations

The New York State Emergency Management Office reports Jefferson County as having been affected by two Presidential Disaster Declarations related to flooding from 1953 to March 2009, as detailed in Table 3a.15. Jefferson County is not listed by FEMA or the New York State Office of Emergency Management as having been affected by any Emergency Declarations involving flooding over the same period.

Through the Public Assistance (PA) Program, FEMA provides supplemental Federal disaster grant assistance for debris removal, emergency protective measures, and the repair, replacement, or restoration of disaster-damaged, publicly owned facilities and the facilities of certain Private Non-Profit (PNP) organizations. The Individual Assistance Program (IA) provides money or direct assistance to individuals, families and businesses in an area whose property has been damaged or destroyed and whose losses are not covered by insurance. It is meant to assist with critical expenses that cannot be covered in other ways, rather than to restore damaged property to its condition before the disaster.

Table 3a.15
Major Flood Disaster Declarations Affecting Jefferson County
(Source: NYSEMO)

Disaster #	Description	Declared Date (and Incident Period)	Damages
DR-1095	Severe storms and flooding: Jefferson County: PA only	1/24/1996 (1/19/1996 – 1/30/1996)	$1m
DR-0367	Flooding Jefferson County: PA and IA	3/21/1973	Not recorded

The NCDC database records flood events in Jefferson County from January 1994 (when detailed NCDC records begin in this area) to December 2008, and there have been 9 significant recorded flood events affecting the County in this period, causing reported damages totaling just under $2 million, including some damages incurred outside Jefferson County. Table 3a.16 presents selected significant flood events recorded for the County in the NCDC database for which some detailed information was available, supplemented with information from Flood Insurance Studies for individual municipalities.

Table 3a.16
Selected Significant Flood Events in Jefferson County
(Source: NOAA NCDC / FISs/ Local sources)

Date	Affected Municipalities	Description	Reported Damage*
1951-1952	Ellisburg	Long-term high lake levels combined with high wind-generated waves caused severe flooding along the lake shore.	Not recorded
4/1963	Ellisburg	A discharge of 8,400 cfs in Sandy Creek inundated low-lying areas around the creek. With an estimated return period of 140 years, this event was the largest on record for this watercourse.	Not recorded

Table 3a.16
Selected Significant Flood Events in Jefferson County
(Source: NOAA NCDC / FISs/ Local sources)

Date	Affected Municipalities	Description	Reported Damage*
9/27/1975	Watertown	Jefferson County and the City of Watertown were declared under a formal state of emergency due to flooding after almost five inches of rain fell over a three-day period. The rainfall caused storm sewers in Watertown to overflow, basement and street flooding and the closure of several schools. In some areas of the county, the Black River overflowed its banks.	Not recorded
3/14/1977	Watertown	Flooding occurred as a result of deep snowpack, warm temperatures, and a large amount of rainfall. At the time the original Flood Insurance Study was compiled, this event was the largest flood on record on the Black River, with an estimated peak discharge at the Watertown USGS gauging station of 39,200 cfs.	Not recorded
12/1984	Countywide, Dexter	Heavy precipitation combined with unseasonably warm temperatures and rapidly melting snow. Flood damage to roads, bridges, and property exceeded $5 million in Jefferson and neighboring counties.	$5,000,000
2/1985	Watertown, Orleans	Flooding occurred along Kelsey and Cold Creeks, due to the small channel capacities, causing damage to homes and businesses.	Not recorded
4/1993	Carthage, Champion, Herrings, Wilna	Scores of families living along the Black River from Carthage to Herrings had to be evacuated from their homes due to rising floodwaters. A then-record crest of 14.2 feet was recorded on the Black River.	Not recorded
4/16/1994	Countywide, Watertown, Antwerp, Black River, Carthage, Brownville	Spring rains and snowmelt combined to raise the Black River above flood stage in Lewis and Jefferson Counties. The crest was about two feet above flood stage at Watertown. Several roads were closed. Most flooding occurred over agricultural lands; however some sandbagging was required to protect homes in the towns of Adams, Antwerp and Watertown and the villages of Black River and Carthage. Sandbagging was also required to protect at least one business in the Town of Brownville.	$50,000
1/19/1996	Countywide, Antwerp, Ellisburg,	Rapid snowmelt of two to three feet of snow combined with heavy rainfall to produce significant flooding on area creeks and the Black River. Damage to County roads and bridges was estimated at around $1 million, with an additional $350,000 in damages to Town roads. Ice jams along the Oswegatchie River near Oxbow, where about eight houses were flooded. Large chunks of ice accumulated on and along Route 3 in the Town of Ellisburg from Sandy Creek. Subsequent localized flooding occurred in February 1996 (snowmelt, ice jams).. Jefferson County became eligible for FEMA Public Assistance funds under federal disaster declaration DR-1095.	$1,350,000
1/8/1998	Countywide, Watertown, Carthage, West Carthage, Herrings,	One to two inches of rain fell on saturated ground across all of the North Country and eastern Lake Ontario counties. At Watertown, the Black River crested at 16.0 feet, a record flood and almost two feet above the previous record. Several streets in the city were flooded, as were areas along Kelsey and Cold Creeks. Flooded areas also along the Black River between Watertown and Lowville (including parts of Route 3 in Carthage and West Carthage), and areas along the Oswegatchie River. Sandbagging efforts were undertaken in many locations to protect lives and property. There was also extensive flooding along Route 3 towards Carthage and the Village of Herrings had to be evacuated. Twenty-five County roads were flooded and a bridge was washed out at South Main Street in Carthage.	$33,000

Table 3a.16
Selected Significant Flood Events in Jefferson County
(Source: NOAA NCDC / FISs/ Local sources)

Date	Affected Municipalities	Description	Reported Damage*
3/30/1998	Watertown, Carthage	Unseasonably warm weather resulted in rapid melt of the snowpack on the Tug Hill plateau. The snowmelt combined with additional rainfall caused the Black River to rise over its banks and exceed flood stage at Watertown. Lowland flooding occurred at Carthage. The river remained above flood stage at Watertown through the first week of April.	$50,000
4/15/2002	Watertown	Runoff from heavy rains and snowmelt caused the Black River to rise to bankfull. In Lewis county, agricultural lands were flooded in Martinsburg. At Watertown, Jefferson county, the river reached and exceeded the 10 foot flood stage for 45 hours, cresting at 10.7 feet..	$10,000
7/12/2004	Theresa	A nearly stationary thunderstorm dropped nearly three inches of rain in less than two hours in eastern Jefferson county. In the Town of Theresa, portions of County Routes 136 and 15 were washed out.	$25,000
4/2/2005	Countywide	Deep low pressure over Pennsylvania brought copious amounts of precipitation to western and central New York, falling mainly as rain across much of the area. Rainfall totals generally ranged from two to three inches. The rain, combined with snowmelt, produced flooding. The Black River at Watertown was above its 10' flood stage for 53 hours and crested at 10.93 feet.	$600,000
9/16/2005	Antwerp	Showers and thunderstorms moved across the North country during the evening hours with isolated areas of intense rain over Jefferson County. In the town of Antwerp, a portion of Route 22 was washed out by flash flooding.	$15,000
2/17/2006	Alexandria Bay, Cape Vincent, Clayton	Low pressure deepened as it tracked northeast into southern Ontario. In Jefferson County, eight foot surges on the St. Lawrence River damaged docks and boathouses and flooded streets in Cape Vincent, Clayton and Alexandria Bay.	Not recorded
7/24/2008	Ellisburg	Thunderstorms which crossed the area produced hail up to one inch in diameter and strong winds estimated to 60mph. The thunderstorms dropped heavy rain, as much as five inches in just a couple of hours over parts of the region. In Jefferson county, the heavy rains washed out several campsites at Southwick Beach and in Ellisburg, a one-mile stretch of Balch Place road was washed away	$125,000
7/2009	Philadelphia	Local sources reported flooding in the Village of Philadelphia in the summer of 2009	Not recorded

*May include damage incurred outside Jefferson County

Probability of Occurrence – Floods

The probability of occurrence of a flood at a given location (the odds of being flooded) is expressed in percentages as the chance of a flood of a specific magnitude occurring in any given year. The "100-year flood" has a 1% chance of occurring in any given year. The 100-year flood is often also referred to as the "base flood". This probability of occurrence might imply that a 100-year flood would reoccur only once every 100 years; in reality, this is not the case. A 100-year flood can happen multiple times in a single year, or not at all for more than 100 years. Properties located in FEMA-mapped A- and V-Zones are within the footprint of the 100-year floodplain. FEMA A-Zones represent the 100-year floodplain.

For all floodplains, there is an associated water surface elevation. This elevation is unique to any given location on the map (in other words, 100-year flood levels vary from one community to the next throughout Jefferson County, and also within individual communities).

Within the 100-year floodplain, flooding can occur at less than the 100-year flood level, and also more than the 100-year flood level. The 100-year flood represents a flood of high magnitude – it is a deep and widespread event. The 500-year flood is of a greater magnitude, and would be deeper and more widespread than a 100-year event. However, it is not as likely to occur. Smaller floods, with magnitudes of 10-years or 50-years for example, are also possible within the 100-year floodplain. These are not as deep or as widespread as a 100-year flood would be, however, they are much more likely to occur.

The term "100-year flood" can often be confusing to someone not intimately familiar with flooding or statistics. FEMA's *NFIP Floodplain Management Requirements: a Study Guide and Desk Reference for Local Officials* (FEMA-480), suggests that another way to look at flood risk is to think of the odds that a 100-year flood will happen some time during the life of a 30-year mortgage of a home in the floodplain. Figure 3a.19 illustrates these odds, over various time periods for different size floods. In any given year, a property in the 100-year floodplain has a 10 percent chance of being flooded by a 10-year flood, and a 1 percent chance of being flooded by a 100-year flood. This may not sound particularly risky at first glance. However, over a 30–year period, that same location has a 96 percent chance of being flooded by a 10-year flood and a 26 percent chance of being flooded by a 100-year flood.

Figure 3a.19: Odds of Being Flooded

WHAT ARE THE ODDS OF BEING FLOODED?

The term "100-year flood" has caused much confusion for people not familiar with statistics. Another way to look at flood risk is to think of the odds that a 100-year flood will happen sometime during the life of a 30-year mortgage—a 26% chance for a structure located in the SFHA.

Chance of Flooding over a Period of Years

Time Period	Flood Size 10-year	25-year	50-year	100-year
1 year	10%	4%	2%	1%
10 years	65%	34%	18%	10%
20 years	88%	56%	33%	18%
30 years	96%	71%	45%	26%
50 years	99%	87%	64%	39%

Even these numbers do not convey the true flood risk because they focus on the larger, less frequent, floods. If a house is low enough, it may be subject to the 10- or 25-year flood. During a 30-year mortgage, it may have a 26% chance of being hit by the 100-year flood, but the odds are 96% (nearly guaranteed) that it will be hit by a 10-year flood. Compare those odds to the only 1-2% chance that the house will catch fire during the same 30-year mortgage.

Ice Jams

Description

Ice jams form when ice floating downstream in a river stalls and begins to build into a jam, forming a dam. The "reservoir" behind the dam quickly fills with water until out of bank flooding occurs. The observed effect can be very similar to flash flooding, and sudden flooding downstream may be caused by the sudden failure or release of the ice jam. Ice jams generally form at locations where the ice transport downstream is reduced by an obstruction or a significant hydrologic change. Natural obstructions in the river can include bends, intact sheet ice cover, or a decrease in channel slope. Man-made obstructions can include bridges, existing dams, waterline crossings, and other constructions in the channel.

Ice jams and resulting floods can occur during fall freeze-up from the formation of frazil ice (a collection of loose, randomly oriented needle-shaped ice crystals) during midwinter periods when stream channels freeze solid forming anchor ice, and during spring breakup when rising water levels from snowmelt or rainfall break existing ice cover into large floating masses that lodge at bridges or other constructions. Damage from ice jam flooding may exceed that caused by open water flooding – flood elevations are usually higher than predicted for free-flow conditions and water levels may change rapidly. During cold weather, there is a reduction in evapotranspiration, infiltration (due to frozen ground) and surface storage, (due to the filling of ground depressions with snow and ice), which result in more water being delivered to the channel. Therefore for equal amounts of total available water during cold and warm seasons, the amount of excess water available for runoff will be greater during the cold season. Additional damage may be caused by the force of floating ice colliding with buildings, other structures, and automobiles.

Location and Extent – Ice Jams

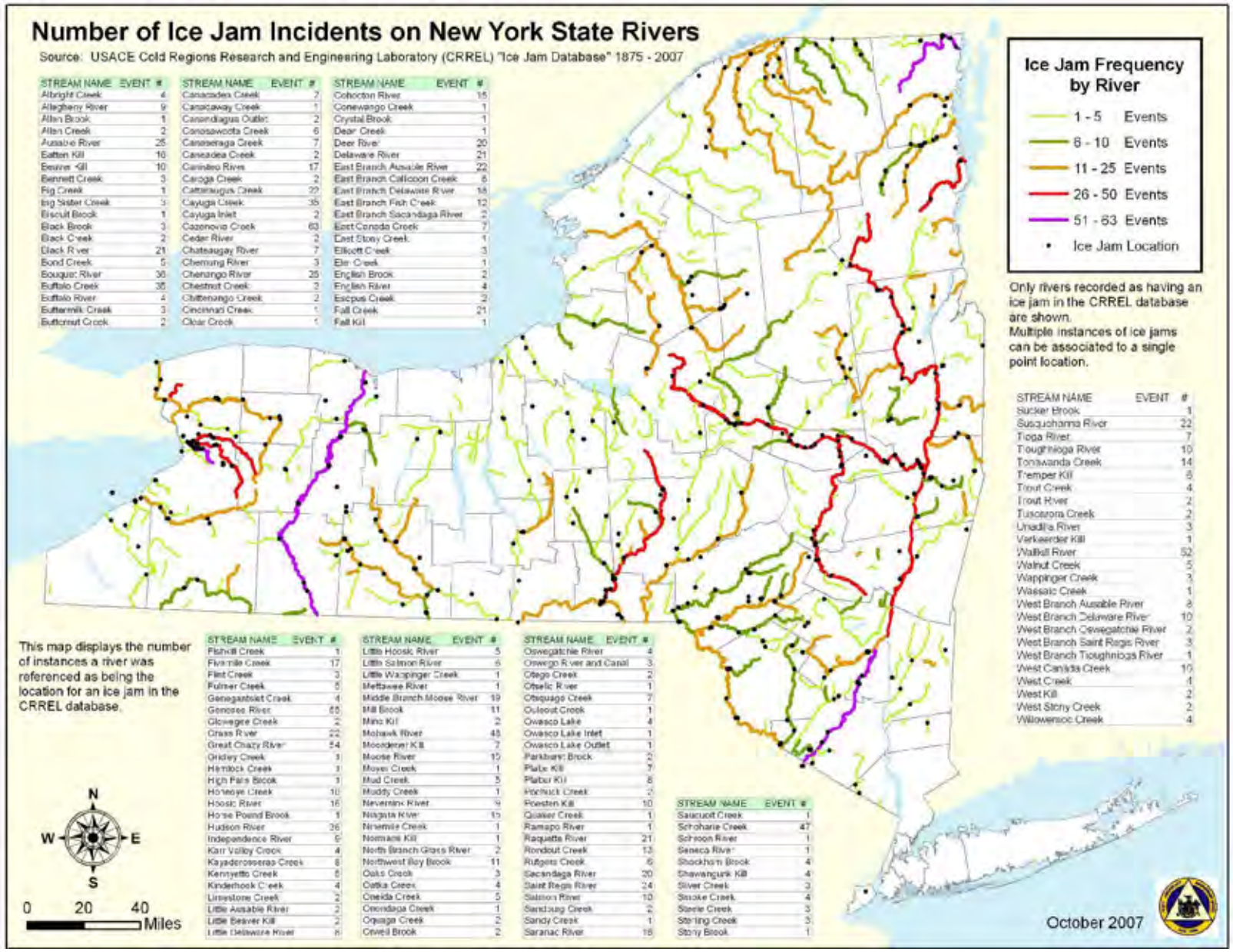
The identification of particular areas prone to ice jam flooding is difficult since the hazard is usually unpredictable and can be extremely localized. However, available research and historic data suggests that ice jam flood hazard is most common in areas of flat terrain where the climate included extended periods of temperature below zero. Ice jams are very common in the north east United States, and according to data from the USACE Cold Region Research and Engineering Laboratory (USACE CRREL), 1,442 ice jam events have been recorded in New York State between 1867 and 2008, a number exceeded only by the State of Montana.

Figure 3a.20 shows the locations of ice jam incidents that have been recorded by the CRREL in New York State from 1875 to 2007. Multiple instances of ice jams may be associated with a single point location. This figure identifies three locations in Jefferson County where ice jams have been recorded.

Previous Occurrences – Ice Jams

The USACE CRREL mapping indicates that ice jam incidents for which some details are available have been recorded at three locations within Jefferson County since 1875. Details have been recorded by CRREL for the incidents following Figure 3a.20.

Figure 3a.20: Ice Jam Incidents in New York State



January 2, 1979
The USGS reported an ice jam at Thomas Settlement on the Sandy Creek in the Town of Adams. No damages or other details were reported.

March 16, 1989
A change in slope and alluvial deposits resulted in an ice jam on West Creek just upstream of the Route 12 bridge in the Village of Evans Mills. The jam shoved downstream nearly to bridge and was estimated to be 5 feet thick, and overbank flooding was reported, but no damages or other details were recorded.

January 19, 1996
An ice jam formed on the Oswegatchie River at Oxbow, in the Town of Antwerp. The jam was several thousand feet long and the flow was forced into some backyards. The jam occupied the main channel in addition to adjacent wetlands and floodplains and although sandbagging was implemented, the jam caused basement flooding to five structures and threatened several more. When the water level receded, a semi-permanent sand berm was constructed to prevent further flooding. The jam was approximately mile long with the toe being at the end of a 180 degree bend. Flow entering the river below the village was eroding the toe of the jam. The Antwerp Town Supervisor reported that the jam was still in place on February 27, but there were no problems. Some minor ice jam flooding was also reported in the Town of Ellisburg at this time.

The Flood Insurance Studies (FIS) for the Towns of Champion, LeRay, Pamelia, Rutland and Wilna mention that ice jams have often contributed to increased flood heights by impeding the flow of water at bridges and culverts. The FIS for the Village of Philadelphia describes ice jams as the principal cause of flooding in that community.

In addition to USACE CRREL records and the Flood Insurance Studies, Core Planning Group members from eight towns and villages report specific ice jam incidents or concerns in their municipalities. In the Town of Henderson, ice jams are reported to occur annually on small watercourses, causing road flooding and erosion of bridge footings. In the Town of Alexandria, ice jams and damage from floating ice has been recorded at several riverside locations. The Town of Lorraine reports increasingly frequent ice jams on local watercourses which cause road flooding and hazardous travel conditions. Ice jams on the Black River have also been reported in the Town of Champion and the Village of West Carthage, which have flooded streets and disrupted travel and the provision of essential services. Non-specific ice jam problems or concerns were reported in the Town of Brownville, and the Villages of Dexter and Glen Park.

Probability of Occurrence – Ice Jams

Due to the nature of the terrain and the climate in Jefferson County, ice jam events are essentially certain to occur in the future, although whether or not such events will cause significant damage is less easy to predict, since detailed records of actual damage caused by ice jams are scarce. The available data also does not easily allow for a meaningful average number of occurrences per year to be computed, since the actual number of recorded incidents is quite low.

Earthquakes

Description – Earthquakes

FEMA defines the term "earthquake" as a sudden, rapid shaking of the Earth caused by the breaking and shifting of rock beneath the Earth's surface. This movement forces the gradual buildup and accumulation of energy. Eventually, strain becomes so great that the energy is abruptly released, causing the shaking at the earth's surface which we know as an earthquake.

According to the USGS Earthquake Hazards Program, most earthquakes (approximately 90%) occur at the boundaries where the plates meet, although it is possible for earthquakes to occur entirely within plates. Jefferson County is significantly distant from any plate boundaries. Regardless of where they are centered, earthquakes can impact locations at – and well beyond – their point of origin. They are often accompanied by "aftershocks" – secondary quakes in the earthquake sequence. Aftershocks are typically smaller than the main shock, and can continue over a period of weeks, months, or years from the main shock. In addition to the effects of ground shaking, earthquakes can also cause landslides and liquefaction under certain conditions. Liquefaction occurs when unconsolidated, saturated soils exhibit fluid-like properties due to intense shaking and vibrations experienced during an earthquake. Together, ground shaking, landslides, and liquefaction can damage or destroy buildings, disrupt utilities (i.e., gas, electric, phone, water), and sometimes trigger fires.

Location and Extent– Earthquakes

Earthquakes are possible within any of Jefferson County's communities. Figures 3a.21 and 3a 22 show the earthquake hazard maps for the conterminous United States and also New York State, which are prepared by the USGS Earthquake Hazards Program. It shows that the earthquake hazard in New York State is low relative to other parts of the country (for example the west coast of the USA), but the possibility for noticeable earthquakes does exist in the State.

Figure 3a.21: Earthquake Hazard Map of the Conterminous United States

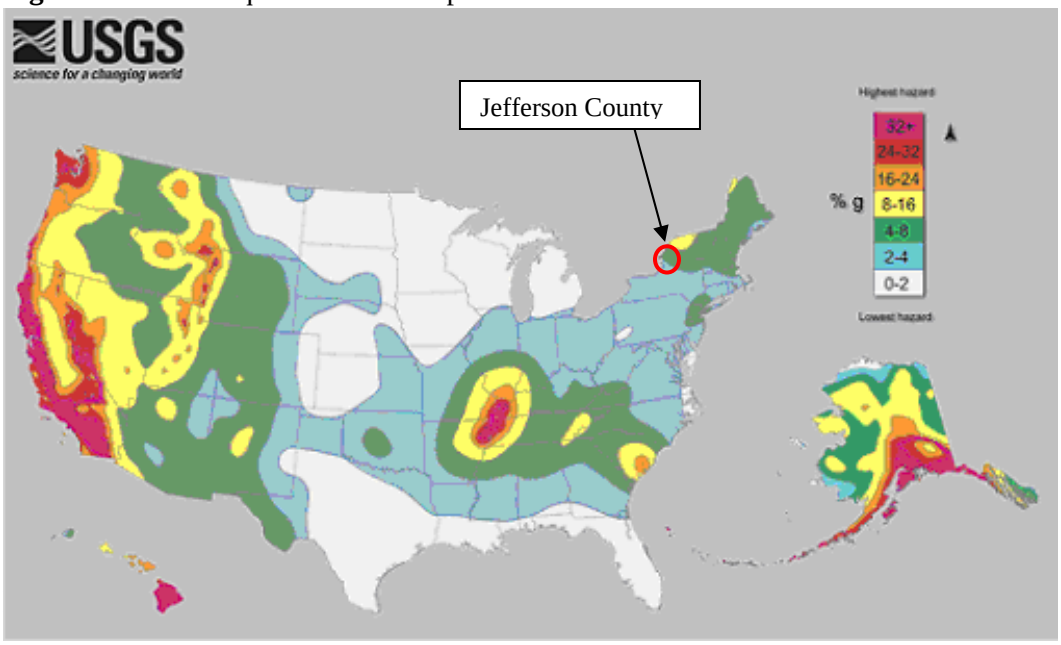
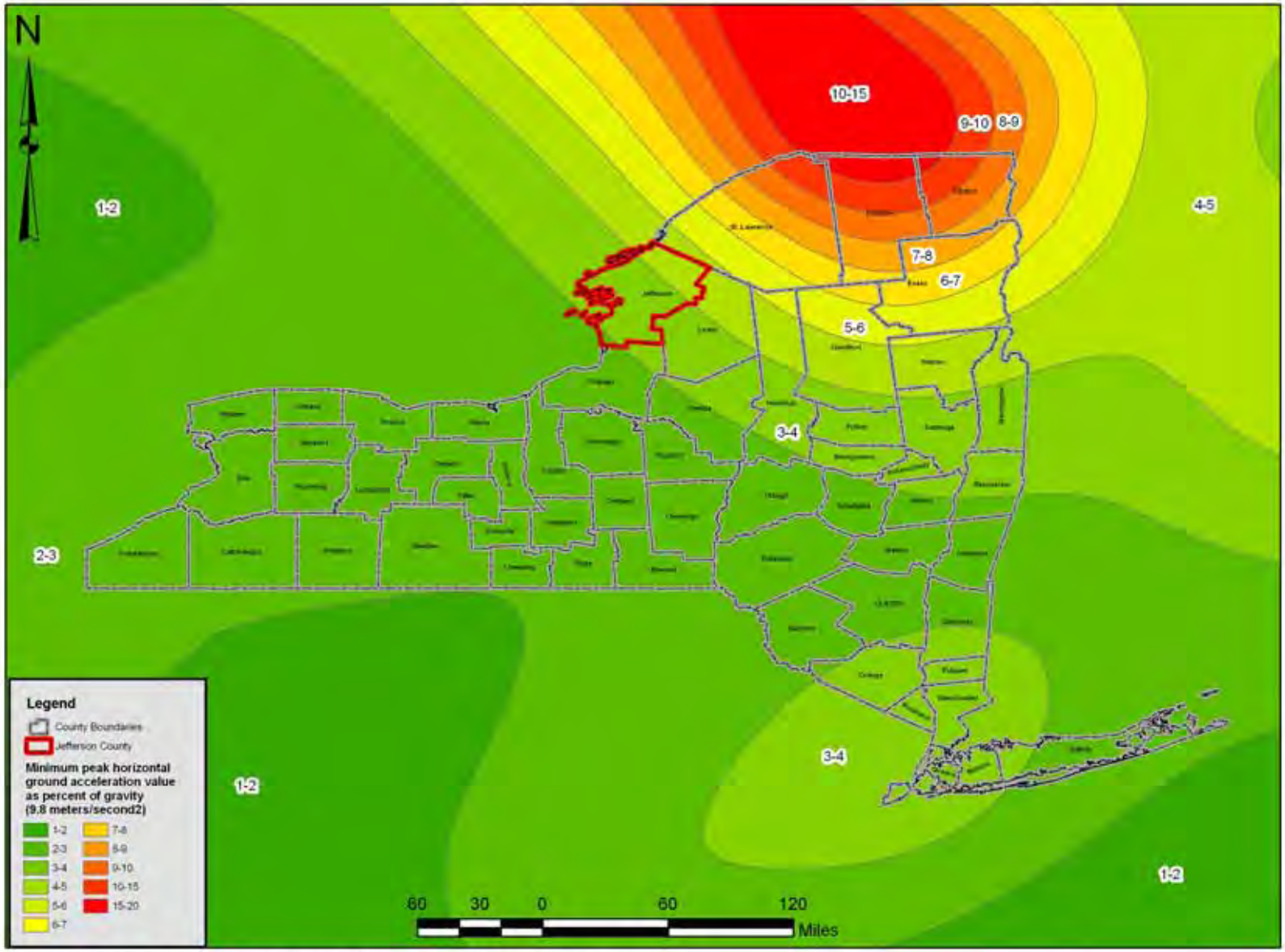


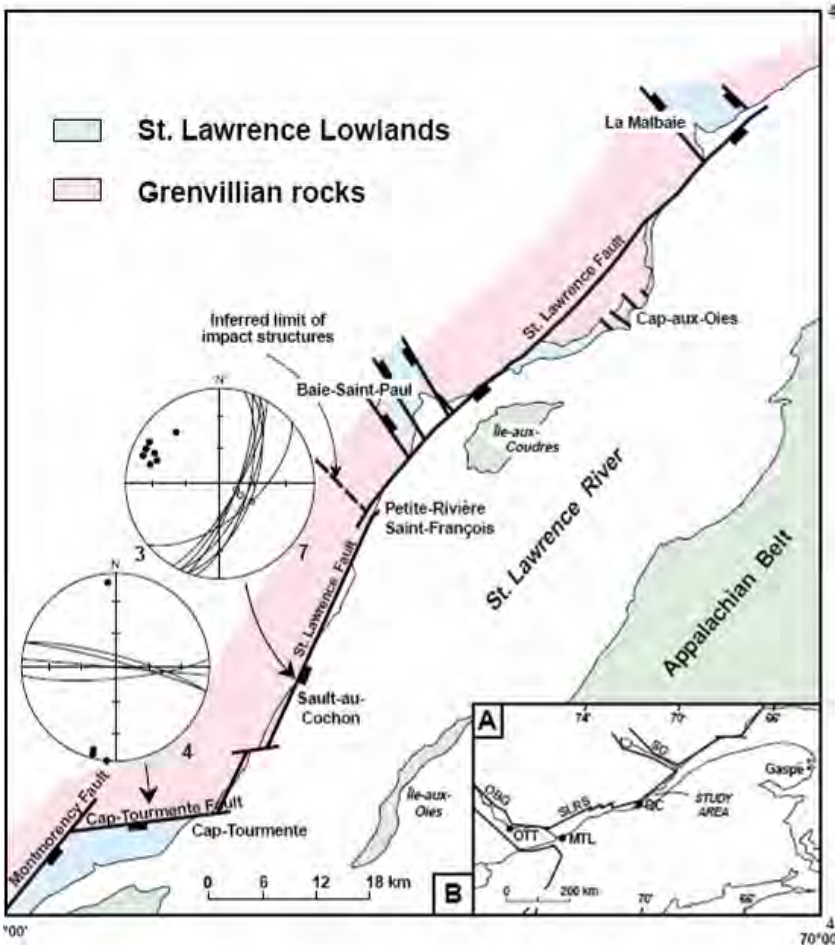
Figure 3a.22: Earthquake Hazard Map of New York State



Source: U.S.G.S. National Seismic Hazard Maps. 2008; ESRI, US Counties, 2005.

Of particular interest to this hazard mitigation plan is the St. Lawrence Rift System, which has been mapped from northern New York State into Canada and beyond. These faults were particularly active during the Late Proterozoic-Early Paleozoic periods. These faults are attributed to the opening of the Iapetus Ocean, the precursor of the Atlantic Ocean. The rift system runs parallel to the St Lawrence River for approximately 620miles. The epicenters of earthquakes recorded between 1627 and 2003 have generally tended to be clustered around rift zone, (in which the main faults are shown as black lines).

Figure 3a.23: The St Lawrence Rift Zone



The severity of an earthquake at a given location depends on the amount of energy released at the epicenter, and the location's distance from the epicenter. The terms "magnitude" and "intensity" are two terms used to describe the severity of an earthquake. An earthquake's "magnitude" is a measurement of the total amount of energy released while its "intensity" is a measure of the effects of an earthquake at a particular place. Another way to express an earthquake's severity is to compare its acceleration to the normal acceleration due to gravity. Peak Ground Acceleration (PGA) measures the rate of change in motion of the earth's surface and expresses it as a percent of the established rate of acceleration due to gravity (9.8 m/sec^2). Figure 3a.22 shows that, for north eastern Jefferson County, PGA values of between 4 and 5% of gravity have a 10 percent chance of being exceeded over 50 years. The remainder of Jefferson County also has some degree of exposure to the earthquake hazard.

An approximate relationship between PGA, magnitude, and intensity is shown in Table 3a.17. Using Table 3a.17, one can approximate that, for an earthquake of expected severity for Jefferson County and its

participating jurisdictions (PGA values of 3 to 5%g), perceived shaking would be light to moderate (depending upon the distance from the epicenter) and potential damage could range from none to very light (also depending upon the distance from the epicenter).

Table 3a.17
Earthquake Magnitude/Intensity Comparison

PGA	Magnitude	Intensity	Perceived Shaking	Potential Damage
< 0.17	1.0 - 3.0	I	Not Felt	None
0.17 – 1.4	3.0 – 3.9	II - III	Weak	None
1.4 – 9.2	**4.0 – 4.9**	**IV – V**	**IV. Light** **V. Moderate**	**IV. None** **V. Very Light**
9.2 - 34	5.0 – 5.9	VI – VII	VI. Strong VII. Very Strong	VI. Light VII. Moderate
34 - 124	6.0 – 6.9	VIII - IX	VIII. Severe IX. Violent	VIII. Moderate/Heavy IX. Heavy
> 124	7.0 and higher	X and higher	Extreme	Very Heavy

Sources: (1) FEMA Mitigation Planning "How-To" Guide 386-2 (as reported in the New York State Hazard Mitigation Plan 2005; (2) Wald, D., et al., 1999, Relationship between Peak Ground Acceleration, Peak Ground Motion, and Modified Mercalli Intensity in California", Earthquake Spectra, V. 15, p. 557-564; (3) Community Internet Intensity, USGS Modified Mercalli Intensity, and Instrumental Intensity. 1999. http://www-socal.wr.usgs.gov/ciim/pubs/ciim/node5.html (July 27, 2003).

An earthquake with a 10 percent chance of exceedance over 50 years in Jefferson County would have a PGA of 3 to 5%g and an intensity ranging from only IV to V, which would result in light to moderate perceived shaking, and damages ranging from none to very light. For comparison purposes, an earthquake of intensity IV on the Modified Mercalli Scale would most likely cause vibrations similar to heavy trucks driving over roads, or the sensation of a jolt. Hanging objects would swing; standing cars would rock; windows, dishes and doors would rattle; and, in the upper ranges of intensity IV, wooden walls and frames would creak. An earthquake of intensity V on the Modified Mercalli Scale would be felt outdoors, awaken sleepers, disturb or spill liquids, displace small unstable objects, swing doors, and cause shutters and pictures to move. Less frequent earthquakes of high magnitude with much higher PGA's and, in turn, substantially higher damage potentials, are possible in Jefferson County - with return periods of 100 to 2500 years. As shown in Figure 3a.25, when soil type is taken into account, the PGAs with a 2% probability of exceedance over 50 years range from 25 to 94, depending on location; this corresponds to very strong to violent perceived shaking and moderate to heavy damages.

As noted in the New York State Hazard Mitigation Plan, soil type can have an impact on the severity of an earthquake at a given location. For example, soft soils (i.e., fill, sand) are more likely to amplify ground motion during an earthquake. Liquefaction is also more likely to occur in areas of soft soils. In contrast, harder soils (i.e., granite) tend to reduce ground motion during an earthquake. Figure 3a.24 shows soil types in five basic categories with varying degrees in likelihood of amplifying the affects of an earthquake, with Category A being far less likely to amplify the seismic motion than Category E.

The soil types and surficial materials have been combined with the seismic hazards by the New York State Emergency Management office and the State Geological Survey in Figure 3a.25 to provide an adjusted, more refined picture of the earthquake hazard in terms of earthquake spectral acceleration*, which is a more accurate indicator of damage to buildings, which in some areas of the state results in a significantly higher earthquake hazard than is evident from the simple USGS mapping of Figure 3a.22.

*While PGA (peak ground acceleration) is what is experienced by a particle on the ground, **spectral acceleration** is approximately what is experienced by a building, as modeled by a particle on a massless vertical rod having the same natural period of vibration as the building (USGS).

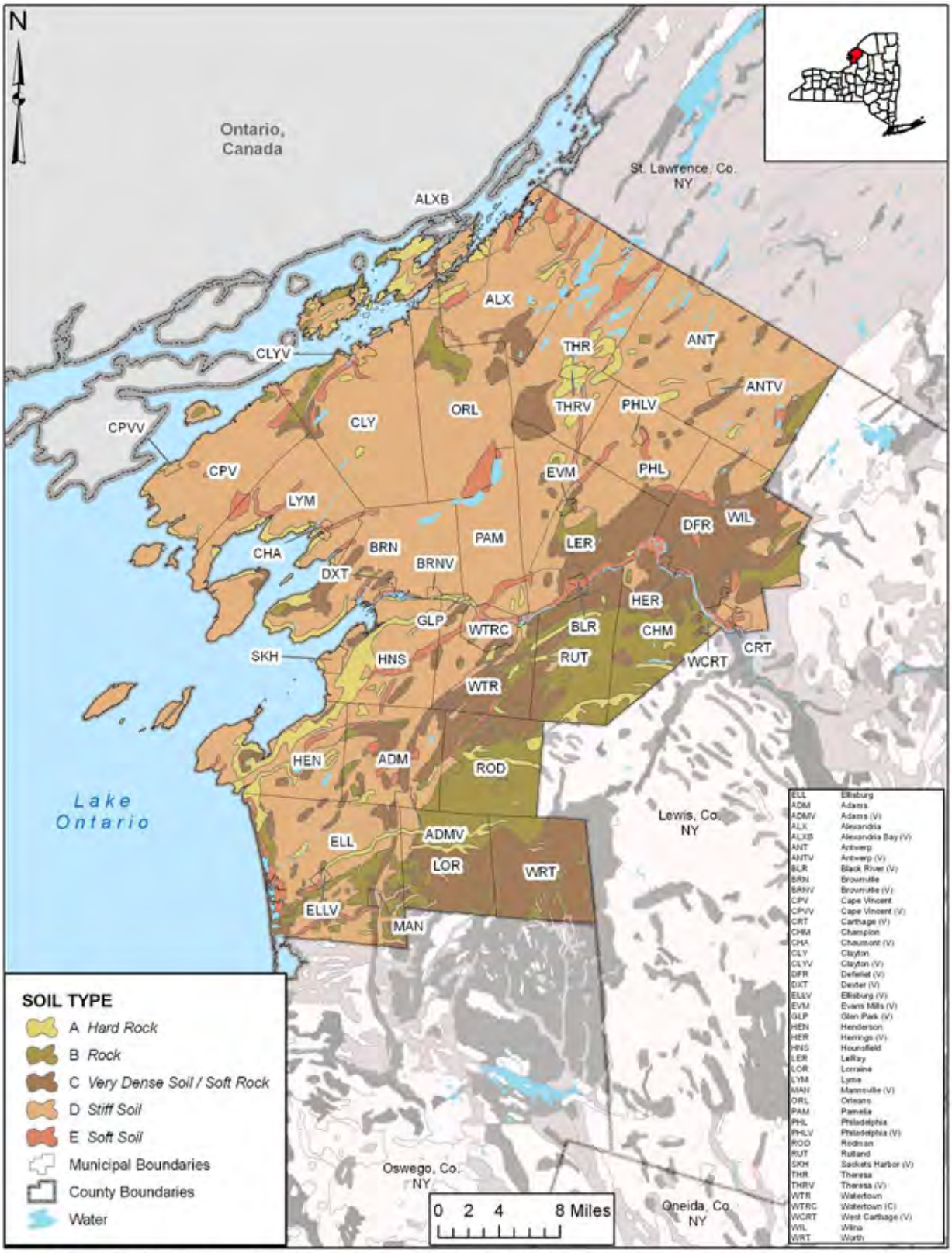
Table 3a.18 presents the areas of earthquake hazard risk in each municipality by the adjusted spectral acceleration (SA) with a 2% probability of occurrence in 50 years. Table 3a.19 presents the values of improved property within those hazard areas for each municipality. For clarity and conciseness Tables 3a.18 and 3a.19 have omitted the acreages and improved values in areas of the two lowest risk hazard bands included in Figure 3a.25.

Over the County as a whole, approximately one third of the County's land area and improved property value is located in the two lowest risk bands plotted in Figure 3a.25, while slightly less than half of the County's area and improved value is located in the third lowest risk band (a 0.2 second duration Spectral Acceleration of 35-45%g has a 2% probability of exceedance in 50 years.

Only 0.01% of the overall County land area and improved value lie in the highest risk band, and only three individual municipalities include land and improved property located in this band (the Towns of Alexandria, Antwerp, and Theresa in the northern part of the County), but in each case the proportion of the town's land or value located in this zone is between 0.2 and 1.8%. However, while overall only 9% of the total County improved property value lies in the second highest risk band, there are several municipalities which individually have much higher proportions of improved value in this band: leading this group is the Village of Black River, with 79% of its improved property value in this band, followed by the villages of Deferiet, Herrings, and Carthage with between 47% and 37% of their improved property in this band. Of the 43 municipalities in the County, 23 have no land or improved property in either of the two highest earthquake risk bands.

A more detailed breakdown of parcels and property exposed to the earthquake hazard by land use types is presented in Appendix A.

Figure 3a.24: Jefferson County Geological Soil Classification



Source: Jefferson County Planning Department, Jefferson County and Municipal Lines, 2004; ESRI, Canada Provinces, 2000, U.S. Census Bureau Area Hydrography, 2008, Census Railroads, New York State, 2001; NYS Geological Survey, NEHRP Soil Class Data

Figure 3a.25: Jefferson County Earthquake Hazard: Combined Seismic Risk/Soils Type

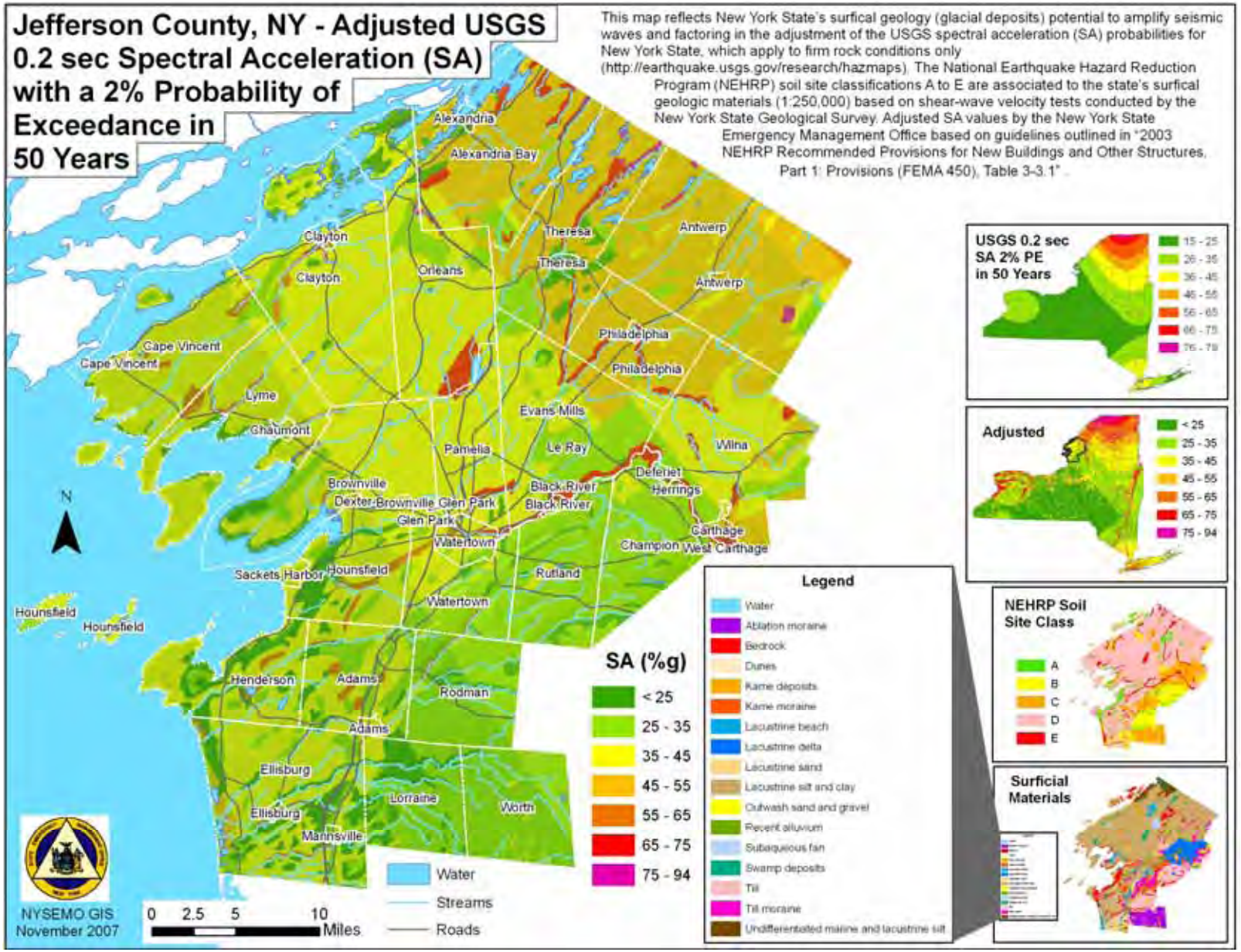


Table 3a.18
Jefferson County Earthquake Hazard: Adjusted USGS 0.2 Sec Spectral Acceleration With a 2% Probability of Exceedance over 50 Years - Acreages
*(Source: **NYSEMO/NYS Geological Survey**)*

Municipality	Total Acres	SA (%g) 35-45		SA (%g) 45-55		SA (%g) 55-65		SA (%g) 65-75		SA (%g) 75-94	
		Acres	%	Acres	%	Acres	%	Acres	%	Acres	%
Adams, Town of	26,240	15,042	57%	0	0%	1,395	5%	0	0%	0	0%
Adams, Village of	891	848	95%	0	0%	0	0%	0	0%	0	0%
Alexandria, Town of	47,333	3,974	8%	33,903	72%	0	0%	3,866	8%	200	0%
Alexandria Bay, Village of	492	0	0%	33	7%	0	0%	0	0%	0	0%
Antwerp, Town of	68,717	4,850	7%	58,893	86%	572	1%	0	0%	776	1%
Antwerp, Village of	661	0	0%	661	100%	0	0%	0	0%	0	0%
Black River, Village of	1,207	0	0%	0	0%	0	0%	663	55%	0	0%
Brownville, Town of	37,170	29,453	79%	0	0%	799	2%	0	0%	0	0%
Brownville, Village of	409	337	82%	0	0%	0	0%	0	0%	0	0%
Cape Vincent, Town of	35,696	31,513	88%	0	0%	1,557	4%	0	0%	0	0%
Cape Vincent, Village of	475	383	81%	0	0%	0	0%	0	0%	0	0%
Carthage, Village of	1,736	173	10%	742	43%	0	0%	678	39%	0	0%
Champion, Town of	27,853	1,260	5%	0	0%	0	0%	877	3%	0	0%
Chaumont, Village of	643	398	62%	0	0%	93	14%	0	0%	0	0%
Clayton, Town of	52,449	44,460	85%	0	0%	1,178	2%	434	1%	0	0%
Clayton, Village of	1,077	857	80%	0	0%	0	0%	131	12%	0	0%
Deferiet, Village of	482	0	0%	0	0%	0	0%	137	28%	0	0%
Dexter, Village of	460	308	67%	0	0%	151	33%	0	0%	0	0%
Ellisburg, Town of	53,521	32,018	60%	2,007	4%	928	2%	0	0%	0	0%
Ellisburg, Village of	641	427	67%	0	0%	78	12%	0	0%	0	0%
Evans Mills, Village of	522	159	31%	0	0%	0	0%	0	0%	0	0%
Glen Park, Village of	480	175	36%	0	0%	0	0%	0	0%	0	0%
Henderson, Town of	26,754	17,423	65%	161	1%	942	4%	0	0%	0	0%
Herrings, Village of	186	0	0%	0	0%	0	0%	89	48%	0	0%
Hounsfield, Town of	30,123	20,247	67%	0	0%	1,819	6%	0	0%	0	0%
Le Ray, Town of	46,268	21,968	47%	5,221	11%	0	0%	2,693	6%	0	0%

Table 3a.18
Jefferson County Earthquake Hazard: Adjusted USGS 0.2 Sec Spectral Acceleration With a 2% Probability of Exceedance over 50 Years - Acreages
*(Source: **NYSEMO/NYS Geological Survey**)*

Municipality	Total Acres	SA (%g) 35-45		SA (%g) 45-55		SA (%g) 55-65		SA (%g) 65-75		SA (%g) 75-94	
		Acres	%	Acres	%	Acres	%	Acres	%	Acres	%
Lorraine, Town of	24,980	2,419	10%	0	0%	0	0%	0	0%	0	0%
Lyme, Town of	35,339	29,973	85%	0	0%	2,209	6%	0	0%	0	0%
Mannsville, Village of	595	228	38%	0	0%	0	0%	0	0%	0	0%
Orleans, Town of	46,157	33,403	72%	605	1%	0	0%	2,696	6%	0	0%
Pamelia, Town of	22,692	21,054	93%	0	0%	86	0%	1,136	5%	0	0%
Philadelphia, Town of	23,479	1,245	5%	20,189	86%	0	0%	1,436	6%	0	0%
Philadelphia, Village of	609	0	0%	412	68%	0	0%	197	32%	0	0%
Rodman, Town of	27,083	625	2%	0	0%	494	2%	0	0%	0	0%
Rutland, Village of	28,482	603	2%	0	0%	0	0%	111	0%	0	0%
Sackets Harbor, Village of	1,485	1,275	86%	0	0%	0	0%	0	0%	0	0%
Theresa, Town of	44,075	666	2%	32,251	73%	0	0%	2,657	6%	814	2%
Theresa, Village of	847	0	0%	11	1%	0	0%	0	0%	0	0%
Watertown, City of	5,972	7,562	127%	0	0%	679	11%	44	1%	0	0%
Watertown, Town of	22,935	3,738	16%	0	0%	868	4%	411	2%	0	0%
West Carthage, Village of	896	0	0%	213	24%	0	0%	157	18%	0	0%
Wilna, Town of	48,096	24,787	52%	13,518	28%	0	0%	2,627	5%	0	0%
Worth, Town of	27,455	847	3%	0	0%	0	0%	0	0%	0	0%
County Totals	*823,662*	*354,698*	*43%*	*168,819*	*20%*	*13,846*	*2%*	*21,039*	*3%*	*1,790*	*0%*

Low risk SA categories (<25 and 25 – 35) omitted for clarity

Table 3a.19
Jefferson County Earthquake Hazard: Adjusted USGS 0.2 Sec Spectral Acceleration With a 2% Probability of Exceedance over 50 Years – Improved Property Values
(Source: NYSEMO/NYS Geological Survey)

Municipality	Total Improved Value	SA (%g) 35-45		SA (%g) 45-55		SA (%g) 55-65		SA (%g) 65-75		SA (%g) 75-94	
		Improved Value	%	Improved Value	%	Improved Value	%	Improved Value	%	Improved Value	%
Adams, Town of	$175,730,094	$104,899,282	60%	$0	0%	$11,444,391	7%	$0	0%	$0	0%
Adams, Village of	$75,977,600	$75,823,559	100%	$0	0%	$0	0%	$0	0%	$0	0%
Alexandria, Town of	$259,310,598	$7,809,766	3%	$169,535,587	65%	$0	0%	$4,074,558	2%	$86,095	0.03%
Alexandria Bay, Village of	$102,359,250	$0	0%	$116,502	0%	$0	0%	$0	0%	$0	0%
Antwerp, Town of	$35,680,827	$2,216,781	6%	$31,210,096	87%	$6,527	0%	$0	0%	$74,512	0.21%
Antwerp, Village of	$22,782,543	$0	0%	$22,782,543	100%	$0	0%	$0	0%	$0	0%
Black River, Village of	$69,017,493	$0	0%	$0	0%	$0	0%	$54,646,048	79%	$0	0%
Brownville, Town of	$195,286,898	$113,997,395	58%	$0	0%	$4,254,338	2%	$0	0%	$0	0%
Brownville, Village of	$44,738,926	$36,082,069	81%	$0	0%	$0	0%	$0	0%	$0	0%
Cape Vincent, Town of	$262,362,672	$187,687,147	72%	$0	0%	$13,373,631	5%	$0	0%	$0	0%
Cape Vincent, Village of	$54,387,216	$35,500,004	65%	$0	0%	$0	0%	$0	0%	$0	0%
Carthage, Village of	$148,112,520	$143,170	0%	$87,366,332	59%	$0	0%	$54,067,563	37%	$0	0%
Champion, Town of	$158,423,000	$12,979,492	8%	$0	0%	$0	0%	$728,696	0%	$0	0%
Chaumont, Village of	$40,576,245	$19,922,055	49%	$0	0%	$6,841,298	17%	$0	0%	$0	0%
Clayton, Town of	$269,994,120	$169,837,084	63%	$0	0%	$3,598,448	1%	$1,846,988	1%	$0	0%
Clayton, Village of	$138,078,500	$119,060,839	86%	$0	0%	$0	0%	$4,780,888	3%	$0	0%
Deferiet, Village of	$26,850,800	$0	0%	$0	0%	$0	0%	$12,591,994	47%	$0	0%
Dexter, Village of	$46,324,924	$20,828,530	45%	$0	0%	$25,496,394	55%	$0	0%	$0	0%
Ellisburg, Town of	$138,555,517	$62,831,055	45%	$753,935	1%	$2,084,517	2%	$0	0%	$0	0%
Ellisburg, Village of	$7,411,700	$3,231,292	44%	$0	0%	$2,469,600	33%	$0	0%	$0	0%
Evans Mills, Village of	$27,725,000	$5,517,903	20%	$0	0%	$0	0%	$0	0%	$0	0%
Glen Park, Village of	$59,893,013	$3,599,610	6%	$0	0%	$0	0%	$0	0%	$0	0%
Henderson, Town of	$191,012,823	$133,223,274	70%	$1,441,839	1%	$312,321	0%	$0	0%	$0	0%
Herrings, Village of	$7,954,100	$0	0%	$0	0%	$0	0%	$3,199,622	40%	$0	0%
Hounsfield, Town of	$125,487,625	$79,625,914	63%	$0	0%	$3,747,526	3%	$0	0%	$0	0%
Le Ray, Town of	$1,180,782,881	$310,704,288	26%	$107,165,162	9%	$0	0%	$100,866,595	9%	$0	0%

Table 3a.19
Jefferson County Earthquake Hazard: Adjusted USGS 0.2 Sec Spectral Acceleration
With a 2% Probability of Exceedance over 50 Years – Improved Property Values
*(Source: **NYSEMO/NYS Geological Survey**)*

Municipality	Total Improved Value	SA (%g) 35-45		SA (%g) 45-55		SA (%g) 55-65		SA (%g) 65-75		SA (%g) 75-94	
		Improved Value	%	Improved Value	%	Improved Value	%	Improved Value	%	Improved Value	%
Lorraine, Town of	$27,780,851	$7,278,646	26%	$0	0%	$0	0%	$0	0%	$0	0%
Lyme, Town of	$196,346,342	$100,955,893	51%	$0	0%	$13,465,272	7%	$0	0%	$0	0%
Mannsville, Village of	$19,161,884	$2,957,395	15%	$0	0%	$0	0%	$0	0%	$0	0%
Orleans, Town of	$307,380,200	$176,002,524	57%	$2,869,266	1%	$0	0%	$1,113,880	0%	$0	0%
Pamelia, Town of	$199,473,646	$167,066,601	84%	$0	0%	$1,035,170	1%	$27,630,608	14%	$0	0%
Philadelphia, Town of	$74,670,470	$80,710	0%	$69,352,027	93%	$0	0%	$4,493,809	6%	$0	0%
Philadelphia, Village of	$53,296,960	$0	0%	$38,105,724	71%	$0	0%	$15,191,236	29%	$0	0%
Rodman, Town of	$38,203,936	$1,677,488	4%	$0	0%	$338,242	1%	$0	0%	$0	0%
Rutland, Village of	$87,650,231	$1,227,472	1%	$0	0%	$0	0%	$12,926	0%	$0	0%
Sackets Harbor, Village of	$100,401,726	$89,603,401	89%	$0	0%	$0	0%	$0	0%	$0	0%
Theresa, Town of	$89,173,551	$1,349,939	2%	$67,952,743	76%	$0	0%	$4,182,983	5%	$232,903	0.3%
Theresa, Village of	$33,167,705	$0	0%	$30,175	0%	$0	0%	$0	0%	$0	0%
Watertown, Town of	$475,544,391	$151,235,459	32%	$0	0%	$1,465,989	0%	$1,065,223	0%	$0	0%
Watertown, City of	$1,234,445,882	$996,477,655	81%	$0	0%	$147,741,459	12%	$21,358,615	2%	$0	0%
West Carthage, Village of	$77,658,900	$0	0%	$12,937,637	17%	$0	0%	$11,047,221	14%	$0	0%
Wilna, Town of	$70,683,576	$15,516,509	22%	$24,270,746	34%	$0	0%	$10,718,099	15%	$0	0%
Worth, Town of	$9,376,136	$49,344	1%	$0	0%	$0	0%	$0	0%	$0	0%
County Totals	$6,959,233,272	*$3,216,999,544*	*46%*	*$635,890,314*	*9%*	*$237,675,124*	*3%*	*$333,617,552*	*5%*	*$393,510*	*0.01%*

Low risk SA categories (<25 and 25 – 35) omitted for clarity

Previous Occurrences - Earthquakes

As noted in the New York State Mitigation Plan, although the probability of damaging earthquakes in New York State is low, earthquakes do occur on a regular basis in New York. Figure 3a.26 illustrates the location of earthquake epicenters in New York, as obtained from the New York State Hazard Mitigation Plan, for earthquakes that occurred between 1737 and May 1986. Table 3a.20 presents details for earthquakes recorded in New York State since 1737 that were recorded in the 2006 NYS statistical yearbook. The list records three significant seismic events in the vicinity of Jefferson County: The first was an event of reported magnitude 4.7 – 5.0 (depending on the source) centered in the adjacent St. Lawrence County in December 1867, and the second was an earthquake of Intensity VI in the vicinity of Blue Mountain Lake in the Adirondack Park Preserve in October 1983, approximately 60 miles east of Jefferson County. Light damage occurred in several towns in the region. The most common effects include cracked chimneys, broken dishes and glassware, overturned/falling objects. Although only causing minor damage, it was felt over 12 states and 2 provinces in Canada.

Figure 3a.26: Significant Earthquake Epicenters in New York State (1737-1986)

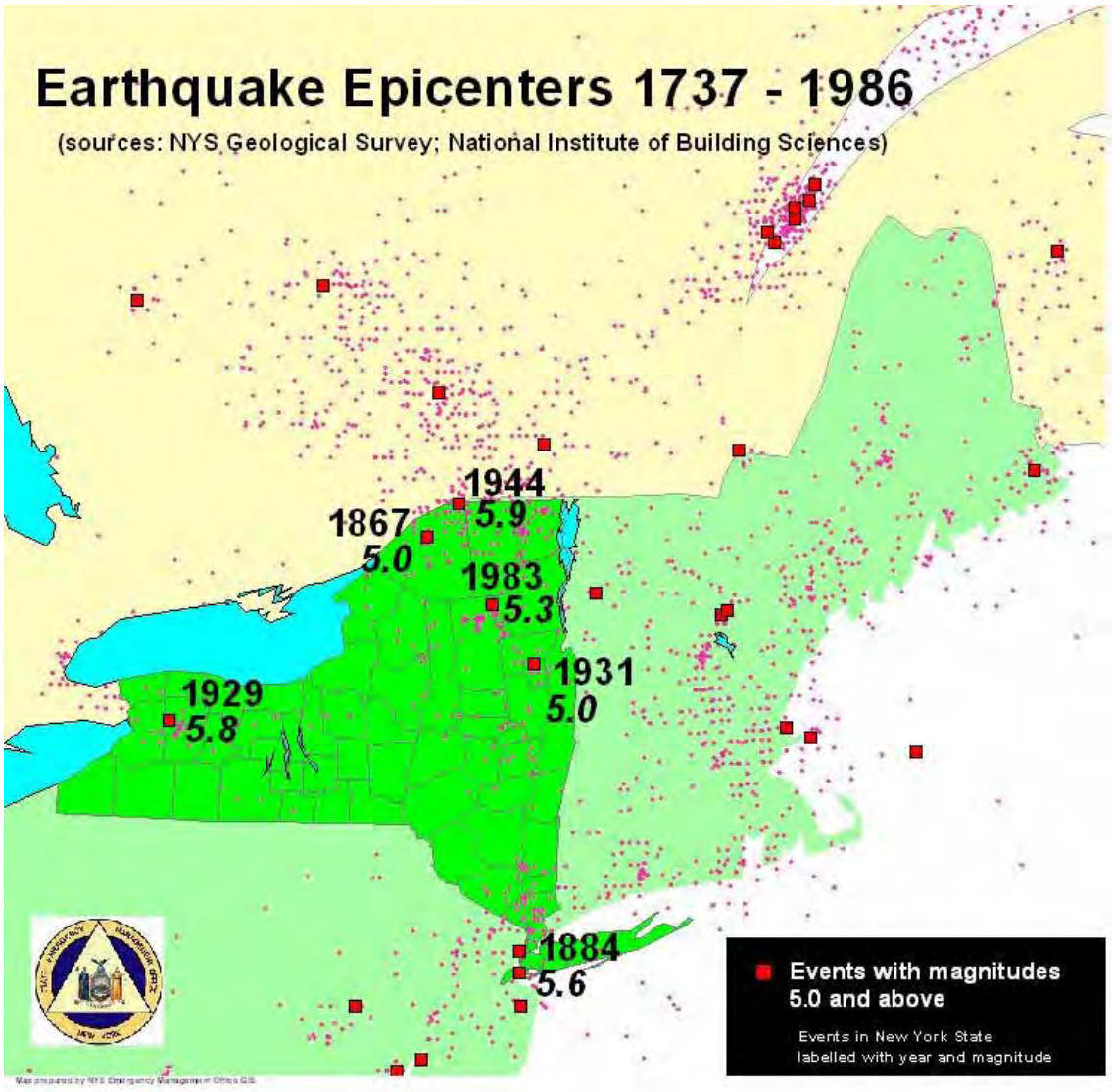


Figure 3a.26 indicates that three additional minor earthquakes have been epicentered in Jefferson County since 1737, although details of these events were not readily available. Local sources also report that an earthquake in 1980 caused significant damage to the old stone church in Depauville, in the Town of Clayton.

There has been one Federally-declared disaster in New York State due to an earthquake, following an event of Magnitude 3.1 that occurred in the far north eastern part of the state in April 2002 (with aftershocks in May 2002). Jefferson County was not affected by this event.

Table 3a.20
Earthquake History Throughout New York State (1737 – 2005)
(Source: NYSEMO / NYS Statistical Yearbook 2006)

Date	Location	Size	Damage Description
December 18, 1737	New York City	5.2	Bells rang, several chimneys fell
January 16, 1840	Herkimer	3.7	No reference and/or No damage reported
September 2, 1847	Offshore NYC	3.5	No reference and/or No damage reported
September 9, 1848	Rockland Lake	V	Felt by many
March 12, 1853	**Lowville**	**VI**	**Machinery knocked over**
February 7, 1855	Saugerties	VI	Cryoseism
October 23, 1857	Buffalo (Lockport)	4.0	Bells rang, crocks fell from shelves
December 18, 1867	**Canton, St. Lawrence County**	**4.7**	**Sleepers awakened**
December 11, 1874	Tarrytown*	3.4	No reference and/or No damage reported
November 4, 1877	Lyon Mountain	VII	Chimneys down, walls cracked, window damaged, crocks overturned
August 10, 1884	New York Bight (NYC)	5.2	Chimneys and bricks fell, walls cracked
May 28, 1897	Dannemora	4.5	No reference and/or No damage reported
February 3, 1916	Schenectady	3.8	Broke windows, people thrown out of bed
March 18, 1928	Saranac Lake	4.0	No reference and/or No damage reported
August 12, 1929	Attica	5.2	250 chimneys fell, brick buildings damaged, Attica prison walls, wells went dry
April 20, 1931	Warrensburg	4.8	Chimneys fell, church spire twisted
April 15, 1934	Dannemora	3.9	House shifted
July 9, 1937	Brooklyn	3.5	No reference and/or No damage reported
September 5, 1944	Corwall, Ontario/Massena, NY	5.8	Nearly all chimneys fell, buildings damaged, $2 million damage
September 5, 1944	Corwall, Ontario/Massena, NY	4.5	Chimneys destroyed, houses damaged
September 3, 1951	Rockland County	3.6	No reference and/or No damage reported
January 1, 1966	Attica	4.7	Chimneys and walls damaged
June 13, 1967	Attica	3.9	Chimneys and walls damaged

Table 3a.20
Earthquake History Throughout New York State (1737 – 2005)
(Source: NYSEMO / NYS Statistical Yearbook 2006)

Date	Location	Size	Damage Description
May 23, 1971	Blue Mountain Lake	4.1	No reference and/or No damage reported
May 23, 1971	Blue Mountain Lake	3.5	No reference and/or No damage reported
June 7, 1974	Wappingers Falls	3.0	Windows broken
June 9, 1975	Plattsburgh (Altona)	3.5	Chimneys and fireplaces cracked
November 3, 1975	Raquette Lake	4.0	No reference and/or No damage reported
February 2, 1983	Scarsdale-Lagrangeville	3.0	Chimneys cracked
October 7, 1983	**Goodnow, Adirondack Mountains**	**5.1**	**Tombstones rotated, some cracked chimneys, windows broken, walls damaged**
October 19, 1985	Ardsley	4.0	Windows broken, walls damaged
June 17, 1991	Richmondville	4.0	No reference and/or No damage reported
March 10, 1992	East Hampton, Suffolk County	4.1	No reference and/or No damage reported
April 20, 2000	Newcomb	3.8	No damage reported
April 20, 2002	Au Sable Forks	5.1	Cracked walls, chimneys fell, road collapsed, power outages. Federal Disaster DR-1415 was declared as a result.
May 24, 2002	Au Sable Forks	3.1	Aftershock of the April 20, 2002 event, no damage reported

Probability of Occurrence – Earthquakes

Earthquakes cannot be predicted. They strike without warning, at any time of the year, and at any time of the day or night. Earthquake hazard maps – sometimes referred to as "PGA maps" – are used as a tool to project the likelihood of a various intensity quake being exceed at a certain location over a given period of time. They depict the Peak Ground Acceleration (PGA), expressed as a percentage of the force of gravity that can be expected to be exceeded at a given location for a particular probability of exceedance over a specific time frame. Figure 3a.22 is an example of a basic earthquake hazard map as prepared by the USGS Earthquake Hazards Program. It shows PGA values that have a 10 percent chance of being exceeded over 50 years.

As Figure 3a.23 shows, the earthquake hazard is relatively low but increases north to south across the County. Therefore, according to the currently available earthquake hazard mapping of New York State, there is a 10 percent chance over 50 years that an earthquake with a minimum PGA of 3%g to 5%g will be centered within Jefferson County and its component jurisdictions. This earthquake, if it did occur, would likely have associated with it light to moderate perceived shaking and little to no significant damage. While earthquakes causing greater damage within Jefferson County are still possible, they have a less than 10% probability of occurrence in any 50-year period.

Landslides

Description - Landslides

According to the USGS National Landslide Information Center (NLIC), the term "landslide" is defined as the movement of a mass of rock, debris, or earth down a slope. The force of gravity acting upon a steep (or sometimes, even a moderately steep) slope is the primary cause of a landslide. Slope failure occurs when the force of gravity pulling the slope downward exceeds the strength of the earth materials that comprise the slope to hold it in place. In addition to the force of gravity, other contributing factors to landslides can include rainfall and/or rapid snowmelt, earthquakes, volcanic activity, changes in groundwater, and human-induced modifications to existing slopes.

The potential for a landslide to occur exists in every state in the country wherever very weak or fractured materials are resting on a moderate to steep slope (typically, a slope steep enough to make walking difficult). However, not all moderate to steep slopes are prone to landslides. As slope stability increases, the susceptibility to landslides decreases. Key factors in slope stability are:

- Soil Type. Certain types of soil are more stable on slopes than others. For example, as noted in the New York State Hazard Mitigation Plan, glacial till is one type of soil that tends to stand up well to the landslide tendency while glacial lake clay soils tend to have a higher risk for landslides.
- Terrain. The degree of the slope and the height from top of the slope to its toe also affect slope stability. The New York State Hazard Mitigation Plan indicates that the steeper the slope the higher the risk for landslides to occur (all other things being equal). It notes that minor landslides called "slumps" can occur with very minor slopes, and that landslides are most likely on slopes greater than or equal to 10 degrees. In terms of the height of the slope, the State Plan notes that relief greater than 40 feet is generally accepted to be the threshold where the potential becomes more significant.
- Vegetative Cover. Slopes with little or no vegetative cover are more prone to landslides than other more vegetated slopes.
- Soil Water Content. As soil water content increases, slope stability decreases. Periods of sustained above-average precipitation, short duration rainfall events with significant precipitation, and snowmelt events can all add to soil water content and increase susceptibility to landslides.

Landslides can be triggered by natural events or by humans. Natural events include erosion, decreases in vegetative cover due to natural causes and/or seasonal changes, and ground shaking from earthquakes. Human caused triggers include altering the slope gradient, increasing the soil water content, and removal of vegetative cover.

Location and Extent - Landslides

Areas that are commonly considered to be safe from landslides include areas that have not experienced landslides in the past, areas of minimal slope, and areas set back from the tops of slopes. Conversely, areas that are commonly considered to be more prone to landslides tend to be areas where a landslide has occurred in the past, bases of steep slopes or drainage channels, and developed hillsides where leach field septic systems are used.

The potential for landslides exists across the whole of New York State, although according to USGS and NYGS the vast majority of the state (80%) has a low susceptibility to landslide hazard. Landslide hazard mapping has been completed for New York State. In general the highest potential for landslides can be found along major river and lake valleys that were formerly occupied by glacial lakes resulting in glacial lake deposits (glacial lake clays) and usually associated with steeper slopes, such as the Lake Ontario Region. USGS landslide susceptibility mapping uses three basic classifications to communicate the risk, in conjunction with three further classifications to communicate the combinations of susceptibility and incidence:

- High incidence (Greater than 15 % of the area involved)
- Moderate incidence (1.5% - 15% of the area involved)
- Low incidence (Less than 1.5% of the area involved)
- High susceptibility/moderate incidence
- High susceptibility/low incidence
- Moderate susceptibility/low incidence

The USGS provides the following supporting narrative for the landslide hazard classifications:

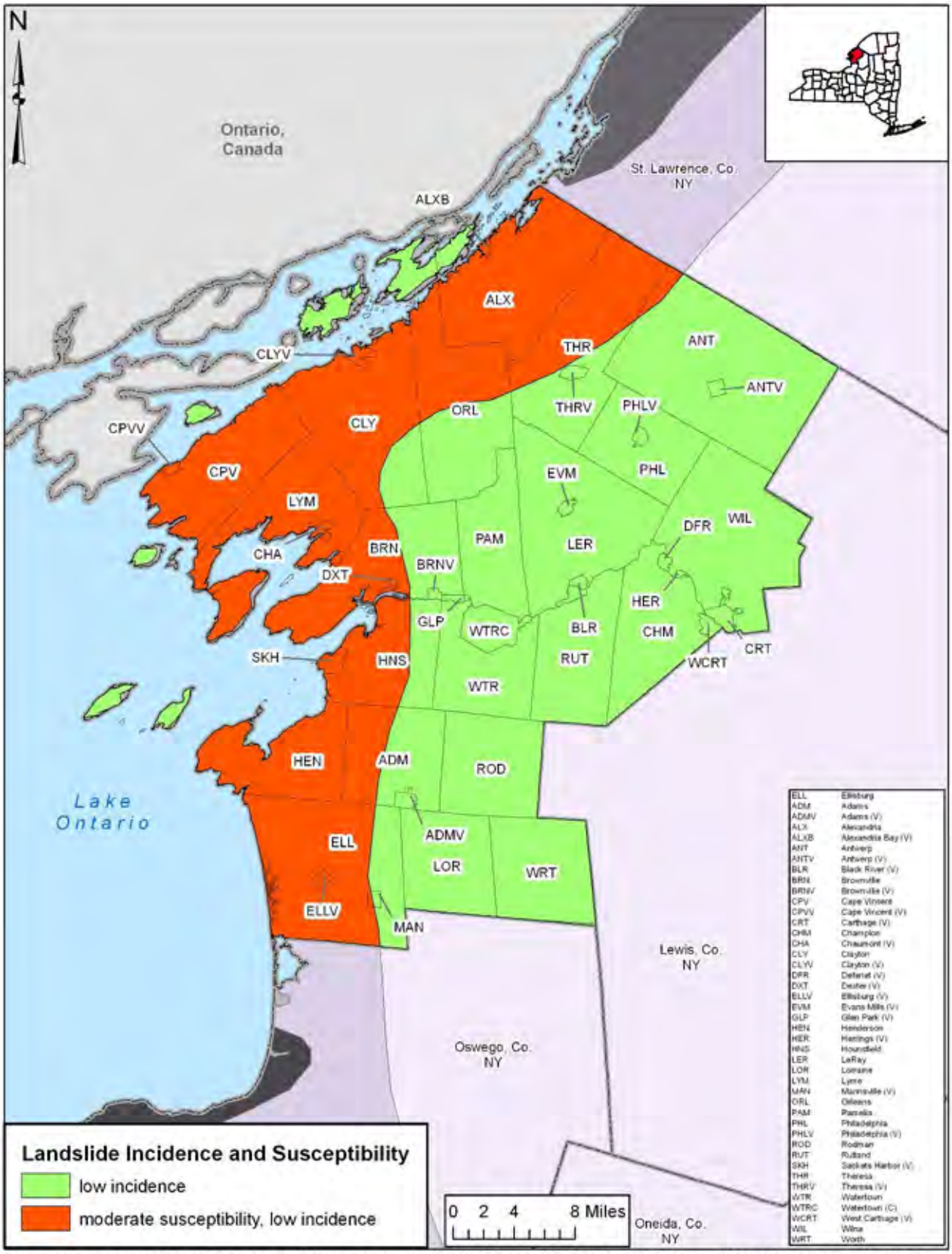
> *"Susceptibility not indicated where same or lower than incidence. Susceptibility to land sliding was defined as the probably degree of response of [the areal] rocks and soils to natural or artificial cutting or loading of slopes, or to anomalously high precipitation. High, moderate, and low susceptibility are delimited by the same percentages used in classifying the incidence of land sliding. Some generalization was necessary at this scale, and several small areas of high incidence and susceptibility were slightly exaggerated."*

USGS landslide susceptibility mapping for Jefferson County is presented in Figure 3a.27. The map shows that the area with the highest susceptibility to landslides is located in the northern part of the County ("Moderate susceptibility/low incidence"), with the remainder of the County classified as "Low Incidence." Of the six categories of incidence and susceptibility listed above, only these two have been identified in Jefferson County.

The severity of a landslide depends in large part on the degree of development in the area in which it occurs and the geographic area of slide itself. Generally speaking, landslides often result in devastating consequences, but only in very localized areas. A landslide occurring in an undeveloped area would be less severe because lives and property would not be affected; the only impacts would be to land, vegetation, and possibly some wildlife. On the contrary, a landslide occurring in a developed area could have devastating affects, ranging from structure and infrastructure damage to injury and/or loss of life. Structures or infrastructure built on susceptible land would likely collapse as their footings slide downhill, while those below the land failure would likely be crushed. Landslides in the area of roadways could have the potential to fall and damage or destroy vehicles, and force other drivers to have accidents.

The GIS data used to generate Figure 3a.27 was used to estimate the extent of land areas vulnerable to landslides and the value of improved property within those areas in each municipality, as presented in Table 3a.21. It should be noted that this mapping represents the overall risk of landslides, and occasional areas more vulnerable to landslides may exist within low risk or incidence areas due to local topographical conditions.

Figure 3a.27: Landslide Incidence in Jefferson County



Source: Jefferson County Planning Department, Jefferson County and Municipal Lines, 2004; ESRI, Canada Provinces, 2000, U.S. Counties, 2005; USGS, Landslide Incidence and Susceptibility in the Conterminous United States, 2001

Table 3a.21
Landslide Risk by Municipality

Municipality	Total Area (Acres)	Total Improved Value	Moderate Susceptibility/Low Incidence				Low Incidence			
			Area (Acres)	%	Improved Value	%	Area (Acres)	%	Improved Value	%
Adams, Town of	26,240	$175,730,094	10,915	42	$17,583,395	10	15,325	58	$158,146,699	90
Adams, Village of	891	$75,977,600					891	100	$75,977,600	100
Alexandria, Town of	47,333	$259,310,598	44,143	93	$170,259,834	66	1,935	4	$27,317,869	11
Alexandria Bay, Village of	492	$102,359,250	437	89	$92,545,346	90				
Antwerp, Town of	68,717	$35,680,827	1,908	3	$665,789	2	66,809	97	$35,015,038	98
Antwerp, Village of	661	$22,782,543					661	100	$22,782,543	100
Black River, Village of	1,207	$69,017,493					513	100	$69,017,493	100
Brownville, Town of	37,170	$195,286,898	21,740	58	$132,231,386	68	694	40	$57,084,277	29
Brownville, Village of	409	$44,738,926					14,996	100	$44,738,926	100
Cape Vincent, Town of	35,696	$262,362,672	32,386	91	$241,080,829	92	1,924	5	$3,848,745	1
Cape Vincent, Village of	475	$54,387,216	475	100	$54,384,006	100				
Carthage, Village of	1,736	$148,112,520					1,736	100	$148,112,520	100
Champion, Town of	27,853	$158,423,000					27,853	100	$158,423,000	100
Chaumont, Village of	638	$40,576,245	637	100	$40,569,707	100				
Clayton, Town of	52,449	$269,994,120	37,829	72	$174,612,734	95	11,898	23	$19,923,613	7
Clayton, Village of	1,077	$138,078,500	1,038	96	$126,271,568	91				
Deferiet, Village of	482	$26,850,800					482	100	$26,850,800	100
Dexter, Village of	460	$46,324,924	324	70	$23,497,610	51				
Ellisburg, Town of	53,521	$138,555,517	42,060	79	$105,204,300	76	11,442	21	$31,502,847	23
Ellisburg, Village of	641	$7,411,700	641	100	$7,411,700	100				
Evans Mills, Village of	522	$27,725,000					522	100	$27,725,000	100
Glen Park, Village of	480	$59,893,013					480	100	$59,893,014	100
Henderson, Town of	26,754	$191,012,823	26,406	99	$163,746,237	86				
Herrings, Village of	186	$7,954,100					186	100	$7,954,100	100
Hounsfield, Town of	30,123	$125,487,625	17,374	58	$87,331,723	70	11,978	40	$32,071,110	26
Le Ray, Town of	46,268	$1,180,782,881					46,268	100	$1,180,782,880	100

Table 3a.21
Landslide Risk by Municipality

Municipality	Total Area (Acres)	Total Improved Value	Moderate Susceptibility/Low Incidence				Low Incidence			
			Area (Acres)	%	Improved Value	%	Area (Acres)	%	Improved Value	%
Lorraine, Town of	24,980	$27,780,851					24,980	100	$27,780,851	100
Lyme, Town of	35,343	$196,346,342	33,444	95	$131,713,564	67				
Mannsville, Village of	595	$19,161,884	209	35	$3,003,574	16	386	65	$16,158,310	84
Orleans, Town of	46,157	$307,380,200	19,641	43	$109,391,354	36	14,953	54	$101,784,897	33
Pamelia, Town of	22,692	$199,473,646					22,692	100	$199,473,644	100
Philadelphia, Town of	23,479	$74,670,470					23,479	100	$74,670,470	100
Philadelphia, Village of	609	$53,296,960					609	100	$53,296,960	100
Rodman, Town of	27,083	$38,203,936					27,083	100	$38,203,936	100
Rutland, Village of	28,482	$87,650,231					28,482	100	$87,650,231	100
Sackets Harbor, Village of	1,485	$100,401,726	1,429	96	$94,724,201	94				
Theresa, Town of	44,075	$89,173,551	26,991	61	$50,845,310	57	17,084	39	$38,328,241	43
Theresa, Village of	847	$33,167,705					847	100	$33,167,705	100
Watertown, City of	5,972	$1,234,445,882					5,972	100	$1,234,445,885	100
Watertown, Town of	22,935	$475,544,391					22,935	100	$475,544,391	100
West Carthage, Village of	896	$77,658,900					896	100	$77,658,900	100
Wilna, Town of	48,096	$70,683,576					48,096	100	$70,683,576	100
Worth, Town of	27,455	$9,376,136					27,455	100	$9,376,136	100
County Totals	*823,662*	*$6,959,233,272*	*320,026*	*39*	*$1,827,074,168*	*26*	*492,952*	*60*	*$4,725,392,206*	*68*

In terms of the land area covered by moderate susceptibility/low incidence landslide zones, Table 3a.21 shows clearly that the municipalities most at risk from landslides are the Towns of Alexandria, Cape Vincent, Henderson, and Lyme and the Villages of Alexandria Bay, Cape Vincent, Chaumont, Clayton, Ellisburg, and Sackets Harbor. The GIS analysis indicates that the highest dollar amounts of improved property in moderate susceptibility/low incidence landslide incidence areas are in the Towns of Cape Vincent and Clayton, which both have substantially more than 65% of their total improved property value within moderate susceptibility/low incidence landslide areas. A more detailed breakdown of property exposed to the mapped landslide hazard by land use types is presented in Appendix A.

Previous Occurrences - Landslides

The New York State Geological Survey records a total of 329 significant landslide events that have occurred in New York State between 1837 and 2007. None of these events are recorded as having occurred in Jefferson County, and mapping of the New York State Geological Survey Landslide Inventory in the New York State Plan does not include any individual landslide events in Jefferson County prior to 1990. Additional general research via the internet has also not uncovered any specific historical landslide events in Jefferson County.

Probability of Occurrence – Landslides

While it is certainly possible for landslides to occur within Jefferson County, the current readily available data regarding historic occurrences does not permit any estimation of the frequency of future occurrences. While the overall probability of future occurrence is assumed to be low for most of the County, there are significant portions (including some developed areas) of the Towns of Adams, Alexandria, Brownville, Clayton, Cape Vincent, Ellisburg, Henderson, Hounsfield, Lyme, Orleans, and Theresa and the Villages of Alexandria Bay, Clayton, Cape Vincent, Chaumont, Dexter, Ellisburg, and Sackets Harbor located within moderate susceptibility, low incidence landslide risk areas.

Based on overall landslide susceptibility, the number of local historic events and the number of vulnerable structures, Jefferson County is ranked in the New York State Hazard Mitigation Plan as the 27th most threatened by landslides out of the 62 counties in the state.

Wildfires

Description – Wildfires

A wildfire is an uncontrolled fire burning in an area of vegetative fuels such as grasslands, brush, or woodlands. Wildfires can occur in areas essentially void of development, or in areas where development intermingles with these natural areas (known as the "urban-wildland interface"). Many wildfires occur in locations that abound in dense forests, grasslands and shrubs. Heavier fuels with high continuity, steep slopes, high temperatures, low humidity, low rainfall, and high winds all work to increase risk.

Wildfires can occur at any time of the year, but will usually occur during warmer and dryer months. Wildfires are most commonly caused by people (i.e., arson, debris burns, and carelessness). Lightning is the next most common cause of wildfires. As reported by the Wildland Fire Assessment System (WFAS) wildfires resulting from a lightning strike largely depend on the duration of the current and the kind of fuel the lightning hits. Spread of the wildfire after ignition usually depends primarily on fuel moisture.

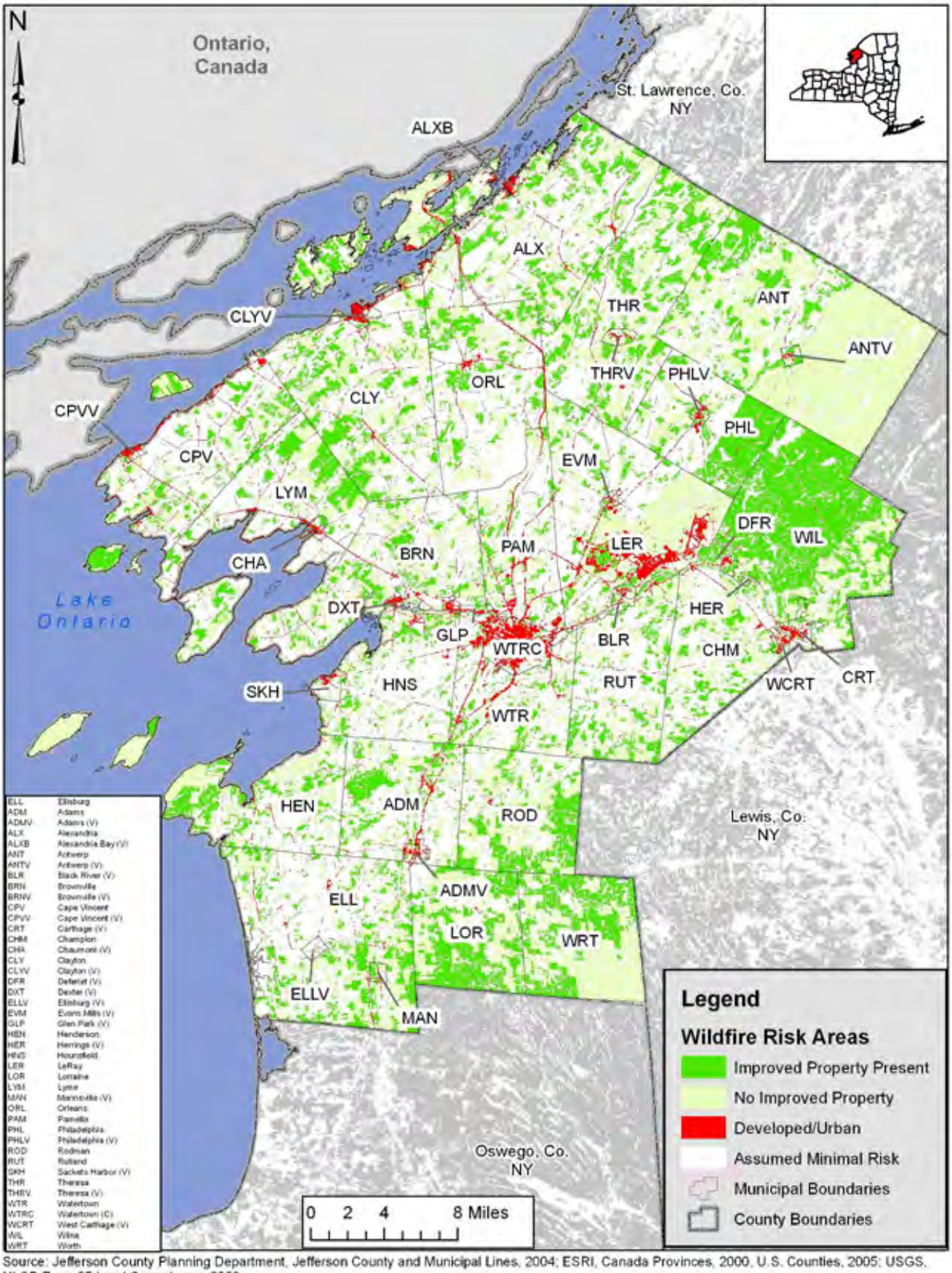
Location and Extent – Wildfires

Areas that are typically considered to be safe from wildfires include highly urbanized, developed areas that are not contiguous with large areas of wild lands. Areas typically considered to be prone to wildfires include large tracts of wild lands containing heavier fuels with high continuity, at steeper slopes.

Wildfires are a significant hazard in Jefferson County, particularly in the forested areas of the county. Many of the areas at risk from wildfires are also popular with hikers and campers. Several major transportation routes such as the US Interstate 81 and US Route 11 touch on potentially vulnerable areas, leaving them vulnerable to closure during forest fire due to smoke conditions. Areas in Jefferson County where the magnitude and severity of the hazard are the greatest tend to exhibit the lowest population densities in the County; as a result, exposure of people living and working in the highest hazard areas is often relatively low.

Figure 3a.28 shows the areas of Jefferson County that are considered to be at risk from wildfire colored green and urban/developed areas colored red. At-risk areas include deciduous, evergreen, and mixed forest, shrub land, and grassland. It should be noted that the vast majority of the wildfire risk areas consist of deciduous woodland (approximately 33% of the County land area and 75% of the wildfire risk area) while evergreen forest, mixed forest, shrub and grassland areas are not present in significant quantities (together they make up approximately 11% of the County land area). Cultivated agricultural land and pastureland, and vegetated developed open space such as golf courses are not considered to be at significant risk from wildfire for the purposes of this plan and its component risk assessment. For the purposes of this plan, it is estimated that approximately 44% of the County area lies within a wildfire hazard zone.

Figure 3a.28: Wildfire Risk Areas in Jefferson County



Source: Jefferson County Planning Department, Jefferson County and Municipal Lines, 2004; ESRI, Canada Provinces, 2000, U.S. Counties, 2005; USGS, NLCD Zone 65 Land Cover Layer, 2003

The wildfire risk areas in Figure 3a.28 have been color-coded as follows:

- Dark green: those areas in which the component parcels include some improved value; i.e. structures are present.
- Light green: those areas for which no improved value and hence no structures are associated with the component parcels.

This allows a general determination to be made regarding those areas at risk from wildfire in which there is a higher likelihood that such fires could also pose a threat to lives and structures, in addition to developed areas (colored red) which have a direct interface with the wildfire risk areas.

The wildfire risk for the individual municipalities within Jefferson County has been quantified by measuring the length of the urban-wildland interface and the total value of improved property located in hazard areas within the county, and these estimations are presented in Table 3a.22. The urban-wildland interface measurements were estimated incorporating a 200 ft buffer extending from the urban/developed areas into the wildfire risk areas, to account for the likelihood that structures in the urban area are at risk of combustion before a wildfire reaches the exact interface.

The Towns of Antwerp, Lorraine, Wilna and Worth, and the Villages of Antwerp, Black River and Glen Park all have more than 50% of their land area within identified wildfire hazard zones, with the Town of Wilna exhibiting the highest proportion (73%). In terms of structures (i.e. improved property) within wildfire hazard zones, the Town of Worth is at the greatest potential risk, with 58% of its improved property within wildfire hazard zones. However, the municipality with the greatest dollar amount of improved property in the hazard zone is the Town of LeRay. A more detailed breakdown of property exposed to the mapped wildfire hazard by land use types is presented in Appendix A.

In terms of the urban-wildland interface, the Town of LeRay also exhibits the biggest vulnerability to wildfires, with an interface more than 70 miles in length. LeRay is one of nine municipalities with urban-wildland interfaces of more than 10 miles, but all except 17 municipalities have interfaces less than 5 miles in length.

Previous Occurrences – Wildfires

While wildfires are considered by local sources to be a significant hazard in Jefferson County, neither the NCDC database or the New York State Hazard Mitigation Plan report any specific historical instances of wildfires in Jefferson County, and no significant wildfire events affecting the County have been uncovered in the course of additional research via the internet.

Table 3a.22
Exposure to Wildfire Risk in Jefferson County

Municipality	Urban-Wildland Interface (feet)	Wildfire Risk Area – No Improved Property (Acres)	Wildfire Risk Area – With Improved Property (Acres)	Total Municipal Area (Acres)	Total Area Within Wildfire Risk Zones %	Total Value of Improvements in Municipal Areas	Improved Value Within Wildfire Risk Zones	Improved Value Within Wildfire Risk Zones %
Adams, Town of	105,551	4,473	4,418	26,240	34	175,730,094	40,215,269	23%
Adams, Village of	12,306	66	99	891	19	75,977,600	10,908,976	14%
Alexandria, Town of	156,205	7,781	10,239	47,333	39	259,310,598	78,132,006	30%
Alexandria Bay, Village of	6,364	23	38	492	13	102,359,250	2,015,015	2%
Antwerp, Town of	66,643	8,190	37,733	68,717	67	35,680,827	11,960,474	34%
Antwerp, Village of	10,154	220	108	661	51	22,782,543	5,060,539	22%
Black River, Village of	19.460	208	234	1,207	76	69,017,493	13,317,795	44%
Brownville, Town of	142,895	4,762	7,855	37,170	34	195,286,898	33,538,236	17%
Brownville, Village of	1,812	13	10	409	6	44,738,926	821,249	2%
Cape Vincent, Town of	127,859	5,693	5,624	35,696	32	262,362,672	27,963,701	11%
Cape Vincent, Village of	4,763	17	30	475	10	54,387,216	2,092,298	4%
Carthage, Village of	21,245	252	279	1,736	31	148,112,520	16,519,793	11%
Champion, Town of	52,358	4,337	6,145	27,853	38	158,423,000	43,970,549	28%
Chaumont, Village of	3,452	129	23	643	24	40,576,245	3,380,325	8%
Clayton, Town of	172,642	9,833	11,666	52,449	41	269,994,120	96,495,857	36%
Clayton, Village of	9,466	67	97	1,077	15	138,078,500	8,049,590	6%
Deferiet, Village of	9,111	155	59	482	45	26,850,800	5,824,690	22%
Dexter, Village of	2,992	47	19	460	15	46,324,924	2,345,744	5%
Ellisburg, Town of	111,649	8,662	9,888	53,521	35	138,555,517	31,122,055	22%
Ellisburg, Village of	1,996	26	23	641	7	7,411,700	573,525	8%
Evans Mills, Village of	11,440	61	72	522	26	27,725,000	3,343,468	12%
Glen Park, Village of	6,408	68	48	480	57	59,893,013	5,197,821	24%
Henderson, Town of	81,639	4,844	6,265	26,754	42	191,012,823	58,509,688	31%
Herrings, Village of	5,575	37	44	186	44	7,954,100	2,018,579	25%
Hounsfield, Town of	91,653	2,691	6,673	30,123	31	125,487,625	35,405,686	28%
Le Ray, Town of	370,426	3,813	12,925	46,268	36	1,180,782,881	577,677,075	49%
Lorraine, Town of	7,066	9,226	7,212	24,980	67	27,780,851	11,934,824	43%
Lyme, Town of	59,689	6,242	4,971	35,339	32	196,346,342	26,527,375	14%

Table 3a.22
Exposure to Wildfire Risk in Jefferson County

Municipality	Urban-Wildland Interface (feet)	Wildfire Risk Area – No Improved Property (Acres)	Wildfire Risk Area – With Improved Property (Acres)	Total Municipal Area (Acres)	Total Area Within Wildfire Risk Zones %	Total Value of Improvements in Municipal Areas	Improved Value Within Wildfire Risk Zones	Improved Value Within Wildfire Risk Zones %
Mannsville, Village of	8,788	178	93	595	46	19,161,884	5,033,478	26%
Orleans, Town of	202,417	6,210	10,160	46,157	36	307,380,200	62,530,010	20%
Pamelia, Town of	142,584	2,019	4,100	22,692	28	199,473,646	28,245,240	14%
Philadelphia, Town of	63,435	8,359	2,885	23,479	48	74,670,470	8,325,155	11%
Philadelphia, Village of	13,268	124	72	609	34	53,296,960	8,453,187	16%
Rodman, Town of	20,297	7,115	7,298	27,083	54	38,203,936	12,657,473	33%
Rutland, Village of	50,734	4,951	5,774	28,482	38	87,650,231	30,775,113	35%
Sackets Harbor, Village of	9,760	85	130	1,485	15	100,401,726	6,481,057	6%
Theresa, Town of	88,915	10,610	10,571	44,075	49	89,173,551	40,705,152	46%
Theresa, Village of	21,528	94	300	847	49	33,167,705	7,622,789	23%
Watertown, City of	29,993	203	290	5,972	8	1,234,445,882	30,251,000	2%
Watertown, Town of	115,943	2,381	3,989	22,935	28	475,544,391	90,690,883	19%
West Carthage, Village of	13,215	96	118	896	24	77,658,900	7,032,360	9%
Wilna, Town of	98,958	29,017	6,017	48,096	73	70,683,576	35,617,462	50%
Worth, Town of	2,130	8,725	10,696	27,455	71	9,376,136	5,476,955	58%
County Totals	*2,553,781*	*162,104*	*195,288*	*823,662*	*44*	*6,959,233,272*	*1,534,819,514*	*22%*

Probability of Occurrence - Wildfires

Wildfire events will remain at least an occasional occurrence in Jefferson County, and the probability of future occurrences in the County is certain, particularly if drought conditions become more prevalent in the future. The likelihood of increased future development (particularly residential) can only result in an increase in the length of the urban-wildland interface, an increase in the improved value of property within wildfire hazard zones, and a greater risk of property damage and danger to the public in future years. However, most wildfire events in the County are typically contained and extinguished rather quickly and those events causing major property damage or life/safety threats are much less likely to occur.

A Distinction Between "Hazards" and "Events"

This section of the plan speaks to hurricanes and tropical storms, tornadoes, and winter storms/ice storms. These are severe weather events (not hazards themselves). Severe weather events have specific hazards associated with them. The unique hazards associated with the severe weather events discussed in this section are addressed specifically elsewhere in the plan; they are summarized briefly here. While HAZARDS are fully identified and profiled, with vulnerability assessments completed, EVENTS are merely summarized here for information only. EVENTS are not fully profiled and a vulnerability assessment has not been completed. The reader is, however, directed to the HAZARDS associated with these EVENTS (for profile/vulnerability assessment/etc.).

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SECTION 3b - RISK ASSESSMENT: IDENTIFICATION AND CHARACTERIZATION OF ASSETS

Overview

An inventory of geo-referenced assets in Jefferson County has been created in order to identify and characterize property and persons potentially at risk from the identified hazards. Understanding the type and number of hazards that exist in relation to known hazard areas is an important step in the process of formulating the risk assessment and quantifying the vulnerability of the municipalities that make up Jefferson County. For this plan, six key categories of assets have been mapped and analyzed using GIS data provided by Jefferson County, with some additional data drawn from other public sources:

1. Improved property: This category includes all developed properties according to parcel data provided by Jefferson County and equalization rates from the New York State Office of Real Property Services. Impacts to improved properties are presented as a percentage of each community's total value of improvements that may be exposed to the identified hazards.
2. Emergency facilities: This category covers all facilities dedicated to the management and response of emergency or disaster situations, and includes emergency operations centers (EOCs), fire stations, police stations, ambulance stations, and hospitals. Impacts to these assets are presented by tabulating the number of each type of facility present in areas that may be exposed to the identified hazards.
3. Critical infrastructure and utilities: This category covers facilities and structures vital to the maintenance of basic living conditions in the county, and includes power generating stations, potable water treatment plants, wastewater treatment plants, significant public works buildings, airports, and ferry ports. Impacts to these assets are presented by tabulating the number of each type of facility present in areas that may be exposed to the identified hazards.
4. Other key facilities: This category covers facilities which may be capable of providing refuge and limited medical care and hence may be utilized as emergency shelters, and those which routinely house more vulnerable sectors of the county population, making them potentially especially vulnerable to identified hazards. Included in this category are schools and senior care facilities and impacts to these assets are presented by tabulating the number of each type of facility present in areas that may be exposed to the identified hazards.
5. Historic and cultural resources: This category includes those historic structures, landmarks and sites that are included in the New York State or National Register of Historic Places. Impacts to these assets are presented by tabulating the number of each type of facility present in areas exposed to each identified hazard. Any other structure, landmark or asset identified during the course of general research for this section that has been judged to be potentially of local historical or cultural significance has also been included in this category.
6. Population: This category covers the number of people residing in Jefferson County as measured by the 2000 U.S. Census. Impacts to population are presented as a percentage of each municipality's total population exposed to the identified hazards, with the exposed population collated by census block.

Improved Property

Improved property covers all development in the form of structures for residential, commercial, industrial, municipal, recreational, and utility uses. The total value of property improvements in the 43 Jefferson County jurisdictions has been estimated at just under $7,000,000,000, based on total assessed values converted to 2008 market values using State equalization rates supplied for each jurisdiction by the New York State Office of Real Property Services (where the assessed value of improvements was calculated by subtracting the assessed value of the land from the total assessed value of the parcel). While this methodology does not provide an estimation of the actual replacement cost of buildings in the County's municipalities, the consistent application of this calculation for all municipalities provides a figure to be used for comparison of exposure across the different municipalities and for different hazards within each municipality. The estimated value of improved property in hazard areas in any municipality is intended as a tool to aid in conceptualizing and prioritizing risk for mitigation planning purposes. It is in no way binding, it is not presented on a property-by-property basis, and it will not be used by FEMA to calculate or influence payments for future disaster losses under such programs as the National Flood Insurance Program (NFIP), Public Assistance or Individual Assistance Programs.

Table 3b.1 summarizes the improved properties in each jurisdiction, in terms of total parcels, percentage of improved parcels, and the total value of improvements in each, based on GIS data provided by the Jefferson County Department of Planning.

Table 3b.2 presents a summary of the estimated improved property values within each principal delineated hazard area by jurisdiction, expressed as a percentage of the total improved property value in each jurisdiction.

"Delineated" hazards are those which only affect specific identifiable areas as opposed to those assumed to have a uniform risk across the entire planning area; i.e. hurricanes, nor'easters and all other extreme wind events, winter storms, extreme temperatures, and lightning. While droughts are considered to affect only specific delineable areas, they are assumed not to impact improved property (i.e. structures) and drought are therefore not included in Table 3b.2.

Detailed tables presenting the improved property values broken down by land use and development type within delineated hazard areas are included in Appendix A.

Table 3b.1
Improved Property by Jurisdiction

Municipality	Total Number of Parcels	Number of Improved Parcels	Percentage of Improved Parcels	Total Value of Improvements*
Adams, Town of	1644	1204	73%	$175,730,094
Adams, Village of	720	629	87%	$75,977,600
Alexandria, Town of	3296	2291	70%	$259,310,598
Alexandria Bay, Village of	700	595	85%	$102,359,250
Antwerp, Town of	714	473	66%	$35,680,827
Antwerp, Village of	314	261	83%	$22,782,543
Black River, Village of	520	451	87%	$69,017,493
Brownville, Town of	2620	1971	75%	$195,286,898
Brownville, Village of	414	378	91%	$44,738,926
Cape Vincent, Town of	2194	1599	73%	$262,362,672
Cape Vincent, Village of	521	464	89%	$54,387,216
Carthage, Village of	1175	1017	87%	$148,112,520
Champion, Town of	1365	1011	74%	$158,423,000
Chaumont, Village of	332	275	83%	$40,576,245
Clayton, Town of	2921	2087	71%	$269,994,120
Clayton, Village of	983	876	89%	$138,078,500
Deferiet, Village of	136	124	91%	$26,850,800
Dexter, Village of	400	351	88%	$46,324,924
Ellisburg, Town of	2258	1551	69%	$138,555,517
Ellisburg, Village of	143	104	73%	$7,411,700
Evans Mills, Village of	256	218	85%	$27,725,000
Glen Park, Village of	250	189	76%	$59,893,013
Henderson, Town of	2068	1556	75%	$191,012,823
Herrings, Village of	60	51	85%	$7,954,100
Hounsfield, Town of	1432	1036	72%	$125,487,625
LeRay, Town of	1780	1289	72%	$1,180,782,881
Lorraine, Town of	656	466	71%	$27,780,851
Lyme, Town of	2910	2119	73%	$196,346,342
Mannsville, Village of	194	161	83%	$19,161,884
Orleans, Town of	2197	1638	75%	$307,380,200
Pamelia, Town of	1482	1186	80%	$199,473,646
Philadelphia, Town of	427	290	68%	$74,670,470
Philadelphia, Village of	359	298	83%	$53,296,960
Rodman, Town of	712	490	69%	$38,203,936
Rutland, Town of	1270	912	72%	$87,650,231
Sackets Harbor, Village of	716	601	84%	$100,401,726
Theresa, Town of	1886	1158	61%	$89,173,551
Theresa, Village of	408	345	85%	$33,167,705
Watertown, Town of	1920	1472	77%	$475,544,391
Watertown, City of	9510	7453	78%	$1,234,445,882
West Carthage, Village of	644	563	87%	$77,658,900
Wilna, Town of	1157	829	72%	$70,683,576
Worth, Town of	400	257	64%	$9,376,136
County Total	56064	42289	75%	$6,959,233,272

*Not including some public buildings and other tax-exempt structures

Table 3b.2
Summary of Delineated Hazard Exposure by Municipality

Municipality	Total Improved Value	High Flood Risk (A/AE Zones)	Earthquake (PGA 4-5%g)	Earthquake (Soil Types D and E)	Landslide (Moderate Susceptibility)	Wildfire Hazard area
Adams, Town of	$175,730,094	1%	0%	66%	10%	23%
Adams, Village of	$75,977,600	2%	0%	100%	0%	14%
Alexandria, Town of	$259,310,598	23%	91%	69%	66%	30%
Alexandria Bay, Village of	$102,359,250	15%	100%	0%	90%	2%
Antwerp, Town of	$35,680,827	4%	100%	88%	2%	34%
Antwerp, Village of	$22,782,543	0%	100%	100%	0%	22%
Black River, Village of	$69,017,493	3%	0%	79%	0%	19%
Brownville, Town of	$195,286,898	6%	0%	61%	68%	17%
Brownville, Village of	$44,738,926	0%	0%	81%	0%	2%
Cape Vincent, Town of	$262,362,672	14%	0%	77%	92%	11%
Cape Vincent, Village of	$54,387,216	8%	0%	66%	100%	4%
Carthage, Village of	$148,112,520	9%	13%	95%	0%	11%
Champion, Town of	$158,423,000	2%	0%	9%	0%	28%
Chaumont, Village of	$40,576,245	2%	0%	66%	100%	8%
Clayton, Town of	$269,994,120	12%	0%	65%	65%	36%
Clayton, Village of	$138,078,500	7%	0%	92%	91%	6%
Deferiet, Village of	$26,850,800	4%	0%	47%	0%	22%
Dexter, Village of	$46,324,924	11%	0%	100%	51%	5%
Ellisburg, Town of	$138,555,517	9%	0%	47%	76%	22%
Ellisburg, Village of	$7,411,700	12%	0%	77%	100%	8%
Evans Mills, Village of	$27,725,000	5%	0%	20%	0%	12%
Glen Park, Village of	$59,893,013	3%	0%	6%	0%	9%
Henderson, Town of	$191,012,823	11%	0%	72%	86%	31%
Herrings, Village of	$7,954,100	59%	0%	40%	0%	25%
Hounsfield, Town of	$125,487,625	7%	0%	67%	70%	28%
LeRay, Town of	$1,180,782,881	1%	10%	38%	0%	49%
Lorraine, Town of	$27,780,851	0%	0%	26%	0%	43%
Lyme, Town of	$196,346,342	15%	0%	59%	67%	14%
Mannsville, Village of	$19,161,884	0%	0%	15%	16%	26%
Orleans, Town of	$307,380,200	13%	2%	59%	36%	20%
Pamelia, Town of	$199,473,646	4%	0%	98%	0%	14%

Table 3b.2
Summary of Delineated Hazard Exposure by Municipality

Municipality	Total Improved Value	High Flood Risk (A/AE Zones)	Earthquake (PGA 4-5%g)	Earthquake (Soil Types D and E)	Landslide (Moderate Susceptibility)	Wildfire Hazard area
Philadelphia, Town of	$74,670,470	1%	99%	99%	0%	11%
Philadelphia, Village of	$53,296,960	8%	100%	100%	0%	16%
Rodman, Town of	$38,203,936	3%	0%	5%	0%	33%
Rutland, Town of	$87,650,231	4%	0%	1%	0%	35%
Sackets Harbor, Village of	$100,401,726	2%	0%	89%	94%	6%
Theresa, Town of	$89,173,551	10%	90%	83%	57%	46%
Theresa, Village of	$33,167,705	6%	100%	0%	0%	23%
Watertown, Town of	$475,544,391	0%	0%	32%	0%	19%
Watertown, City of	$1,234,445,882	2%	0%	94%	0%	2%
West Carthage, Village of	$77,658,900	4%	0%	31%	0%	9%
Wilna, Town of	$70,683,576	4%	70%	50%	0%	50%
Worth, Town of	$9,376,136	0%	0%	1%	0%	58%
County Total	*$6,959,233,272*	*6%*	*12%*	*62%*	*26%*	*22%*

Emergency Facilities

Emergency facilities were included in the asset identification and characterization to determine jurisdictions with particularly high numbers of key facilities located in hazard areas, which may guide the focus of individual mitigation activities in the mitigation goals and strategy stage of the plan. Emergency facilities by jurisdiction are presented in Table 3b.3. According to County GIS data and other county records, and databases embedded in HAZUS-MH (a risk-assessment tool made available by FEMA), there are a total of 79 geo-referenced emergency facilities in the 43 municipalities that comprise Jefferson County. According to the available records, there is at least one type of emergency facility located in 35 of the 43 municipalities.

Table 3b.3
Emergency Facilities by Jurisdiction

Municipality	Fire Stations	Police Stations	EMS / Ambulance Stations	Hospitals	Coast Guard
Adams, Town of	1				
Adams, Village of	1	1	1		
Alexandria, Town of	2				1
Alexandria Bay, Village of	2	1		1	
Antwerp, Town of	1				
Antwerp, Village of	1	1			
Black River, Village of	1		1		
Brownville, Town of					
Brownville, Village of	1				
Cape Vincent, Town of	1	1			
Cape Vincent, Village of					
Carthage, Village of	1	1		1	
Champion, Town of	3				
Chaumont, Village of					
Clayton, Town of	3	1			
Clayton, Village of	0		1		
Deferiet, Village of	1				
Dexter, Village of	2	1			
Ellisburg, Town of	1				
Ellisburg, Village of	1				
Evans Mills, Village of	2		1		
Glen Park, Village of	1				
Henderson, Town of	1				
Herrings, Village of					
Hounsfield, Town of					
LeRay, Town of	2		1	1	
Lorraine, Town of	1				
Lyme, Town of	2				
Mannsville, Village of	1				
Orleans, Town of	3				
Pamelia, Town of	2				
Philadelphia, Town of					
Philadelphia, Village of	1				
Rodman, Town of	2				
Rutland, Town of	3				

Table 3b.3
Emergency Facilities by Jurisdiction

Municipality	Fire Stations	Police Stations	EMS / Ambulance Stations	Hospitals	Coast Guard
Sackets Harbor, Village of	1	1			1
Theresa, Town of	1				
Theresa, Village of	1				
Watertown, Town of	3		1		
Watertown, City of	1	3	1	1	
West Carthage, Village of	1	1			
Wilna, Town of	1		1		
Worth, Town of					
County Total	*53*	*12*	*8*	*4*	*2*

Critical Infrastructure and Utilities

Critical infrastructure and utilities were included in the asset identification and characterization to determine jurisdictions with particularly high numbers of key facilities located in hazard areas, which may guide the focus of individual mitigation activities in the mitigation goals and strategy stage of the plan. Critical infrastructure and utilities by jurisdiction are presented in Table 3b.4. According to County GIS records, the Jefferson County Comprehensive Plan, information from New York State Department of Environmental Conservation, and databases embedded in HAZUS-MH, there are a total of 96 identified georeferenced critical infrastructure and utility facilities in the planning area.

Public works facilities include buildings for the storage and maintenance of vehicles and other equipment used to respond to emergency situations, apart from police, fire and ambulance stations, such as municipal highway departments and town garages.

Airports has been taken to mean substantial airfields with paved runways operating scheduled services or suitable for the operation of fixed-wing aircraft for the transporting of emergency response personnel and equipment. This includes the airfield at Fort Drum which, while not open to the public, could be utilized in emergencies for evacuations or the transport of emergency response personnel and equipment.

Communications facilities are transmitting stations for emergency services or for radio and/or television stations licensed by the Federal Communications Commission.

Table 3b.4
Critical Infrastructure and Utilities by Jurisdiction

Municipality	Water Treatment Facilities	Waste Water Facilities	Public Works Facilities	Airports	Electric Power Facilities	Communications Facilities
Adams, Town of			1			1
Adams, Village of		1	2			1
Alexandria, Town of			2	1		
Alexandria Bay, Village of		1	1			
Antwerp, Town of			2			
Antwerp, Village of		1	1			
Black River, Village of						
Brownville, Town of			4			1
Brownville, Village of		1	1			
Cape Vincent, Town of			2			2
Cape Vincent, Village of		1	1			
Carthage, Village of			1			
Champion, Town of			1			3
Chaumont, Village of			1			
Clayton, Town of		2	1			
Clayton, Village of			1			
Deferiet, Village of		1				
Dexter, Village of		1	1			
Ellisburg, Town of			1			
Ellisburg, Village of			2			
Evans Mills, Village of		1	1			
Glen Park, Village of			1			
Henderson, Town of			2			
Herrings, Village of		1				
Hounsfield, Town of			1	1		
LeRay, Town of				1	1	
Lorraine, Town of			2			
Lyme, Town of						
Mannsville, Village of			1			
Orleans, Town of		2	3			
Pamelia, Town of			5			
Philadelphia, Town of			1			1
Philadelphia, Village of		1	1			
Rodman, Town of			2			1
Rutland, Town of			1			4
Sackets Harbor, Village of		1				
Theresa, Town of		1				
Theresa, Village of		1	2			
Watertown, Town of		1				2
Watertown, City of	1	1	1			2
West Carthage, Village of		1	1			
Wilna, Town of			1			
Worth, Town of			1			
County Total	*1*	*20*	53	*3*	*1*	*18*

Other Key Facilities

Other key facilities were included in the asset identification and characterization to determine jurisdictions with particularly high numbers of such facilities located in hazard areas, which may guide the focus of individual mitigation activities in the mitigation goals and strategy stage of the plan. Schools and residential senior care facilities by jurisdiction are presented in Table 3b.5.

Table 3b.5
Other Key Facilities by Jurisdiction

Municipality	Schools	Residential Senior Care Facilities
Adams, Town of	2	
Adams, Village of		
Alexandria, Town of		
Alexandria Bay, Village of	1	
Antwerp, Town of		
Antwerp, Village of	1	
Black River, Village of	1	
Brownville, Town of	2	
Brownville, Village of		
Cape Vincent, Town of	2	
Cape Vincent, Village of	1	
Carthage, Village of	1	1
Champion, Town of	2	
Chaumont, Village of	1	
Clayton, Town of		
Clayton, Village of	1	
Deferiet, Village of		
Dexter, Village of		
Ellisburg, Town of	1	
Ellisburg, Village of		
Evans Mills, Village of	1	
Glen Park, Village of	1	
Henderson, Town of		
Herrings, Village of		
Hounsfield, Town of		
LeRay, Town of	1	
Lorraine, Town of		
Lyme, Town of		
Mannsville, Village of	1	
Orleans, Town of	1	
Pamelia, Town of		
Philadelphia, Town of	4	
Philadelphia, Village of	1	
Rodman, Town of		
Rutland, Town of		
Sackets Harbor, Village of	1	
Theresa, Town of		
Theresa, Village of	1	
Watertown, Town of		

Table 3b.5 Other Key Facilities by Jurisdiction		
Municipality	**Schools**	**Residential Senior Care Facilities**
Watertown, City of	14	2
West Carthage, Village of	1	
Wilna, Town of	1	
Worth, Town of		
County Total	*44*	*3*

According to County GIS records and databases embedded in HAZUS-MH, there are a total of 47 such key facilities in the planning area. The exposure of identified emergency services, critical facilities, and infrastructure assets to hazards with discrete delineable impact areas is presented in Appendix B.

Historical and Cultural Resources

Historical and cultural resources were included in the asset identification and characterization to determine jurisdictions with particularly high numbers of culturally or historically valuable assets located in hazard areas, which may influence the focus of individual mitigation activities in the mitigation goals and strategy stage of the plan. At the State and Federal levels, official listings of historic resources are established and maintained to foster the preservation of particular cultural resources. The State and National Registers of Historic Places are the official listings of buildings, structures, districts, objects, and sites significant in the history, architecture, archaeology, engineering, and culture of the State and the nation. Cultural and historic resources are defined as follows:

Cultural Resources: As defined by the National Park Service in its "Cultural Resources Management Guidelines," cultural resources are: "*Those tangible and intangible aspects of cultural systems, both living and dead, that are valued by or representative of a given culture or that contain information about a culture . . . and [they] include but are not limited to sites, structures, districts, objects and artifacts, and historic documents associated with or representative of peoples, cultures, and human activities and events, either in the present or in the past. Cultural resources also can include the primary written and verbal data for interpreting and understanding those tangible resources.*"

Historic Resources: Historic resources are any cultural resource dating from the period between the onset of written records (which in northern New York State is typically placed around the time of first European contact in the sixteenth century) and 50 years ago.

In the State of New York, the State Historic Preservation Office (SHPO) – within the New York State Office of Parks, Recreation and Historic Preservation (NYS OPRHP) – helps communities identify, evaluate, preserve, and revitalize their historic and cultural resources. New York SHPO maintains GIS databases of all historic and cultural assets listed on the State and National Registers. To identify the resources of this nature located in Jefferson County, GIS files were obtained through a request to the NYS OPRHP. This data includes only those cultural and historic properties and sites that are included in the New York State or National Registers of Historic Places, or that have been determined Eligible for inclusion through federal or state processes as administered by the New York

SHPO. Inclusion in this data set does not preclude the existence of other historic properties or sites not within this category or as yet unidentified.

Historical and cultural assets located in Jefferson County are presented in Table 3b.6. According to New York SHPO and National Register of Historic Places data there are 136 such assets georeferenced and registered in the planning area. According to the available records, State and Federally listed historical assets are located in 22 of the 43 municipalities covered by this hazard mitigation plan. In The National Register of Historic Places also includes two archaeological districts (LeRaysville in LeRay and Sterlingville in Philadelphia) and three historic sites (James LeRay Mansion in LeRay, Swarthout Site in Clayton, and Wood's Gristmill in Wilna) for which the exact locations are restricted since they all lie inside the Fort Drum Military Reservation. The exposure of identified historical and cultural resources to hazards with discrete delineable impact areas is presented in Appendix C.

Table 3b.6
Historic and Cultural Resources in Jefferson County
(Source: NYS OPHRP)

Municipality	Historic Structure / Landmark Name	Location / Address
Adams, Village of	Adams Commercial Historic District	Main and North Main Streets; East and West Church Streets
Adams, Village of	Smith-Ripley House	29 East Church Street
Alexandria, Town of	George C. Boldt Yacht House	Northwest of Alexandria Bay on Wellesley Island
Alexandria, Town of	Densmore Methodist Church of the Thousand Islands	Route 100 at Densmore Bay
Alexandria, Town of	Ingleside	West of Alexandria Bay on Cherry Island
Alexandria, Town of	Longue Vue Island	St. Lawrence River
Alexandria Bay, Village of	Cornwall Brothers' Store	2 Howell Place
Alexandria Bay, Village of	Church of Saint Lawrence	Fuller Street
Alexandria Bay, Village of	Holland Library	7 Market Street
Antwerp, Town of	Dr. Abner Benton House	Main Street
Antwerp, Town & Village of	Antwerp Historic District	Main, Depot, Maple Streets, Lexington, Hoyt, Madison Avenues
Brownville, Village of	William Archer House	112 Washington Street
Brownville, Village of	General Jacob Brown Mansion	Brown Boulevard
Brownville, Village of	Brownville Hotel	Brown Boulevard and West Main Street
Brownville, Village of	Vogt House	110 Main Street
Brownville, Village of	St. Paul's Church (Episcopal)	210 Washington Street
Brownville, Village of	Arthur Walrath House	114 Corner Pike
Cape Vincent, Town of	Xavier Chevalier House	Gosier Road
Cape Vincent, Town of	Joseph Docteur House	Rosiere Road
Cape Vincent, Town of	Johnson House	Tibbetts Point Road
Cape Vincent, Town & Village of	Broadway Historic District	St. Lawrence River, west edge of Village of Cape Vincent, on Broadway & Tibbetts Point

Table 3b.6
Historic and Cultural Resources in Jefferson County
(Source: NYS OPHRP)

Municipality	Historic Structure / Landmark Name	Location / Address
Cape Vincent, Town of	Nicholas Cocaigne House	Favret Road
Cape Vincent, Town of	Remy Dezengremel House	Rosiere Road
Cape Vincent, Town of	Reuter Dyer House	Rosiere Road
Cape Vincent, Town of	Claude Vautrin House	Mason Road
Cape Vincent, Town of	Warren Wilson House	Favret Road
Cape Vincent, Town of	Rogers Brothers Farmstead	Dablon Point Road
Cape Vincent, Town of	Tibbetts Point Light	Tibbetts Point
Cape Vincent, Town of	Captain Louis Peugnet House	Tibbetts Point Road
Cape Vincent, Town of	George Reynolds House	River Road
Cape Vincent, Town of	St. Vincent of Paul Catholic Church	Kanady St.
Cape Vincent, Town of	Union Meeting House	Millens Bay Road
Cape Vincent, Village of	Levi Anthony Building	Broadway
Cape Vincent, Village of	Aubertine Building	Broadway
Cape Vincent, Village of	John Borland House	Market Street
Cape Vincent, Village of	James Buckley House	Joseph Street
Cape Vincent, Village of	E. K. Burnham House	565 Broadway
Cape Vincent, Village of	Duvillard Mill	Broadway
Cape Vincent, Village of	Jean Philippe Galband du Fort House	James Street
Cape Vincent, Village of	General Sacket House	4407 James Street
Cape Vincent, Village of	Glen Building	Broadway
Cape Vincent, Village of	Lewis House	Market Street
Cape Vincent, Village of	Roxy Hotel	310 Broadway
Cape Vincent, Village of	Cornelius Sacket House	571 Broadway
Cape Vincent, Village of	St. John's Episcopal Church	Market Street
Cape Vincent, Village of	Otis Starkey House	Point Street
Cape Vincent, Village of	Vincent LeRay House	Broadway (NY 12E)
Carthage, Village of	State Street Historic District	249-401 State Street, 246-274 State Street and 106-108 Mechanic Street
Carthage, Village of	US Post Office	521 State Street
Carthage, Village of	First Baptist Church and Cook Memorial Building	511 State Street
Chaumont, Village of	Chaumont Historic District	Along Main Street, between Washington and Church Streets
Chaumont, Village of	Cedar Grove Cemetery	Washington Street
Chaumont, Village of	Chaumont Railroad Station	Main Street
Chaumont, Village of	Chaumont Grange Hall and Dairymen's League Building	Main Street
Chaumont, Village of	Evans-Gaige-Dillenback House	Evans Road
Chaumont, Village of	Chaumont House	Main Street

Table 3b.6
Historic and Cultural Resources in Jefferson County
(Source: NYS OPHRP)

Municipality	Historic Structure / Landmark Name	Location / Address
Chaumont, Village of	George House	Washington Street
Clayton, Town of	Fairview Manor	38289 NY 12E
Clayton, Village of	Clayton Historic District	203-215 & 200-326 James Street, 500-544 & 507-537 Riverside Drive
Clayton, Village of	Captain Simon Johnstone House	507 Riverside Drive
Clayton, Village of	Swarthout Site	Address Restricted
Dexter, Village of	Dexter Universalist Church	Brown and Kirby Streets
Ellisburg, Town of	Pierrepont Manor Complex	North of Mannsville on Ellisburg Street
Evans Mills, Village of	LeRay Hotel	Main and Noble Streets
Henderson, Town of	Cyrus Bates House	7185 NY 3
Hounsfield, Town of	Madison Barracks	Military Road
Hounsfield, Town of	Ressequie Farm	Parker Road
Hounsfield, Town of	Conklin Farm	Evans Road
Hounsfield, Town of	Stevenson-Frink Farm	Salt Point Road
Hounsfield, Town of	Simon Read Farm	Cady Road
Hounsfield, Town of	Galloo Island Light	Galloo Island
Hounsfield, Town of	Stephen Simmons House	Camps Mills Road, west of Old Slat Points Road
Hounsfield, Town of	Dr. Samuel Guthrie House	Co. Road 75/Military Road
Hounsfield, Town of	Bedford Creek Bridge	Campbell's Point Road over Bedford Creek
Hounsfield, Town of	District School No. 19	County Road 69
Hounsfield, Town of	District School No. 20	NY 3, South of County Road 75
Hounsfield, Town of	Sulphur Springs Cemetery	County Road 62, southwest of Spencer Road
Hounsfield, Town of	East Hounsfield Christian Church	NY 3
Hounsfield, Town of	Star Grange No. 9	Sulphur Springs Road between Jericho and Spencer Rds.
Hounsfield, Town of	Shore Farm	Military Road, east of Mill Creek
LeRay, Town of	James LeRay Mansion Complex	Address Restricted
Lyme, Town of	Getman Farmhouse	South Shore Road
Lyme, Town of	Lance Farm	South Shore Road
Lyme, Town of	Wilcox Farmhouse	Carrying Place Road
Lyme, Town of	Point Salubrious Historic District	Point Salubrious Road
Lyme, Town of	Angell Farm	South Shore Road, County Road 57
Lyme, Town of	Taft House	Main Street, Three Mile Bay
Lyme, Town of	United Methodist Church	South Shore Road
Lyme, Town of	Three Mile Bay Historic District	Junction of Church and Depot Streets, Three Mile Bay

Table 3b.6
Historic and Cultural Resources in Jefferson County
(Source: NYS OPHRP)

Municipality	Historic Structure / Landmark Name	Location / Address
Lyme, Town of	Old Stone Shop	Main Street, Three Mile Bay
Lyme, Town of	The Row	Main Street at Shaver Creek, Three Mile Bay
Lyme, Town of	Taylor Boathouse	Bay View Drive, Three Mile Bay
Lyme, Town of	Union Hall	South Shore Road
Lyme, Town of	Menzo Wheeler House	Main and Depot Streets
Lyme, Town of	District School No. 3	Junction of NY 3 and County Road 57, Putnam Corners
Orleans, Town of	Thousand Island Park Historic District	South tip of Wellesley Island
Orleans, Town of	John N. Rottiers Farm	NY 180
Orleans, Town of	A. Newton Farm	NY 180; North and South Sides
Orleans, Town of	Stone Mills Union Church	NY 180 near junction with Carter Street
Orleans, Town of	Rock Island Light Station	North of Fishers Landing on Rock Island
Orleans, Town of	Irwin Brothers Store	NY 180
Orleans, Town of	Buttermilk Flat Schoolhouse No. 22	Buttermilk Flat Road; East of Carter Street Road
Orleans, Town of	Carter Street Schoolhouse No. 21	Dog Hill Road at Carter Street
Orleans, Town of	Elijah Horr House	NY 180
Orleans, Town of	La Farge Land Office	Southwest corner of Main and Mill Streets
Orleans, Town of	La Fargeville United Methodist Church	Main Street
Orleans, Town of	Saint Paul's Episcopal Church	Main Street
Orleans, Town of	Thousand Island Grange Hall	Gore Road
Orleans, Town of	Methodist-Protestant Church at Fisher's Landing	Reed Point Road
Orleans, Town of	Saint John's Roman Catholic Church	Main Street (NY 180)
Orleans, Town of	Central Garage	Clayton Street
Orleans, Town of	Byron J. Strough House	Clayton Street; South side; West of junction NY 411
Orleans, Town of	Charles Ford House	Ford Street
Orleans, Town of	Tracy Farm	East Side Wilder Road; South of junction with Overbluff Road
Orleans, Town of	Methodist Episcopal Church	NY 180
Orleans, Town of	Budlong House (LaFarge Retainer Houses)	Main Street (NY 180); East side
Orleans, Town of	Biddlecom House (LaFarge Retainer Houses)	Main Street (NY 180); East side
Rutland, Town of	George Brothers Building	Mill Street
Sackets Harbor, Village of	Sackets Harbor Battlefield	Coastline and area from Sackets Harbor southwest to and including Horse Island

Table 3b.6
Historic and Cultural Resources in Jefferson County
(Source: NYS OPHRP)

Municipality	Historic Structure / Landmark Name	Location / Address
Sackets Harbor, Village of	Madison Barracks	Military Road
Sackets Harbor, Village of	Shore Farm	Military Road, east of Mill Creek
Sackets Harbor, Village of	Union Hotel	Main and Ray Streets
Sackets Harbor, Village of	Sackets Harbor Village Historic District	Main, Washington, Pike, Edmund, Hill, Hamilton, Broad, and Ambrose Streets
Sackets Harbor, Village of	Elisha Camp House	310 General Smith Drive
Watertown, City of	Public Square Historic District	Roughly Court, Arsenal, Washington, Franklin and State Streets
Watertown, City of	Paddock Mansion	228 Washington Street
Watertown, City of	Roswell P. Flower Memorial Library	229 Washington Street
Watertown, City of	Watertown Masonic Temple	240 Washington Street
Watertown, City of	Jefferson County Courthouse Complex	Southeast corner of Arsenal and Sherman Streets
Watertown, City of	St. Paul's Episcopal Church	308 Clay Street
Watertown, City of	Trinity Episcopal Church and Parish House	219-227 Sherman Street
Watertown, City of	Thomas Memorial AME Zion Church	715 Morrison Street
Watertown, City of	Emerson Place	20-30 Emerson Place
Watertown, City of	Emma Flower Taylor Mansion	241 Clinton Street
Watertown, City of	Paddock Arcade	Washington St. between Arsenal and Store Streets
Wilna, Town of	Wood's Grist Mill	Address Restricted

The Tibbetts Point Lighthouse in Cape Vincent was built in 1827 at the point where Lake Ontario meets the St. Lawrence River. It is named after Captain John Tibbetts of Troy, NY who donated the land on which it was built. In addition to being listed on the National Register of Historic Places, the lighthouse is also designated a National Historic Landmark.

Population

The Countywide population as determined by the 2000 Census was 111,738 in 43,309 households and the U.S Census Bureau estimated the 2008 population to be 118,046 - an increase of over five percent from the 2000 Census. More information regarding likely future population trends can be found in the discussion of Land Use and Development Trends in a later section of the Plan report. Table 3b.7 presents the breakdown of the county population and household totals in 2000 by municipality.

Table 3b.7
Population and Households by Jurisdiction (2000 Census[1])

Jurisdiction	Population		Households	
	Total	Percent of County	Total	Percent of County
Adams, Town of	3,158	4.3%	1,159	2.9%
Adams, Village of	1,624	1.5%	705	1.8%
Alexandria, Town of	3,009	3.7%	1,171	2.9%
Alexandria Bay, Village of	1,088	1.0%	482	1.2%
Antwerp, Town of	1,077	1.6%	361	0.9%
Antwerp, Village of	716	0.6%	260	0.6%
Black River, Village of	1,285	1.2%	521	1.3%
Brownville, Town of	3,701	5.2%	1,345	3.4%
Brownville, Village of	1,022	0.9%	419	1.0%
Cape Vincent, Town of	2,585	3.0%	519	1.3%
Cape Vincent, Village of	760	0.7%	348	0.9%
Carthage, Village of	3,721	3.3%	1,417	3.5%
Champion, Town of	2,259	3.9%	845	2.1%
Chaumont, Village of	592	0.5%	233	0.6%
Clayton, Town of	2,996	4.3%	1,086	2.7%
Clayton, Village of	1,821	1.6%	828	2.1%
Deferiet, Village of	309	0.3%	120	0.3%
Dexter, Village of	1,120	1.0%	420	1.0%
Ellisburg, Town of	2,872	3.2%	1,035	2.6%
Ellisburg, Village of	269	0.2%	91	0.2%
Evans Mills, Village of	605	0.5%	251	0.6%
Glen Park, Village of	487	0.4%	175	0.4%
Henderson, Town of	1,377	1.2%	577	1.4%
Herrings, Village of	129	0.1%	42	0.1%
Hounsfield, Town of	1,937	3.0%	697	1.7%
LeRay, Town of	19,231	17.8%	4,747	11.8%
Lorraine, Town of	930	0.8%	327	0.8%
Lyme, Town of	1,423	1.8%	580	1.4%

Table 3b.7
Population and Households by Jurisdiction (2000 Census[1])

Jurisdiction	Population		Households	
	Total	Percent of County	Total	Percent of County
Mannsville, Village of	400	0.4%	143	0.4%
Orleans, Town of	2,465	2.2%	928	2.3%
Pamelia, Town of	2,897	2.6%	1,044	2.6%
Philadelphia, Town of	621	1.9%	213	0.5%
Philadelphia, Village of	1,519	1.4%	546	1.4%
Rodman, Town of	1,147	1.0%	385	1.0%
Rutland, Town of	2,959	2.6%	1,097	2.7%
Sackets Harbor, Village of	1,386	1.2%	653	1.6%
Theresa, Town of	1,602	2.2%	561	1.4%
Theresa, Village of	812	0.7%	308	0.8%
Watertown, City of	26,705	23.9%	11,036	27.5%
Watertown, Town of	4,482	4.0%	1,407	3.5%
West Carthage, Village of	2,102	1.9%	830	2.1%
Wilna, Town of	2,076	5.6%	756	1.9%
Worth, Town of	234	0.2%	96	0.2%
County Total	*111,738*	*100%*	*40,068*	*100%*

Note 1: Detailed breakdown data for years later than 2000 is not yet available for all municipalities.

Note 2: Household totals for these towns include households in villages whose municipal areas cover parts of more than one town and for which detailed household breakdowns are not available:

- Town of Rutland: Includes part of the Village of Black River
- Town of LeRay: Includes part of the Village of Black River
- Town of Brownville: Includes part of the Village of Glen Park
- Town of Pamelia: Includes part of the Village of Glen Park

For the purposes of this plan, "vulnerable" has been taken to mean residents of the county aged under five or over 65 years. Compared to the majority of the county population, people of these ages are assumed to require extra medical care and additional resources, particularly in the event of emergency evacuation. When viewed in combination with the data in Table 3b.5 and subsequent assessments of assets in individual hazard areas, this data may be used to highlight areas which may benefit from increased focus in the development of mitigation goals and strategies.

Table 3b.8 indicates that about 19 percent of the population of the planning area can be termed "vulnerable", and that the municipalities with the highest proportion of vulnerable residents are the Villages of Cape Vincent and Alexandria Bay (29% and 28%), while the Towns of Theresa and Cape Vincent has the lowest (12% and 11%). Within the vulnerable sector of the population, the percentage of seniors outnumbers that of small children in every municipality except the Villages of Herrings and Philadelphia and the Towns of LeRay and Lorraine. In three of these municipalities small children outnumber seniors by small margins, but in LeRay small children outnumber seniors by approximately five to one.

In all other municipalities seniors outnumber small children by an average ratio of around than 2.5 to 1. In Jefferson County overall, small children account for 7.3% of municipal populations, while seniors account for 11.3%.

Table 3b.8
Vulnerable Sectors of the Population by Jurisdiction (2000 Census[1])

Jurisdiction	Total Population	Under 5 Years	Percent of Municipal Total	65 Years and over	Percent of Municipal Total	Total Vulnerable Population	Percent of Municipal Total
Adams, Town of	3,158	200	6.3%	324	10.3%	524	16.6%
Adams, Village of	1,624	111	6.8%	265	16.3%	376	23.2%
Alexandria, Town of	3,009	167	5.6%	421	14.0%	588	19.5%
Alexandria Bay, Village of	1,088	47	4.3%	253	23.3%	300	27.6%
Antwerp, Town of	1,077	76	7.1%	82	7.6%	158	14.7%
Antwerp, Village of	716	36	5.0%	91	12.7%	127	17.7%
Black River, Village of	1,285	76	5.9%	177	13.8%	253	19.7%
Brownville, Town of	3,701	209	5.6%	417	11.3%	626	16.9%
Brownville, Village of	1,022	68	6.7%	160	15.7%	228	22.3%
Cape Vincent, Town of	2,585	49	1.9%	231	8.9%	280	10.8%
Cape Vincent, Village of	760	36	4.7%	184	24.2%	220	28.9%
Carthage, Village of	3,721	287	7.7%	539	14.5%	826	22.2%
Champion, Town of	2,259	136	6.0%	240	10.6%	376	16.6%
Chaumont, Village of	592	24	4.1%	92	15.5%	116	19.6%
Clayton, Town of	2,996	199	6.6%	349	11.6%	548	18.3%
Clayton, Village of	1,821	104	5.7%	380	20.9%	484	26.6%
Deferiet, Village of	309	20	6.5%	63	20.4%	83	26.9%
Dexter, Village of	1,120	64	5.7%	173	15.4%	237	21.2%
Ellisburg, Town of	2,872	178	6.2%	350	12.2%	528	18.4%
Ellisburg, Village of	269	11	4.1%	27	10.0%	38	14.1%
Evans Mills, Village of	605	39	6.4%	100	16.5%	139	23.0%
Glen Park, Village of	487	37	7.6%	63	12.9%	100	20.5%
Henderson, Town of	1,377	57	4.1%	261	19.0%	318	23.1%
Herrings, Village of	129	11	8.5%	6	4.7%	17	13.2%

Table 3b.8
Vulnerable Sectors of the Population by Jurisdiction (2000 Census[1])

Jurisdiction	Total Population	Under 5 Years	Percent of Municipal Total	65 Years and over	Percent of Municipal Total	Total Vulnerable Population	Percent of Municipal Total
Hounsfield, Town of	1,937	96	5.0%	243	12.5%	339	17.5%
LeRay, Town of	19,231	2,194	11.4%	441	2.3%	2635	13.7%
Lorraine, Town of	930	78	8.4%	68	7.3%	146	15.7%
Lyme, Town of	1,423	52	3.7%	263	18.5%	315	22.1%
Mannsville, Village of	400	39	9.8%	61	15.3%	100	25.0%
Orleans, Town of	2,465	146	5.9%	300	12.2%	446	18.1%
Pamelia, Town of	2,897	180	6.2%	234	8.1%	414	14.3%
Philadelphia, Town of	621	32	5.2%	55	8.9%	87	14.0%
Philadelphia, Village of	1,519	167	11.0%	126	8.3%	293	19.3%
Rodman, Town of	1,147	66	5.8%	98	8.5%	164	14.3%
Rutland, Town of	2,959	161	5.4%	291	9.8%	452	15.3%
Sackets Harbor, Village of	1,386	73	5.3%	151	10.9%	224	16.2%
Theresa, Town of	1,602	94	5.9%	103	6.4%	197	12.3%
Theresa, Village of	812	48	5.9%	81	10.0%	129	15.9%
Watertown, City of	26,705	2,076	7.8%	4,140	15.5%	6216	23.3%
Watertown, Town of	4,482	230	5.1%	442	9.9%	672	15.0%
West Carthage, Village of	2,102	197	9.4%	290	13.8%	487	23.2%
Wilna, Town of	2,076	133	6.4%	204	9.8%	337	16.2%
Worth, Town of	234	8	3.4%	28	12.0%	36	15.4%
County Total	*111,738*	*8,199*	*7.3%*	*12,627*	*11.3%*	*20,826*	*18.6%*

Note 1: Detailed breakdown data for years later than 2000 is not yet available for all municipalities.
Note 2: Household totals for these towns include households in villages whose municipal areas cover parts of more than one town and for which detailed household breakdowns are not available (see Footnote 2 under Table 3b.7).

SECTION 3c - RISK ASSESSMENT: *ESTIMATED DAMAGES IN HAZARD AREAS*

44 CFR Part 201.6 (c)(2)(ii)(B) states, "[The plan should describe vulnerability in terms of an] estimate of the potential dollar losses to vulnerable structures identified in paragraph (c)(2)(i)(A) of this section and a description of the methodology used to prepare this estimate…" This section of the Plan is intended to satisfy this requirement.

Methodology

This plan aims to assess vulnerability to various hazards within the limitations of the available data, where generally accepted measures of vulnerability are established. Parcel data included assessed values for land and total assessed values; assessed values for improvements were calculated by subtracting the land value from the total value. Expanding upon the parcel data in the County's GIS to include such information as building square footage, year built, type, foundation type, and condition, would allow for a more accurate assessment of vulnerability. Therefore, the Planning Committee has considered actions in this regard. Please see further sections of this plan for additional information on actions considered and ultimately selected.

To ensure that meaningful conclusions could be drawn across the range of susceptible hazards, the plan presents an estimation of annual damages for each hazard (as opposed to event damages or damages associated with a certain recurrence interval), in all cases where generally accepted methodologies exist for estimating potential dollar losses to vulnerable structures, and where sufficient data was readily available to employ these methodologies. FEMA guidance currently acknowledges that for some of the hazards in Jefferson County, there are no standard methodologies suitable for application in the mitigation planning context. During future updates of this plan, additional efforts should be made to seek out sources of data and approved methodologies with which to estimate potential annualized dollar losses for those hazards that lack them in this current draft plan.

Atmospheric Hazards

Estimated Damages – Extreme Temperatures

Generally accepted methodologies suitable for use in the mitigation planning context do not exist for estimating potential dollar losses to vulnerable structures during extreme heat/cold events.

While all of Jefferson County is exposed to extreme temperatures, existing buildings, infrastructure and critical facilities are not considered significantly vulnerable to substantial damage caused by extreme heat or cold events. Therefore any estimated property losses associated with these hazards are anticipated to be minimal across the planning area. Extreme temperatures do, however, present a significant life and safety threat to the planning area's population.

Heat casualties are usually caused by lack of adequate air conditioning or heat exhaustion. The most vulnerable population to heat casualties are the elderly or infirmed, who frequently live on low fixed incomes and cannot afford to run air-conditioning on a regular basis. This population is sometimes isolated, with no immediate family or friends to look out for their well being.

Casualties resulting from extreme cold may result from a lack of adequate heat, carbon monoxide poisoning from unsafe heat sources and frostbite. The most vulnerable populations to cold casualties are

the elderly or infirmed as well as low income households, as they may not be able to afford to operate a heat source on a regular basis and may not have immediate family or friends to look out for their well being.

Given the lack of historical data and limited likelihood for structural losses resulting from extreme heat or cold occurrences in the planning area, and that placing dollar damage amounts on non-structural costs, such as damages to human health, are beyond the scope of this study, annualized economic losses for each municipality in the county due to extreme temperatures are currently considered to be unquantifiable, but most likely negligible.

Estimated Damages – Extreme Winds

Generally-accepted methodologies do exist for estimating potential dollar losses to vulnerable structures during extreme wind events; however, sufficient data was not available at the time of the study to estimate detailed damages to structures due to extreme winds. At this time, overall vulnerability is being expressed as the value of improvements exposed to the hazard (as defined in the "Hazard Profiles" section). Because it cannot be predicted where extreme winds may occur, all existing and future buildings, facilities and populations in all municipalities in the county are considered to be exposed to this hazard and could potentially be impacted.

While FEMA methodologies do exist to estimate structure damages due to extreme wind, a great deal of specific information is required for buildings in order to employ these methodologies, such as type of construction and details on any existing protective features. This data was not included in GIS datasets supplied by Jefferson County and was not readily available from other sources.

Second, having even the year built data for each structure, one would be able to highlight structures built before codes and standards were adopted to make buildings more resistant to wind damage, thus being better candidates for mitigation. Without the year-built data, this can not be done.

While historical data regarding events and associated losses was available from NCDC, this data does not readily allow estimates of wind-induced damage to be made easily specifically for Jefferson County: The NCDC database records 54 extreme wind events affecting Jefferson County in the period 1962 through 2008, and while these events caused more than $25 million in damages, these damages are often given for multi-county areas and there is usually no way to break down the damage figures so that damages specific to Jefferson County can be isolated.

Included in FEMA tools and methodologies for the estimation of damages due to wind is a standard figure for economic losses due to power outages. Currently FEMA values the loss of electrical service at $126 per person served per day. Given that power outages are very common during extreme wind events, an estimate of annual losses due to power outages can be derived.

Power supply reliability data provided by National Grid (the entity responsible for electricity supply in Jefferson County) indicates that Jefferson County customers experienced an average of 1.4 to 7.9 hours of power supply interruption from January 2005 through December 2008, with an overall average outage duration of 3.5 hours. Using the FEMA standard value for power losses, the data from National Grid can be used to derive the annual losses due to power outages for Jefferson County municipalities presented in Table 3c.1.

Table 3c.1
Estimated Losses due to Power Outages (2005-2008)
(Source: National Grid Inc.)

Municipalities	Total Customers* Served	Annual Average Number of Interruptions (2003-2008)	Annual Average Interruption Duration (hours)	Value of lost service of the four year period of record	Annual average value of lost service
Adams (includes Village of Adams)	2,555	43	3.75	$324,325	$81,081
Alexandria (includes Alexandria Bay)	4,351	56	3.09	$124,373	$31,093
Antwerp (includes Village of Antwerp)	876	17	5.44	$112,557	$28,139
Brownville (includes Village of Dexter, Glen Park & Brownville)	3,206	46	3.82	$98,027	$24,507
Cape Vincent (includes Village of Cape Vincent)	2,951	27	3.76	$47,949	$11,987
Champion (includes Village of West Carthage)	2,314	11	3.78	$31,514	$7,879
Clayton (includes Village of Clayton)	4,068	50	2.84	$79,653	$19,913
Ellisburg (includes Village of Ellisburg & Mannsville)	1,894	27	4.90	$211,586	$52,897
Henderson	1,705	19	4.16	$55,734	$13,933
Hounsfield (includes Village of Sackets Harbor)	2,298	14	3.24	$24,873	$6,218
Le Ray (includes Village of Evan Mills & Black River in part)	3,735	35	1.51	$156,090	$39,023
Lorraine	388	10	3.00	$19,979	$4,995
Lyme (includes Village of Chaumont)	2,408	23	3.01	$122,528	$30,632
Orleans	2,589	35	2.25	$54,716	$13,679
Pamelia	1,496	11	1.37	$10,525	$2,631
Philadelphia (includes Village of Philadelphia)	653	11	3.86	$61,550	$15,387
Rodman	507	12	3.13	$48,522	$12,130
Rutland (includes Village of Black River in part)	1,346	16	3.36	$37,011	$9,253
Theresa (includes Village of Theresa)	1,566	28	5.17	$48,868	$12,217
Watertown (City)	14,504	67	1.95	$460,914	$115,229
Watertown	2,282	46	2.04	$112,027	$28,007
Wilna (includes Villages of Carthage, Deferiet & Herrings)	3,182	24	2.62	$260,702	$65,175
Worth	582	2	7.88	$6,203	$1,551
Jefferson County Total	***61,456***	***630***	***3.48***	***$2,510,227***	***$627,557***

* "Customers" has been taken to mean residences or businesses receiving electrical power from the supplier. This has been converted to a population via calculations not included for simplicity.

It should be noted that the figures provided by National Grid were not accompanied by any additional data regarding the causes of the recorded outages; while high winds may be considered the primary cause of downed power lines in Jefferson County, ice and snow also frequently cause widespread power outages, and the NCDC records several ice and snow events that disrupted power supplies in the period

2005 – 2008. Hence it is not possible to estimate with confidence the proportion of the $627,557 in estimated damages which could have been caused solely by extreme wind events.

It should also be noted that the NCDC records for the period 2005 – 2008 did not include any large-scale wind events disrupting power to many thousands of people, such as the microburst event of July 1995. This event affected a wide area with local reports indicating that service was disrupted for 75-80,000 customers in Jefferson and Lewis Counties for two to three days. If it is assumed that the majority of these customers were in Jefferson County (say 60,000), based on their respective population sizes, then the total loss due to power outage for this event alone could be in the region of $15-20 million.

An attempt has been made to derive more detailed annualized losses due wind-induced power outages by adjusting the baseline damages from Table 3c.1 to account for other causes of service disruption (i.e. winter and ice storms and combining them with annualized damages from lower frequency but more catastrophic events such as the 1995 microburst, and the results are presented in Table 3c.2. The following assumptions were made in the derivation of these damages:

- Based on the relative occurrence of all power outage-causing events recorded by NCDC in the period 2005 through 2008, approximately 80% of outages are caused by extreme winds, while the rest are caused by ice and winter storms.
- Catastrophic wind events causing Countywide power losses such as the July 1995 microburst are significantly rare; an exceedance interval of 50 years has been assumed for this analysis.

Table 3c.2
Estimated Annual Damages: Wind-Induced Power Outages
(Source: National Grid / NCDC)

Municipalities	Baseline Damages	Low Frequency (Catastrophic Event) Damages	Total Damage
Adams, Town of	$46,852	$10,516	$57,369
Adams, Village of	$24,094	$5,408	$29,502
Alexandria, Town of	$19,982	$10,020	$30,002
Alexandria Bay, Village of	$7,225	$3,623	$10,848
Antwerp, Town of	$14,790	$3,587	$18,376
Antwerp, Village of	$9,832	$2,384	$12,217
Black River, Village of	$2,077	$4,279	$6,357
Brownville, Town of	$12,537	$12,325	$24,862
Brownville, Village of	$3,462	$3,403	$6,865
Cape Vincent, Town of	$8,106	$8,608	$16,714
Cape Vincent, Village of	$2,383	$2,531	$4,914
Carthage, Village of	$34,034	$12,391	$46,426
Champion, Town of	$3,571	$7,523	$11,094
Chaumont, Village of	$7,875	$1,971	$9,846
Clayton, Town of	$10,837	$9,977	$20,814
Clayton, Village of	$6,587	$6,064	$12,651
Deferiet, Village of	$2,826	$1,029	$3,855
Dexter, Village of	$3,794	$3,730	$7,524
Ellisburg, Town of	$37,540	$9,564	$47,104
Ellisburg, Village of	$3,516	$896	$4,412
Evans Mills, Village of	$978	$2,015	$2,993
Glen Park, Village of	$1,650	$1,622	$3,272
Henderson, Town of	$12,192	$4,586	$16,777
Herrings, Village of	$1,180	$430	$1,609

Table 3c.2
Estimated Annual Damages: Wind-Induced Power Outages
(Source: National Grid / NCDC)

Municipalities	Baseline Damages	Low Frequency (Catastrophic Event) Damages	Total Damage
Hounsfield, Town of	$3,172	$6,450	$9,622
Le Ray, Town of	$31,089	$64,041	$95,131
Lorraine, Town of	$4,370	$3,097	$7,467
Lyme, Town of	$18,928	$4,739	$23,667
Mannsville, Village of	$5,228	$1,332	$6,560
Orleans, Town of	$11,969	$8,209	$20,178
Pamelia, Town of	$2,302	$9,647	$11,950
Philadelphia, Town of	$3,907	$2,068	$5,975
Philadelphia, Village of	$9,557	$5,058	$14,615
Rodman, Town of	$10,614	$3,820	$14,434
Rutland, Village of	$8,096	$9,854	$17,950
Sackets Harbor, Village of	$2,269	$4,616	$6,885
Theresa, Town of	$7,094	$5,335	$12,429
Theresa, Village of	$3,596	$2,704	$6,300
Watertown, Town of	$24,506	$14,926	$39,431
Watertown, City of	$100,825	$88,930	$189,755
West Carthage, Village of	$3,323	$7,000	$10,323
Wilna, Town of	$18,988	$6,913	$25,901
Worth, Town of	$1,357	$779	$2,136
Jefferson County Total	***$549,112***	***$378,000***	***$927,112***

Estimated Damages – Lightning

Generally-accepted loss estimation methodologies suitable for use in the mitigation planning context do not exist for estimating potential dollar losses to vulnerable structures due to lightning, and that historic damage accounts lack sufficient detail to enable even a rough analysis of annualized lightning losses for participating jurisdictions.

While qualitative information on historic occurrences was available for some events, available data such as the numbers and locations of lightning strikes and damages attributed to them was not sufficient at the time of the study to estimate damages due to lightning. At this time, vulnerability is being expressed as the value of improvements exposed to the hazard, as presented in the "Hazard Profiles" section of this plan.

First, current loss estimation methodologies are not available for estimating lightning damages.

Second, having even the year built data for each structure, one would be able to highlight structures built before codes and standards were adopted to make buildings more resistant to lightning damage, thus being better candidates for mitigation. Without the year-built data, this can not be done.

If this information should become available in the future, it could be incorporated into future updates of the plan. While one could make some blanket assumptions at this time to use various tools for loss estimation, this would likely yield erroneous data given the high degree of variation in type and density of development in the study area. Acting upon such rough estimates could result in an unwise use of limited resources.

In general terms, estimated damages due to a single lightning event could be severe in any one location, however no one location or municipality in the county is any more vulnerable than another, and annual damages from lightning in the study area are estimated to be generally low.

Estimated Damages – Tornados

For the purpose of estimating annual tornado damages at this time, we have evaluated the NOAA NCDC database for tornado events in the full period for which NCDC records tornado event details for Jefferson County (1959-2009). The NCDC database records three significant tornado in Jefferson County – one of magnitude F0 and two of magnitude F1. The NCDC database records that these events resulted in a total of approximately $2.53 million in damages, or approximately $63,000 per year county-wide. As a proportion of the total value of improved property in Jefferson County, this represents estimated damages to 0.00091 percent of the improved property in the County on an annual basis. Applying this same percentage uniformly across the County (since tornados can occur at any location, and there is not a delineable tornado hazard area) produces the estimated annual loss figures presented in Table 3c.3, which are quite negligible when considered on an average annual basis. However, dollar damages incurred during any particular event would likely be very localized, and could be quite significant.

Because it cannot be predicted where a tornado may touch down, all existing and future buildings, facilities, and populations are considered to be exposed to this hazard and could potentially be impacted.

Table 3c.3
Estimated Annual Average Damages – Tornado

Jurisdiction	Total Value of Improvements	Estimated Annual Percent Damages	Distributed Annual Loss Estimate, Tornado
Adams, Town of	$175,730,094	0.00091%	$1,597
Adams, Village of	$75,977,600	0.00091%	$690
Alexandria, Town of	$259,310,598	0.00091%	$2,356
Alexandria Bay, Village of	$102,359,250	0.00091%	$930
Antwerp, Town of	$35,680,827	0.00091%	$324
Antwerp, Village of	$22,782,543	0.00091%	$207
Black River, Village of	$69,017,493	0.00091%	$627
Brownville, Town of	$195,286,898	0.00091%	$1,774
Brownville, Village of	$44,738,926	0.00091%	$406
Cape Vincent, Town of	$262,362,672	0.00091%	$2,384
Cape Vincent, Village of	$54,387,216	0.00091%	$494
Carthage, Village of	$148,112,520	0.00091%	$1,346
Champion, Town of	$158,423,000	0.00091%	$1,439
Chaumont, Village of	$40,576,245	0.00091%	$369
Clayton, Town of	$269,994,120	0.00091%	$2,453
Clayton, Village of	$138,078,500	0.00091%	$1,254
Deferiet, Village of	$26,850,800	0.00091%	$244
Dexter, Village of	$46,324,924	0.00091%	$421
Ellisburg, Town of	$138,555,517	0.00091%	$1,259
Ellisburg, Village of	$7,411,700	0.00091%	$67
Evans Mills, Village of	$27,725,000	0.00091%	$252
Glen Park, Village of	$59,893,013	0.00091%	$544
Henderson, Town of	$191,012,823	0.00091%	$1,735
Herrings, Village of	$7,954,100	0.00091%	$72

Table 3c.3 Estimated Annual Average Damages – Tornado			
Jurisdiction	**Total Value of Improvements**	**Estimated Annual Percent Damages**	**Distributed Annual Loss Estimate, Tornado**
Hounsfield, Town of	$125,487,625	0.00091%	$1,140
Le Ray, Town of	$1,180,782,881	0.00091%	$10,727
Lorraine, Town of	$27,780,851	0.00091%	$252
Lyme, Town of	$196,346,342	0.00091%	$1,784
Mannsville, Village of	$19,161,884	0.00091%	$174
Orleans, Town of	$307,380,200	0.00091%	$2,793
Pamelia, Town of	$199,473,646	0.00091%	$1,812
Philadelphia, Town of	$74,670,470	0.00091%	$678
Philadelphia, Village of	$53,296,960	0.00091%	$484
Rodman, Town of	$38,203,936	0.00091%	$347
Rutland, Village of	$87,650,231	0.00091%	$796
Sackets Harbor, Village of	$100,401,726	0.00091%	$912
Theresa, Town of	$89,173,551	0.00091%	$810
Theresa, Village of	$33,167,705	0.00091%	$301
Watertown, Town of	$475,544,391	0.00091%	$4,320
Watertown, City of	$1,234,445,882	0.00091%	$11,215
West Carthage, Village of	$77,658,900	0.00091%	$706
Wilna, Town of	$70,683,576	0.00091%	$642
Worth, Town of	$9,376,136	0.00091%	$85
Jefferson County Total	***$6,959,233,272***	***0.00091%***	***$63,225***

Estimated Damages – Winter Storms

Examination of NCDC records for snow and ice events as mentioned in Section 3a reveals that damaging snowfalls and ice storms are very frequent events in the Jefferson County region, with a recorded 85 such events causing more than $87 million in damage in the 16-year period beginning in January 1993. However, these damages apply to a wide region covering multiple counties and further breakdowns giving damages by individual counties are not readily available from NCDC.

As mentioned previously in the discussion on damages due to extreme winds, data and methodologies exist to allow the estimation of economic damages due to power outages, which are a frequent occurrence during winter storm events. The estimated losses from power outages due to all causes have been presented in Table 3c.1, and the assumption was made in the subsequent derivation of Table 3c.2 that, based on the relative occurrence of damaging extreme wind/winter storm events in the period covered by the National Grid data, approximately 80% of the recorded power outages were due to wind events, with the remainder caused by snow and ice events.

Similarly to the derivation of damages for wind events, NCDC records for the period covered by the National Grid data do not include any large-scale winter storm events, which have been known to affect essentially the whole county and disrupt power supplies to tens of thousands of people at a time. For example, the ice storms of January 1977, March 1991, and January 1998 each affected 30-50,000 people across Jefferson, Lewis, and St. Lawrence Counties, and if it conservatively assumed that outages lasted on average for three days per affected person, power outage losses for these events can be estimated at $5 to $15 million.

In addition to power outages, limited information is available regarding losses suffered by farmers during winter storms. For example, local newspaper reports include agricultural losses in Jefferson County of $8 million from the January 1977 event, and $228,000 from the March 1991 event, predominantly in dairy farms across the County.

Total losses due to disruption of power supplies and agriculture have been derived by the addition of the baseline power outage losses, catastrophic power outage losses annualized over the period 1977 – 2008 and distributed among the County municipalities by population size, and agricultural losses annualized over the same period and distributed among the County municipalities by their agricultural land as a proportion of the County Total. The results of this analysis are presented in Table 3c.4.

Table 3c.4
Estimated Annual Damages: Winter Storms
(Source: National Grid / NCDC / Local press)

Municipalities	Baseline Damages: Power Outages	Catastrophic Damages: Power Outages	Agricultural Damages	Total Damages
Adams, Town of	$6,693	$31,111	$10,198	$48,003
Adams, Village of	$3,442	$15,999	$88	$19,528
Alexandria, Town of	$2,855	$29,643	$18,058	$50,556
Alexandria Bay, Village of	$1,032	$10,718	$0	$11,751
Antwerp, Town of	$2,113	$10,610	$16,044	$28,767
Antwerp, Village of	$1,405	$7,054	$189	$8,648
Black River, Village of	$1,791	$12,659	$33	$14,483
Brownville, Town of	$495	$36,461	$11,373	$48,328
Brownville, Village of	$542	$10,068	$56	$10,667
Cape Vincent, Town of	$236	$25,466	$16,310	$42,012
Cape Vincent, Village of	$1,158	$7,487	$44	$8,689
Carthage, Village of	$340	$36,658	$0	$36,998
Champion, Town of	$510	$22,255	$9,471	$32,236
Chaumont, Village of	$475	$5,832	$4	$6,311
Clayton, Town of	$1,548	$29,515	$20,325	$51,388
Clayton, Village of	$941	$17,940	$0	$18,881
Deferiet, Village of	$5,363	$3,044	$0	$8,407
Dexter, Village of	$502	$11,034	$147	$11,683
Ellisburg, Town of	$747	$28,294	$26,274	$55,315
Ellisburg, Village of	$1,742	$2,650	$352	$4,744
Evans Mills, Village of	$453	$5,960	$28	$6,441
Glen Park, Village of	$324	$4,798	$132	$5,254
Henderson, Town of	$4,441	$13,566	$11,420	$29,427
Herrings, Village of	$140	$1,271	$0	$1,411
Hounsfield, Town of	$297	$19,082	$11,720	$31,099
Le Ray, Town of	$624	$189,455	$11,251	$201,330
Lorraine, Town of	$2,704	$9,162	$5,345	$17,211
Lyme, Town of	$1,125	$14,019	$14,285	$29,428
Mannsville, Village of	$1,710	$3,941	$73	$5,723
Orleans, Town of	$329	$24,284	$15,471	$40,084
Pamelia, Town of	$558	$28,540	$7,818	$36,917
Philadelphia, Town of	$1,365	$6,118	$8,465	$15,948
Philadelphia, Village of	$1,516	$14,965	$61	$16,542
Rodman, Town of	$1,157	$11,300	$10,044	$22,500
Rutland, Village of	$1,013	$29,151	$13,619	$43,783
Sackets Harbor, Village of	$514	$13,654	$318	$14,486
Theresa, Town of	$14,404	$15,782	$9,752	$39,938

Table 3c.4 Estimated Annual Damages: Winter Storms *(Source: National Grid / NCDC / Local press)*				
Municipalities	**Baseline Damages: Power Outages**	**Catastrophic Damages: Power Outages**	**Agricultural Damages**	**Total Damages**
Theresa, Village of	$3,501	$7,999	$45	$11,545
Watertown, Town of	$2,713	$44,155	$4,980	$51,847
Watertown, City of	$4,862	$263,086	$6	$267,954
West Carthage, Village of	$404	$20,708	$28	$21,140
Wilna, Town of	$169	$20,452	$1,120	$21,740
Worth, Town of	$194	$2,305	$2,180	$4,679
Jefferson County Total	***$78,445***	***$1,118,250***	***$257,125***	***$1,453,820***

Hydrologic Hazards

Estimated Damages – Coastal Erosion

Based on information provided by the NYSDEC, the erosion hazard area in Jefferson County is limited to the Lake Ontario shoreline of the Town of Ellisburg. The Town of Ellisburg's lake shoreline is exposed to erosion and wave action from Lake Ontario and is characterized by a system of barrier beaches and dunes, which front a chain of wetlands and ponds. Rear areas are sheltered from direct wave action by an elevated shorefront. The CEHA runs for approximately 10 miles along the shore of Ellisburg. The area is "open coast" shore which can be severely damaged by prevailing westerly winds in the event of a storm as well as fluctuating water levels.

Sufficient data was not available at the time of the study to estimate coastal erosion damages. At this time, vulnerability is being expressed as the value of improvements in the current mapped CEHA.

First, specific erosion rates were not available for the area of concern. For the purpose of this plan, the 1988 NYS CEHA mapping was used to define the coastal erosion hazard area in the Town of Ellisburg. In this area, New York State defined the landward limit of the coastal erosion hazard area at the location of the landward limit of existing natural protective features at that time. NYS CEHA maps did not include any mapped areas with demonstrated long-term average annual recession rates of one foot per year or greater.

Second, FEMA's How-To #2 (FEMA #386-2), Page 4-30, states that "…current standard loss estimation models and tables for erosion damages are not available….As a result, you may wish to simplify your consideration of structure damage so that buildings are assumed to be either undamaged or severely damaged due to erosion. Although slight or moderate damage can occur due to erosion, the likelihood of this level of damage is considered small."

For the purposes of this mitigation plan, the vulnerability to coastal erosion within the Town of Ellisburg has been quantified via GIS analysis using County parcel data and the digitized CEHA extent from the State's 1988 mapping. The results of this analysis are presented in Table 3c.5. This shows that approximately nine percent of the value of all improved property in the Town of Ellisburg is vulnerable to the effects of coastal erosion.

Table 3c.5 Affected Parcels and Improved Property in the NYSDEC Mapped CEHA Jefferson County, NY					
Community	**Total Value of All Improved Property in the Community**	**Estimated Number of CEHA-affected Improved Parcels**	**Estimated Acreage of CEHA-affected Improved Parcels**	**Estimated Value of Improvements on CEHA-affected Parcels**	**Estimated Percent of Total Improved Property in CEHA-affected Parcels**
Ellisburg, Town of	$138,555,517	197 parcels	94 acres	$11,804,547	9%

The probability of occurrence of specific erosion events in Jefferson County was not readily available at the time of this report, and data regarding long/short term erosion rates was not readily available. Erosion rates vary greatly over even short distances and long-term erosion rates and short-term (or storm) erosion rates can differ greatly. The absence of any SHAs on the CEHA map implies the lack of "areas landward of the NPFs…which have a demonstrated long-term average annual recession rate of one foot per year or greater." There are, however, 94 acres of improved land that are within the landward extent of the NPFs and thus considered by the State of New York to be susceptible to coastal erosion. This information will be updated during future maintenance cycles of the plan if information becomes available.

Severe storms can erode large quantities of sand in a relatively short amount of time. However, severe storms do not necessarily cause all beaches to erode. Some beaches will erode, and others will have sand deposited on them. Detailed short-term storm erosion rates for specific communities are not available at this time, but any property that is within the CEHA should be considered at risk for short-term (storm-induced) coastal erosion.

While the percent of building value exposed to coastal erosion is quantifiable, average annual damages associated with coastal erosion are unquantifiable. It is estimated, however, that they could likely be significant within the Town of Ellisburg, as even a 0.05 percent annual damage assumption applied to structures within the CEHA would yield $5,902 in annual damages.

Estimated Damages – Dam Failure

Generally accepted methodologies suitable for use in the mitigation planning context do not exist for estimating potential annual losses to vulnerable structures due to dam failure events, and historical data regarding past events and losses was not sufficient to generate meaningful estimates.

Sufficient data was not available at the time of the study to estimate damages due to dam failure. Since inundation mapping was not readily available for dams in Jefferson County, it has not been possible to estimate vulnerability in terms of improved values within inundation areas for this plan. It is recommended that efforts associated with future updates of the plan include formally obtaining detailed inundation mapping or studies which result in same, at least for the designated moderate hazard dams in the county for use in emergency response and mitigation planning.

Given the lack of historical data for significant dam failure occurrences and data related to the current condition and integrity of dam structures, and that it would be inappropriate to make assumptions regarding the effectiveness of future dam inspection and maintenance activities, it is assumed that

significant dam breaches or failures are an extremely rare event. Therefore, while one major event may result in significant losses, annualizing such losses over a long period of time would most likely yield a negligible annual loss estimate for jurisdictions exposed to this hazard.

Estimated Damages – Drought

According to FEMA's How-To #2, there are currently no standard loss estimation methodologies available for estimating drought damages. If new information or techniques should become available in the future, it could be incorporated into future updates of the plan. While blanket assumptions could be made regarding the overall economic impact of drought, at this time to use various tools for loss estimation, this would likely yield erroneous data given the high degree of variation in type and density of development. Acting upon such rough estimates could result in an unwise use of limited resources. At this time, overall vulnerability is being expressed in qualitative terms in terms of types of damages.

Because drought impacts large areas and cross jurisdictional boundaries, all existing and future buildings, facilities and populations are considered to be exposed to this hazard and could potentially be impacted. However, drought impacts are mostly experienced in water shortages (affecting domestic uses and businesses) and crop losses on agricultural lands and have no impact on buildings.

Crop failure is one common impact of drought. According to the 2007 USDA Census of Agriculture, Jefferson County has 885 farms covering approximately 262,331 acres in total. The Census notes that farmland in Jefferson County is 63.37 percent cropland, 15.7 percent woodland, and 10.61 percent pastureland, while the remaining 10.33 is dedicated to other uses. The market value of production on Jefferson County farms in 2007 was $139.24 million, or $157,335 per farm. In 2007 Jefferson County ranked 3rd out of 62 counties in the State of New York by the amount of land in farms, and 9th for the value of agricultural products sold. By far the greatest proportion of agricultural sales in the county (88 percent) was attributable to livestock sales, while the remaining 12 percent accounted for crop sales Further data breaking down the types and amounts of produce grown in each individual municipality were not readily available at the time of writing.

While agricultural losses during a drought, specifically losses to crops and produce, could be significant to individual farm operators, the overall impact of agricultural losses on the County economy is likely to be slight. When drought begins, the agricultural sector is usually the first to be impacted because of its heavy reliance on stored soil water, which can rapidly be depleted during extended dry periods. When precipitation returns to normal, impacts on the agricultural sector are quick to diminish again due to the reliance on stored soil moisture.

For the purpose of estimating annual drought damages at this time, we have evaluated the NOAA NCDC database for drought events in the full period for which NCDC records drought event details for Jefferson County (1993-2009). The NCDC database records one significant drought event which specifically lists Jefferson County as an affected area since August 1993, the point at which NCDC drought records begin in New York State. The NCDC database records that this event (the drought of August to December 1993) affected all 62 counties in New York State and resulted in $50 million in crop losses state-wide. Estimates of grain feed losses for affected counties were between 40 and 100 percent, and hay, corn, fruit and vegetable crops were also hard hit. In other counties in the affected region, crop losses due to the 1993 drought were estimated at 50 to 60% percent of total crop sales, based on the 1992 USDA Agriculture Census. Applying the same percentage (55 percent) of loss to current crop production values (2007 total crop sales of $16,986,000), annualizing over the NCDC record period (16 years), and distributing the total among the municipalities according to their share of agricultural land produces the estimated annual loss figures presented in Table 3c.6.

This methodology does not take into account the degree of variation in value of various crop types between the municipalities, or the degree of drought resistance, and should be used for mitigation planning purposes only. This is considered to be a significantly conservative estimate, since it relies on only one damage estimate since 1993, a period in which there have been additional drought events for which crop damages are likely to have occurred but were not recorded by NCDC or any other readily available data source.

Table 3c.6
Annual Loss Estimates – Drought
Period of record: 1993 – 2009 (NCDC)

Jurisdiction	Total Acres Cultivated Crop Land (Acres)	Percent of Total Cultivated Crop Land in Jefferson County	Distributed Annual Loss Estimate, Drought
Adams, Town of	4,482	6.10%	$35,634
Adams, Village of	118	0.16%	$938
Alexandria, Town of	1,668	2.27%	$13,261
Alexandria Bay, Village of	29	0.04%	$231
Antwerp, Town of	1,695	2.31%	$13,476
Antwerp, Village of	11	0.01%	$87
Black River, Village of	79	0.11%	$628
Brownville, Town of	2,117	2.88%	$16,831
Brownville, Village of	21	0.03%	$167
Cape Vincent, Town of	4,413	6.01%	$35,085
Cape Vincent, Village of	33	0.04%	$262
Carthage, Village of	21	0.03%	$167
Champion, Town of	4,713	6.42%	$37,470
Chaumont, Village of	19	0.03%	$151
Clayton, Town of	3,615	4.92%	$28,741
Clayton, Village of	37	0.05%	$294
Deferiet, Village of	15	0.02%	$119
Dexter, Village of	0	0.00%	$0
Ellisburg, Town of	13,465	18.33%	$107,052
Ellisburg, Village of	162	0.22%	$1,288
Evans Mills, Village of	23	0.03%	$183
Glen Park, Village of	13	0.02%	$103
Henderson, Town of	4,851	6.61%	$38,567
Herrings, Village of	0	0.00%	$0
Hounsfield, Town of	6,365	8.67%	$50,604
Le Ray, Town of	3,272	4.46%	$26,014
Lorraine, Town of	1,193	1.62%	$9,485
Lyme, Town of	2,435	3.32%	$19,359
Mannsville, Village of	31	0.04%	$246
Orleans, Town of	3,755	5.11%	$29,854
Pamelia, Town of	1,464	1.99%	$11,639
Philadelphia, Town of	1,536	2.09%	$12,212
Philadelphia, Village of	7	0.01%	$56
Rodman, Town of	3,638	4.95%	$28,924
Rutland, Village of	4,129	5.62%	$32,827
Sackets Harbor, Village of	235	0.32%	$1,868
Theresa, Town of	839	1.14%	$6,670
Theresa, Village of	35	0.05%	$278

Table 3c.6 Annual Loss Estimates – Drought Period of record: 1993 – 2009 (NCDC)			
Jurisdiction	**Total Acres Cultivated Crop Land (Acres)**	**Percent of Total Cultivated Crop Land in Jefferson County**	**Distributed Annual Loss Estimate, Drought**
Watertown, Town of	2,141	2.92%	$17,022
Watertown, City of	77	0.10%	$612
West Carthage, Village of	7	0.01%	$56
Wilna, Town of	557	0.76%	$4,428
Worth, Town of	126	0.17%	$1,002
Jefferson County Total	***73,442***	***100%***	***$583,894***

Water supply shortages are a second effect of drought. While water shortages and use restrictions imposed as a result of drought conditions have a detrimental effect on many businesses, particularly certain sectors of the manufacturing industry, calculating actual dollar losses resulting from shortages and use restrictions is beyond the current scope of this study. Jefferson County's total withdrawal of fresh water for public supply is 10.37 million gallons per day, with 21% percent from groundwater sources and 79 percent from surface water sources. Groundwater is fairly resistant to drought conditions, while surface water is more immediately susceptible to the effects of drought. The extent to which crops in the participating communities are vulnerable to drought conditions will depend to a great extent on from where they draw their water supply. The greatest source of agricultural losses under drought conditions is likely to be from those nursery, greenhouse, or floriculture businesses which rely predominantly on surface water supplies.

A third common affect of drought is fish and wildlife mortality. More than 60 percent of the county is undeveloped land (either used for agricultural purposes, vacant, or dedicated parkland/open space) with diverse populations of fish and wildlife, and abundant creeks, aquifers and reservoirs providing essential water resources. Because Jefferson County has significant undeveloped land, aquatic and other wildlife habitat is fairly significant and therefore losses to fish and wildlife could potentially be significant.

A fourth common affect of drought is the increased incidence and severity of wildfires. The baseline risk of wildfire in Jefferson County is significant, with 44 percent of the land area and 22 percent of the total estimated improved value located within wildfire hazard areas. In the planning area, wildfire fuel tends to be most plentiful in areas where development densities are lowest; since Jefferson County is largely rural in nature, and the majority of the wildfire hazard areas consist of undeveloped protected land, this works to reduce possible property damages and loss of life; however, the wildland-urban interface would be particularly vulnerable as well as transportation routes. Wildfires are a unique hazard addressed separately in this plan.

Estimated Damages – Flood

Generally-accepted methodologies do exist for estimating potential dollar losses to vulnerable structures during flood events; however sufficient data was not available at the time of the study to undertake detailed formal estimates of damages due to flooding. At this time, vulnerability is being expressed as the value of improvements in the current mapped flood hazard areas as presented in the "Hazard Profiles" section of this plan. First, while FEMA methodologies do exist to estimate damages due to flooding,

specific information is required for buildings in order to employ these methodologies, such as first floor elevation, type of construction, foundation type, and details on any existing protective features. This data was not available as a part of the GIS data provided for this study.

Second, having even the year built data for each structure, one would be able to highlight structures built before codes and standards were adopted to make buildings more resistant to flood damage, thus being better candidates for mitigation. Without the year-built data, this can not be done. If this information should become available in the future, it could be incorporated into future updates of the plan. While one could make some blanket assumptions at this time to use various tools for loss estimation, this would likely yield erroneous data. Acting upon such rough estimates could result in an unwise use of limited resources.

For the purpose of estimating annual flood damages at this time, the NOAA NCDC database has been evaluated for flood events in Jefferson County in the last 15 years (1994-2009, i.e. the period for which NCDC records flood events in Jefferson County in any detail), which records approximately $1.9 million in damages assumed to be specifically occurring in Jefferson County during this period.

Other readily available sources of data for flood losses in the county include FEMA NFIP records, which show that there has been a total of $865,360 in flood insurance payments made to cover flood damage in Jefferson County since the first municipalities in the County joined the NFIP in 1978. Combining these two sources of data with some additional local information and annualizing over the periods they cover gives annual flood damages of just over $186,000 for the whole County.

Because the flood hazard is not uniform across the county, the annual damage derived from NCDC data has been distributed across the municipalities in the County based on the total value of improved property in the 1% annual probability floodplain (Zones A and AE) in each one. These scaled damages have been added to the annualized NFIP losses to derive the total damages presented in Table 3c.7. These estimates should be considered extremely conservative, due to the limited amount and incomplete nature of the relevant historical data.

Table 3c.7
Estimated Annual Damages – Flood
Period of record: 1994 – 2009 (NCDC), 1978 – 2009 (NFIP)

Jurisdiction	Total Value of Improvements	Total Value of Improvements in the Flood Hazard Area*	Annual Loss Estimates; Flood
Adams, Town of	$175,730,094	$2,631,898	$8,190
Adams, Village of	$75,977,600	$1,705,425	$1,500
Alexandria, Town of	$259,310,598	$59,521,406	$20,880
Alexandria Bay, Village of	$102,359,250	$15,844,095	$5,560
Antwerp, Town of	$35,680,827	$1,374,989	$1,640
Antwerp, Village of	$22,782,543	$9,257	$0
Black River, Village of	$69,017,493	$2,147,263	$730
Brownville, Town of	$195,286,898	$10,798,566	$14,980
Brownville, Village of	$44,738,926	$213,356	$70
Cape Vincent, Town of	$262,362,672	$38,263,565	$13,580
Cape Vincent, Village of	$54,387,216	$4,163,549	$1,780
Carthage, Village of	$148,112,520	$13,611,110	$7,290
Champion, Town of	$158,423,000	$3,292,265	$1,830
Chaumont, Village of	$40,576,245	$878,306	$620

Table 3c.7 Estimated Annual Damages – Flood Period of record: 1994 – 2009 (NCDC), 1978 – 2009 (NFIP)			
Jurisdiction	**Total Value of Improvements**	**Total Value of Improvements in the Flood Hazard Area***	**Annual Loss Estimates; Flood**
Clayton, Town of	$269,994,120	$32,844,375	$11,740
Clayton, Village of	$138,078,500	$9,204,507	$3,710
Deferiet, Village of	$26,850,800	$1,190,608	$410
Dexter, Village of	$46,324,924	$5,261,962	$1,990
Ellisburg, Town of	$138,555,517	$13,164,576	$5,670
Ellisburg, Village of	$7,411,700	$895,705	$620
Evans Mills, Village of	$27,725,000	$1,266,829	$430
Glen Park, Village of	$59,893,013	$5,550,880	$1,900
Henderson, Town of	$191,012,823	$20,609,715	$7,700
Herrings, Village of	$7,954,100	$4,679,084	$1,600
Hounsfield, Town of	$125,487,625	$8,538,570	$2,920
Le Ray, Town of	$1,180,782,881	$9,869,013	$3,980
Lorraine, Town of	$27,780,851	$27,416,629	$9,370
Lyme, Town of	$196,346,342	$29,588,837	$10,280
Mannsville, Village of	$19,161,884	$0	$0
Orleans, Town of	$307,380,200	$48,501,726	$16,700
Pamelia, Town of	$199,473,646	$7,518,099	$2,740
Philadelphia, Town of	$74,670,470	$840,466	$290
Philadelphia, Village of	$53,296,960	$4,112,718	$1,410
Rodman, Town of	$38,203,936	$995,095	$340
Rutland, Village of	$87,650,231	$3,073,957	$1,180
Sackets Harbor, Village of	$100,401,726	$2,200,926	$800
Theresa, Town of	$89,173,551	$9,098,318	$3,110
Theresa, Village of	$33,167,705	$1,831,677	$710
Watertown, Town of	$475,544,391	$2,113,402	$2,870
Watertown, City of	$1,234,445,882	$29,566,015	$10,480
West Carthage, Village of	$77,658,900	$3,351,111	$1,650
Wilna, Town of	$70,683,576	$2,690,731	$2,870
Worth, Town of	$9,376,136	$117,199	$40
Jefferson County Total:	***$6,959,233,272***	***$440,547,781***	***$186,160***

*Zones A, AE, only

Estimated Damages – Ice Jams

Generally accepted methodologies suitable for use in the mitigation planning context do not exist for estimating potential dollar losses to vulnerable structures due to ice jam events, and historical data regarding past events and losses was not sufficient to generate meaningful estimates.

Flooding caused by ice jams is similar to flash flooding. Ice jam formation causes a rapid rise of water at the jam and extending upstream. Failure or release of the jam causes sudden flooding downstream.

It is difficult to identify particular areas that are generally prone to ice jam flooding because the hazard can be very localized. The formation of ice jams depends on the weather and physical conditions in river channels. Unlike the typical violent flash flooding occurrences where steep terrain is present, ice jams are most likely to occur where the channel slope naturally decreases, where culverts freeze solid at headwaters of reservoirs, at natural channel restrictions such as bends and bridges, and along shallows

where channels may freeze solid. The ice jam hazard and associated damages are assumed to be possible in 14 of Jefferson County's municipalities where past occurrences are documented, based on a review of historical records, Flood Insurance Studies, the USACE CRREL database of events, and information provided by Core Planning Group members.

Due to the nature of the terrain and the climate in Jefferson County, ice jam events are essentially certain to occur in the future, although whether or not such events will cause significant damage is less easy to predict, since detailed records of actual damage caused by ice jams are scarce. The available data (historical records, Flood Insurance Studies, and local information) also does not easily allow for a meaningful average number of occurrences per year to be computed, since the actual number of recorded incidents is quite low and information on historic damages incurred per event was unavailable. For damage estimation purposes, it was assumed that if historic damages for noted occurrences was significant, more detailed information would have been uncovered during the research phase of this project. Lack of quantifiable damages was deemed to imply a likelihood of negligible average annual damages for the susceptible municipalities (where negligible has been defined as less than $5,000 per year). This assumption should be revisited in future updates of the plan if better data should become available.

Damage from ice jam flooding usually exceeds that caused by open water flooding. Flood elevations are usually higher than predicted for free-flow conditions and water levels may change rapidly. Additional physical damage is caused by the force of ice impacting buildings and other structures. Because of the sometimes unpredictable nature of ice jam floods, FEMA's Flood Insurance Rate Maps often do not reflect ice jam flood threats.

Loss estimation methodologies are not currently available for estimating ice jam damages. Sufficient historical data regarding events and associated losses was not available to quantify here. For the purpose of this analysis, we have assumed that annual losses would be realized as an unquantifiable component within the flood damage estimate.

Geologic Hazards

Estimated Damages – Earthquakes

As stated previously in the plan in the Hazard Profile section, according to the Earthquake Hazard Map of New York State, there is a 10 percent chance over 50 years that an earthquake with a PGA of greater than 3 to 5%g will be centered within Jefferson County. This earthquake, if it were to occur, would likely have associated with it light to moderate perceived shaking and little to no damage. PGA's of between 8 and 10%g would most often be required to cause appreciable damage, say, to unreinforced masonry buildings. While it is true that earthquakes are possible in this part of New York, they are not particularly likely, or likely to be particularly intense. The earthquakes that are most likely to occur in Jefferson County (low magnitude events with return periods of less than 50 years) are not likely to be particularly damaging; therefore, a full earthquake loss estimation was not conducted at this time for individual jurisdictions. However, countywide data included in the State Plan has been evaluated and is presented later in this section. In addition, FEMA reminds us that less frequent earthquakes of high magnitude with much higher PGA's and, in turn, substantially higher damage potentials, are quite possible in Jefferson County - with return periods of 100 to 2500 years. As shown in Figure 3a.25, when soil type is taken into account, the PGAs with a 2% probability of exceedance in any given year ranges from 25 to 94, depending on location; this corresponds to very strong to violent perceived shaking and moderate to heavy damages.

Examples of the types of damages that could be observed during an earthquake with a PGA of 3 to 5%g include:

- ⇒ Felt indoors by many, outdoors by few during the day
- ⇒ At night, some awakened.
- ⇒ Dishes, windows, doors disturbed and possibly broken
- ⇒ Walls make cracking sounds
- ⇒ Unstable objects could be overturned
- ⇒ Sensation like heavy truck striking building
- ⇒ Standing automobiles rocked noticeably

For earthquakes, the hazard area encompasses the entire study area and therefore all assets could be impacted.

FEMA's How-To #2 suggests that for earthquake loss estimation, data regarding building type, type of foundation, building code design level, and date of construction, is required for a quality analysis. This is because certain structures are more susceptible to earthquake damage than others. In the State of New York, regulations accounting for earthquake risk exist for new construction. Older buildings, built before these standard building codes went into effect, are more susceptible to earthquake damage. Similarly, unreinforced masonry buildings are more likely to sustain earthquake damage. While extensive damage to even these structures is unlikely, based on the mapped hazard areas, identifying this subset of buildings is important, particularly with regard to critical facilities that may meet these criteria. This information was not readily available at the time of the study for the planning area.

The New York State Hazard Mitigation Plan includes HAZUS-MH runs for earthquake losses in counties across New York State. The data prepared by the State estimates the following potential earthquake losses for Jefferson County as shown in Table 3c.8. This includes; Total Exposure – representing dollar value of all general building stock and calculated potential total losses (Capital Stock + Income Losses) for the four return periods of 2500, 1000, 500, & 250-years.

Table 3c.8
Total Earthquake Losses – Jefferson County
For the Four Return Periods of 2500, 1000, 500 and 250 years
(Source: New York State Hazard Mitigation Plan)

Return Period (Years)	Total Losses	Total Losses Expressed as a Percentage of Total Improved Property in the County	Total Losses Per Square Mile of Land in the County	Total Losses Per Person in the County
2,500	$303,900,000	4.4%	$236,131	$2,720
1,000	$100,231,000	1.4%	$77,880	$897
500	$36,742,000	0.5%	$28,549	$329
250	$12,179,000	0.2%	$9,463	$109

The State Plan goes on to show an estimated unadjusted annualized total earthquake losses for Jefferson County of $397,000, of which 84% ($334,000) is attributed to structure damage, and the remainder to income losses. The total figure ranks Jefferson County 26th for annualized earthquake losses among all of New York State's 62 counties. For comparison purposes, the highest annualized losses were calculated in Kings County ($10,093,000) and the lowest were calculated in Schuyler County at ($19,000). However, when factoring in National Earthquake Hazard Reduction Program soil classes, the estimated annualized

earthquake loss for Jefferson County becomes $382,543, ranking Jefferson County 19th out of all New York State Counties.

To provide a more detailed picture of potential earthquake losses in Jefferson County, the estimated annualized earthquake losses (adjusted for soil amplification as described above) to structures for the County ($382,543) have been distributed among the municipalities according to their estimated total value of improvements, and the results are presented in Table 3c.9.

Table 3c.9
Estimated Annual Average Damages – Earthquake
(Based on HAZUS-MH analyses run for the NY State Plan)

Jurisdiction	Total Value of Improvements	Annual Loss Estimate, Earthquakes
Adams, Town of	$175,730,094	$9,660
Adams, Village of	$75,977,600	$4,176
Alexandria, Town of	$259,310,598	$14,254
Alexandria Bay, Village of	$102,359,250	$5,627
Antwerp, Town of	$35,680,827	$1,961
Antwerp, Village of	$22,782,543	$1,252
Black River, Village of	$69,017,493	$3,794
Brownville, Town of	$195,286,898	$10,735
Brownville, Village of	$44,738,926	$2,459
Cape Vincent, Town of	$262,362,672	$14,422
Cape Vincent, Village of	$54,387,216	$2,990
Carthage, Village of	$148,112,520	$8,142
Champion, Town of	$158,423,000	$8,708
Chaumont, Village of	$40,576,245	$2,230
Clayton, Town of	$269,994,120	$14,841
Clayton, Village of	$138,078,500	$7,590
Deferiet, Village of	$26,850,800	$1,476
Dexter, Village of	$46,324,924	$2,546
Ellisburg, Town of	$138,555,517	$7,616
Ellisburg, Village of	$7,411,700	$407
Evans Mills, Village of	$27,725,000	$1,524
Glen Park, Village of	$59,893,013	$3,292
Henderson, Town of	$191,012,823	$10,500
Herrings, Village of	$7,954,100	$437
Hounsfield, Town of	$125,487,625	$6,898
Le Ray, Town of	$1,180,782,881	$64,907
Lorraine, Town of	$27,780,851	$1,527
Lyme, Town of	$196,346,342	$10,793
Mannsville, Village of	$19,161,884	$1,053
Orleans, Town of	$307,380,200	$16,896
Pamelia, Town of	$199,473,646	$10,965
Philadelphia, Town of	$74,670,470	$4,105
Philadelphia, Village of	$53,296,960	$2,930
Rodman, Town of	$38,203,936	$2,100
Rutland, Village of	$87,650,231	$4,818
Sackets Harbor, Village of	$100,401,726	$5,519
Theresa, Town of	$89,173,551	$4,902
Theresa, Village of	$33,167,705	$1,823
Watertown, Town of	$475,544,391	$26,140

Table 3c.9 Estimated Annual Average Damages – Earthquake *(Based on HAZUS-MH analyses run for the NY State Plan)*		
Jurisdiction	**Total Value of Improvements**	**Annual Loss Estimate, Earthquakes**
Watertown, City of	$1,234,445,882	$67,856
West Carthage, Village of	$77,658,900	$4,269
Wilna, Town of	$70,683,576	$3,885
Worth, Town of	$9,376,136	$515
Jefferson County Total:	***$6,959,233,272***	***$382,543***

Estimated Damages – Landslides

Sufficient data and methodologies were not available at the time of the study to estimate damages due to landslides. At this time, vulnerability is being expressed as the value of improvements in the current mapped landslide hazard area (of high susceptibility, low incidence) presented in Table 3a.21 in the "Hazard Profiles" section of this plan.

First, according to FEMA's How-To #2, current loss estimation methodologies are not available for estimating landslide damages. While the guide indicates that structures within a landslide hazard area could be assumed to be "severely" damaged and those outside could be assumed to be "undamaged", applying this methodology would not be appropriate for Jefferson County given the lack of historical data from which to derive the frequencies of landslide events necessary for the calculation of annual loss estimates. In addition, specific information would be required for buildings in order to employ these methodologies, such as type of construction, foundation type, and details on any existing protective features. This data was not available as a part of the County GIS during this study.

Second, having even the year built data for each structure, one would be able to highlight structures built before codes and standards (such as steep slope ordinances) were adopted to make buildings more resistant to landslide damage, thus being better candidates for mitigation. Without the year-built data, this can not be done.

If this information should become available in the future, it could be incorporated into future updates of the plan. While one could make some blanket assumptions at this time to use various tools for loss estimation, this would likely yield erroneous data given the high degree of variation in type and density of development. Acting upon such rough estimates could result in an unwise use of limited resources.

In general terms, estimated damages due to a single landslide event could be severe in any one location, and are most likely in areas of highest risk (municipalities in the western part of the county).

Given the lack of historical data on significant landslide occurrences (research has uncovered no known landslide events in Jefferson County), it is assumed that while one major event may result in significant losses, annualizing structural losses over a long period of time would most likely yield a negligible annual loss estimate for jurisdictions exposed to this hazard.

Other Hazards

Estimated Damages – Wildfires

Sufficient data and methodologies were not available at the time of the study to estimate damages due to wildfires. Available data such as the numbers and locations of wildfires and damages attributed to them was not sufficient at the time of the study to estimate damages due to wildfires. In fact, no historic occurrences were uncovered through research during plan development. At this time, vulnerability is being expressed as the value of improvements exposed to the hazard, as presented in the "Hazard Profiles" section of this plan.

First, according to FEMA's How-To #2, current loss estimation methodologies are not available for estimating wildfire damages. In addition, specific information would be required for buildings in order to develop alternate methodologies, such as type of construction, and details on any existing protective features. This data was not available as a part of the County GIS during this study.

Second, having even the year built data for each structure, one would be able to highlight structures built before codes and standards were adopted to make buildings more resistant to wildfire damage, thus being better candidates for mitigation. Without the year-built data, this can not be done.

If this information should become available in the future, it could be incorporated into future updates of the plan. While one could make some blanket assumptions at this time to use various tools for loss estimation, this would likely yield erroneous data given the high degree of variation in type and density of development. Acting upon such rough estimates could result in an unwise use of limited resources.

Standard loss estimation methodologies are not currently available for estimating wildfire damages. Sufficient historical data regarding events and associated losses was not available to quantify here. For the purpose of this analysis, at this time we have determined that annual losses are unquantifiable. While damages associated with any single event could be significant, it is estimated that damages are most likely negligible when evaluated on an average annual basis.

Estimated Damages - Summary

The following table is a useful tool to summarize vulnerability in terms of annual damages estimated for various hazards in communities across the 43 municipalities that form Jefferson County. For mitigation planning purposes only, municipalities could use this information in their evaluation and prioritization of mitigation options, and development of a mitigation strategy, as municipalities may wish to stress mitigation of those hazards for which annual loss estimates are the highest. These estimated damages are not intended for use in any more formal benefit-cost analyses.

During future updates of this plan, additional efforts should be made to seek out sources of data and approved methodologies with which to estimate potential annualized dollar losses for those hazards that lack them in this current draft plan.

U_N: Annual losses currently unquantifiable but assumed negligible on an annual basis (less than $5,000) U_S: Annual losses currently unquantifiable but potentially significant on an annual basis (more than $5,000)

Table 3c.10
Summary of Annual Loss Estimates by Municipality, All Natural Hazards

Jurisdiction	Total Value of Improvements	Extreme Temperatures	Extreme Wind	Tornado	Lightning	Winter Storm	Coastal Erosion	Dam Failure	Drought	Flood	Ice Jam	Earthquake	Landslide	Wildfires
Adams, Town of	$175,730,094	U_N	$57,369	$1,597	U_N	$48,003	$0	U_N	$35,634	$8,190	U_N	$9,660	U_N	U_N
Adams, Village of	$75,977,600	U_N	$29,502	$690	U_N	$19,528	$0	U_N	$938	$1,500	U_N	$4,176	U_N	U_N
Alexandria, Town of	$259,310,598	U_N	$30,002	$2,356	U_N	$50,556	$0	U_N	$13,261	$20,880	U_N	$14,254	U_N	U_N
Alexandria Bay, Village	$102,359,250	U_N	$10,848	$930	U_N	$11,751	$0	U_N	$231	$5,560	U_N	$5,627	U_N	U_N
Antwerp, Town of	$35,680,827	U_N	$18,376	$324	U_N	$28,767	$0	U_N	$13,476	$1,640	U_N	$1,961	U_N	U_N
Antwerp, Village of	$22,782,543	U_N	$12,217	$207	U_N	$8,648	$0	U_N	$87	$0	U_N	$1,252	U_N	U_N
Black River, Village of	$69,017,493	U_N	$6,357	$627	U_N	$14,483	$0	U_N	$628	$730	U_N	$3,794	U_N	U_N
Brownville, Town of	$195,286,898	U_N	$24,862	$1,774	U_N	$48,328	$0	U_N	$16,831	$14,980	U_N	$10,735	U_N	U_N
Brownville, Village of	$44,738,926	U_N	$6,865	$406	U_N	$10,667	$0	U_N	$167	$70	U_N	$2,459	U_N	U_N
Cape Vincent, Town of	$262,362,672	U_N	$16,714	$2,384	U_N	$42,012	$0	U_N	$35,085	$13,580	U_N	$14,422	U_N	U_N
Cape Vincent, Village of	$54,387,216	U_N	$4,914	$494	U_N	$8,689	$0	U_N	$262	$1,780	U_N	$2,990	U_N	U_N
Carthage, Village of	$148,112,520	U_N	$46,426	$1,346	U_N	$36,998	$0	U_N	$167	$7,290	U_N	$8,142	U_N	U_N
Champion, Town of	$158,423,000	U_N	$11,094	$1,439	U_N	$32,236	$0	U_N	$37,470	$1,830	U_N	$8,708	U_N	U_N
Chaumont, Village of	$40,576,245	U_N	$9,846	$369	U_N	$6,311	$0	U_N	$151	$620	U_N	$2,230	U_N	U_N
Clayton, Town of	$269,994,120	U_N	$20,814	$2,453	U_N	$51,388	$0	U_N	$28,741	$11,740	U_N	$14,841	U_N	U_N
Clayton, Village of	$138,078,500	U_N	$12,651	$1,254	U_N	$18,881	$0	U_N	$294	$3,710	U_N	$7,590	U_N	U_N
Deferiet, Village of	$26,850,800	U_N	$3,855	$244	U_N	$8,407	$0	U_N	$119	$410	U_N	$1,476	U_N	U_N
Dexter, Village of	$46,324,924	U_N	$7,524	$421	U_N	$11,683	$0	U_N	$0	$1,990	U_N	$2,546	U_N	U_N
Ellisburg, Town of	$138,555,517	U_N	$47,104	$1,259	U_N	$55,315	U_S	U_N	$107,052	$5,670	U_N	$7,616	U_N	U_N
Ellisburg, Village of	$7,411,700	U_N	$4,412	$67	U_N	$4,744	$0	U_N	$1,288	$620	U_N	$407	U_N	U_N
Evans Mills, Village of	$27,725,000	U_N	$2,993	$252	U_N	$6,441	$0	U_N	$183	$430	U_N	$1,524	U_N	U_N
Glen Park, Village of	$59,893,013	U_N	$3,272	$544	U_N	$5,254	$0	U_N	$103	$1,900	U_N	$3,292	U_N	U_N
Henderson, Town of	$191,012,823	U_N	$16,777	$1,735	U_N	$29,427	$0	U_N	$38,567	$7,700	U_N	$10,500	U_N	U_N
Herrings, Village of	$7,954,100	U_N	$1,609	$72	U_N	$1,411	$0	U_N	$0	$1,600	U_N	$437	U_N	U_N
Hounsfield, Town of	$125,487,625	U_N	$9,622	$1,140	U_N	$31,099	$0	U_N	$50,604	$2,920	U_N	$6,898	U_N	U_N
Le Ray, Town of	$1,180,782,881	U_N	$95,131	$10,727	U_N	$201,330	$0	U_N	$26,014	$3,980	U_N	$64,907	U_N	U_N
Lorraine, Town of	$27,780,851	U_N	$7,467	$252	U_N	$17,211	$0	U_N	$9,485	$9,370	U_N	$1,527	U_N	U_N
Lyme, Town of	$196,346,342	U_N	$23,667	$1,784	U_N	$29,428	$0	U_N	$19,359	$10,280	U_N	$10,793	U_N	U_N
Mannsville, Village of	$19,161,884	U_N	$6,560	$174	U_N	$5,723	$0	U_N	$246	$0	U_N	$1,053	U_N	U_N
Orleans, Town of	$307,380,200	U_N	$20,178	$2,793	U_N	$40,084	$0	U_N	$29,854	$16,700	U_N	$16,896	U_N	U_N
Pamelia, Town of	$199,473,646	U_N	$11,950	$1,812	U_N	$36,917	$0	U_N	$11,639	$2,740	U_N	$10,965	U_N	U_N
Philadelphia, Town of	$74,670,470	U_N	$5,975	$678	U_N	$15,948	$0	U_N	$12,212	$290	U_N	$4,105	U_N	U_N
Philadelphia, Village of	$53,296,960	U_N	$14,615	$484	U_N	$16,542	$0	U_N	$56	$1,410	U_N	$2,930	U_N	U_N
Rodman, Town of	$38,203,936	U_N	$14,434	$347	U_N	$22,500	$0	U_N	$28,924	$340	U_N	$2,100	U_N	U_N
Rutland, Village of	$87,650,231	U_N	$17,950	$796	U_N	$43,783	$0	U_N	$32,827	$1,180	U_N	$4,818	U_N	U_N
Sackets Harbor, Village	$100,401,726	U_N	$6,885	$912	U_N	$14,486	$0	U_N	$1,868	$800	U_N	$5,519	U_N	U_N

Table 3c.10
Summary of Annual Loss Estimates by Municipality, All Natural Hazards

Jurisdiction	Total Value of Improvements	Extreme Temperatures	Extreme Wind	Tornado	Lightning	Winter Storm	Coastal Erosion	Dam Failure	Drought	Flood	Ice Jam	Earthquake	Landslide	Wildfires
Theresa, Town of	$89,173,551	U_N	$12,429	$810	U_N	$39,938	$0	U_N	$6,670	$3,110	U_N	$4,902	U_N	U_N
Theresa, Village of	$33,167,705	U_N	$6,300	$301	U_N	$11,545	$0	U_N	$278	$710	U_N	$1,823	U_N	U_N
Watertown, Town of	$475,544,391	U_N	$39,431	$4,320	U_N	$51,847	$0	U_N	$17,022	$2,870	U_N	$26,140	U_N	U_N
Watertown, City of	$1,234,445,882	U_N	$189,755	$11,215	U_N	$267,954	$0	U_N	$612	$10,480	U_N	$67,856	U_N	U_N
West Carthage, Village	$77,658,900	U_N	$10,323	$706	U_N	$21,140	$0	U_N	$56	$1,650	U_N	$4,269	U_N	U_N
Wilna, Town of	$70,683,576	U_N	$25,901	$642	U_N	$21,740	$0	U_N	$4,428	$2,870	U_N	$3,885	U_N	U_N
Worth, Town of	$9,376,136	U_N	$2,136	$85	U_N	$4,679	$0	U_N	$1,002	$40	U_N	$515	U_N	U_N
Jefferson County Total:	***$6,959,233,272***	***U_N***	***$927,112***	***$63,225***	***U_N***	***$1,453,820***	***U_S***	***U_N***	***$583,894***	***$186,160***	***U_N***	***$382,543***	***U_N***	***U_N***

SECTION 3d - RISK ASSESSMENT: EXISTING LAND USES AND FUTURE DEVELOPMENT TRENDS IN HAZARD AREAS

Historic

The vast wilderness of Jefferson County was originally inhabited by the Oneida Indian Nation which thrived on the area's abundant natural resources. Though French colonial influences are evident, substantial settlement and development in the County did not occur until after the American Revolution, when Alexander Macomb acquired title to this region from the Oneidas in 1791. "Macomb's Purchase" – an area of 3,670,715 acres including much of northern New York State, along the St. Lawrence River and eastern Lake Ontario, including the Thousand Islands - was soon subdivided into large tracts and other holdings which stimulated the settlement of the region. From this purchase are derived the deeds for all the lands that are now included in Lewis, Jefferson, St. Lawrence and Franklin Counties, as well as portions of Herkimer and Oswego Counties.

To settle Jefferson County's densely forested lands, the County's earliest settlers had to create clearings first for the purposes of constructing living spaces, and then for formation of cropland. A need to dispose of the land's timber brought about the construction of saw mills, along with asheries for the creation of potash. To make full use of their land, excess wood needed to be disposed of. The easiest way to accomplish this was to burn any wood not needed for fuel or construction. Potash could then be sold to manufacturers of goods such as glass, soap, gunpowder and fertilizer.Potash production provided many early settlers with a way to obtain badly needed cash and credit as they cleared their wooded land for crops.

Attracted by the abundant hydropower afforded by the Black River, industrially minded pioneers from New England settled in the center of the County and established a manufacturing and trading center. The City of Watertown was thus established and soon became the County seat. During this time, Jefferson County's residents developed strong business relationships with the Canadians through trading.

Old Indian trails gave way to roadways allowing for the passage of wagons and stage coaches. The growth of commerce spurred the construction of new roadways. Transportation via steamboat on Lake Ontario began in the early 1800s with the first steamboat to navigate the lake being constructed in Sackets Harbor in 1817. The completion of the Erie Canal in 1825 brought the port of Sackets Harbor into great importance as nearly all the County's commerce now turned toward that port by water to Oswego and to the Erie Canal. By the 1830s, Sackets Harbor had built large numbers of steamers and the village was a lively steamport. The first telegraph line arrived in Jefferson County in 1850, and was speedily followed by the railroad, which eventually did away with the old stage coach services. The County's location on Lake Ontario also proved advantageous due to the navigable access provided to the Atlantic Ocean via the St. Lawrence River. The associated economic benefits of the County's location along this navigation route were evident in the days of the County's infancy, and are still true today.

Over time, a prosperous agricultural, industrial, and mercantile tradition was established. Jefferson County became famous for its manufacturing tradition: cotton and woolen yarns, carriages, sewing machines, water pumps, oil lamps, portable steam engines, railroad brakes, plows, emery grinders, paper machinery, cylinder printing presses, high pressure hydraulic pumps, and turbine starting systems are just a few of the examples.

Jefferson County's economy has traditionally been resource-based, with many economic opportunities afforded by its water, agricultural and forest resources. Dairy farming, food processing, and papermaking are major industries in the County with a long tradition. Although manufacturing industries declined in the second half of the 20th century, railroad equipment, industrial machinery, and medical equipment manufacturing are currently also substantial contributors to the County's economy.

Today, Jefferson County is still a largely rural county with a strong agricultural base. Jefferson County is a regional administrative center for State government programs and also benefits from being the home of the 10th Mountain Division and ("The New") Fort Drum. The expansion of Fort Drum in the 1980s has brought a tremendous boom in population, construction and trade.

The natural beauty of the County led to the development of a tourism industry – already strong as early as the late 1800s - particularly in the Thousand Islands region which became known at the turn of the century as the "Millionaires' Playground". In addition to its location on Lake Ontario and the St. Lawrence River, the Black River divides Jefferson County roughly in half and the County is in close proximity to the Adirondack Park. Today, Jefferson County offers four seasons of recreation for the outdoor sports enthusiast. With renowned sport fishing, boating, and winter recreation opportunities, and proximity to Canadian markets the economic impact of tourism is substantial.

Existing Land Use

Jefferson County is one of the northernmost counties in New York State. Jefferson County is on the western side of northern New York State, adjacent to the area where the Saint Lawrence River exits Lake Ontario. The county seat of Watertown lies approximately 65 miles north of Syracuse, and 140 miles northwest of Albany. According to the US Census Bureau, the County is 1,272 miles in area (not including open water. Jefferson County is bounded to the northeast by St. Lawrence County, to the southeast by Lewis County, and to the southwest by Oswego County. All other areas are bounded by water and represent international borders with Canada, with Lake Ontario immediately to the west and the St. Lawrence River to the northwest.

There are 43 municipal jurisdictions in addition to the County, with the City of Watertown designated as the County seat. The Countywide population as determined by the 2000 Census was 111,738, and the U.S Census Bureau estimated the 2008 population to be 118,046. The New York Statistical Information System at Cornell University projects the County's population to decline gradually thereafter through 2035, back to a level of only 112,711 (only slightly higher than the Census population for the year 2000). The Census 2000 population gives the County a population density of 87.8 people per square mile, while the population density for New York State overall is significantly higher at402 people per square mile.

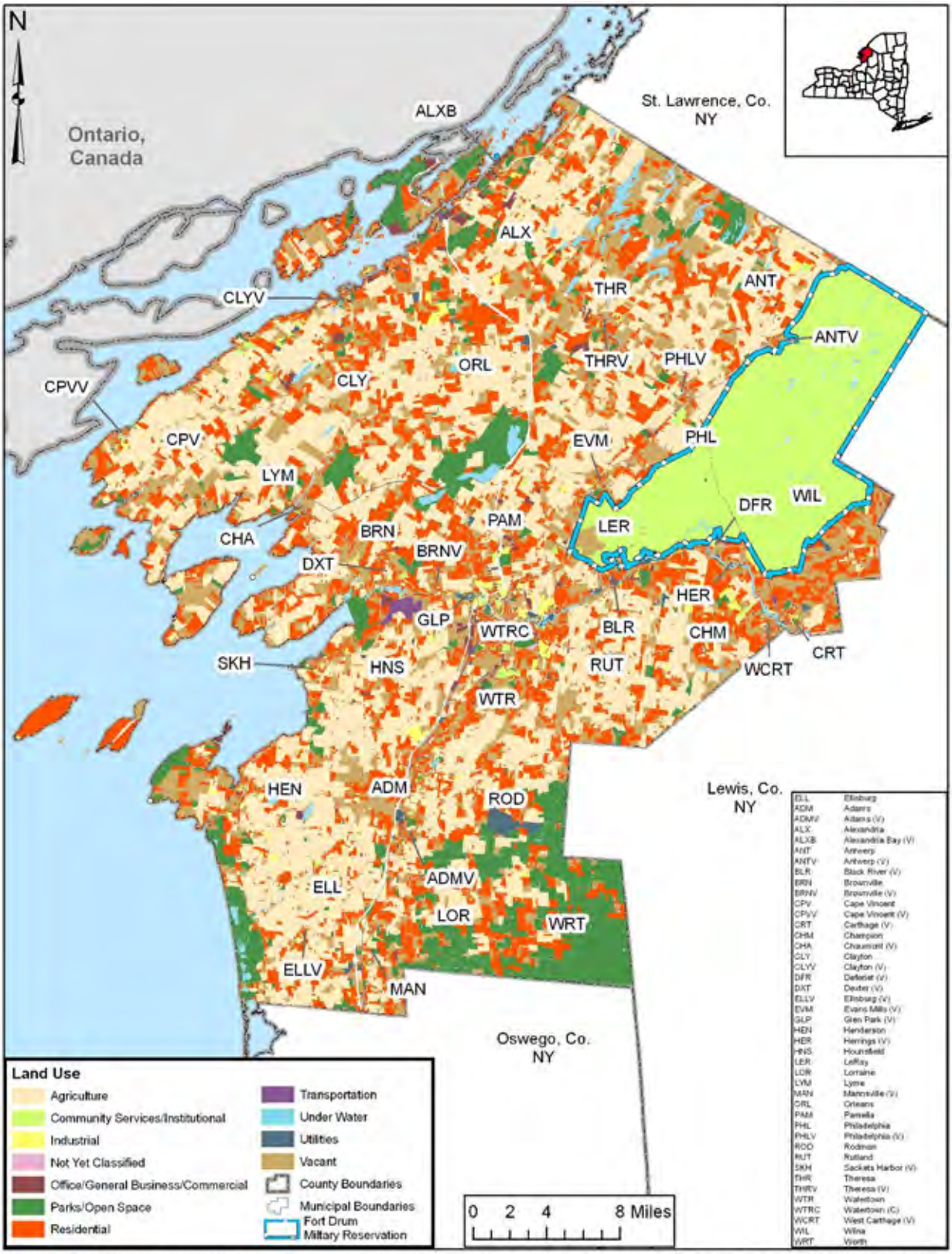
Figure 3d.1 presents a graphical depiction of land use in Jefferson County, and the component data used to compile this figure is presented in Tables 3d.1 and 3d.2, which present total acreages of land currently under various land use categories and their relative percentages within each municipality and in the County overall.

Together, Tables 3d.1 and 3d.2 and Figure 3d.1 show that 36.7 percent of the county is currently used for agriculture, 23 percent is residential, and 16.3 percent of the land is vacant. Furthermore, 11.4 percent is community services/institutional and 9.7 percent of the land is parks and open space. The remaining 3 percent is comprised of offices/general business/commercial, industrial, utilities, land that has not yet been classified, or open water.

Approximately 10 percent of the county is parkland, and significant areas of designated protected undeveloped land include the following:

- Robert Wehle State Park 1,087 acres
- Southwick Beach State Park 482 acres
- Perch River Wildlife Management Area (WMA) 7,839 acres
- Lakeview Marsh WMA 3,529 acres
- Ashland Flats WMA 2,034 acres
- French Creek WMA 2,300 acres
- Dexter Marsh WMA 1,384 acres
- Indian River WMA 984 acres
- Black Pond WMA 542 acres
- Collins Landing WMA 51 acres
- Tug Hill State Forest 8,598 acres
- Winona State Forest 3,625 acres
- Gould's Corners State Forest 2,037 acres
- Littlejohn WMA 1,854 acres
- Pinckney State Forest 2,121 acres
- Point Peninsula WMA 1,041 acres
- Pulpit Rock WMA 1,602 acres
- Coyote Flats State Forest 560 acres
- Brownville WMA 243 acres
- Honeyville WMA 114 acres

Figure 3d.1: Jefferson County Land Use



Source: Jefferson County Planning Department, Jefferson County and Municipal Lines, 2004, Tax Parcels, 2008; U.S. Census Bureau, Jefferson County, NY, Area Hydrography, 2008; ESRI, Canada Provinces, 2000.

Table 3d.1
Land Use Acreage Breakdowns by Municipality

Municipality	Residential	Community Services/Institutional	Offices/ General Business/Commercial	Industrial	Utilities	Transportation	Agriculture	Parks/Open Space/ Conservation	Vacant	Under Water	Not Yet Classified	Total (Acres)
Adams, Town of	6,265	110	204	487	177	93	11,640	253	6,104	0	0	25,333
Adams, Village of	304	62	36	22	22	17	100	30	163	0	0	757
Alexandria, Town of	11,437	52	838	356	64	0	20,611	4,642	6,798	81	0	44,878
Alexandria Bay, Village of	197	68	72	2	4	0		17	64	0	0	423
Antwerp, Town of	8,986	32,118	34	265	15	70	18,312	2,648	5,446	0	0	67,893
Antwerp, Village of	204	95	2	3	6	12	216	4	51	0	0	595
Black River, Village of	382	52	18	1	133	0	38	29	470	0	0	1,123
Brownville, Town of	13,570	119	64	162	135	1	12,981	2,873	6,667	0	0	36,572
Brownville, Village of	173	20	6	7	5	0	64	0	87	0	0	363
Cape Vincent, Town of	7,825	254	25	167	52	0	18,616	1,306	6,599	28	0	34,871
Cape Vincent, Village of	188	45	8	2	8	0	50	23	78	0	0	403
Carthage, Village of	532	65	72	83	139	48	0	111	578	4	0	1,630
Champion, Town of	8,856	935	40	839	414	2	10,810	584	4,549	84	0	27,112
Chaumont, Village of	205	32	29	0	1	0	5	6	304	0	0	583
Clayton, Town of	15,439	137	617	285	174	0	23,198	1,652	9,594	0	0	51,097
Clayton, Village of	421	52	61	13	9	0	0	139	272	0	0	967
Deferiet, Village of	44	3	0	48	115	0	0	6	234	0	0	449
Dexter, Village of	125	6	5	14	21	0	168	16	38	0	0	393
Ellisburg, Town of	9,793	106	165	188	190	107	29,988	7,312	4,575	1	0	52,425
Ellisburg, Village of	140	26	3	1	0	0	402	7	26	0	0	605
Evans Mills, Village of	195	37	16	10	11	11	32	39	133	0	0	483
Glen Park, Village of	117	29	6	3	72	2	151	5	62	0	0	448
Henderson, Town of	5,093	52	307	166	5	0	13,034	2,270	4,936	0	0	25,863
Herrings, Village of	40	1	1	0	57	0	0	2	74	0	0	175
Hounsfield, Town of	8,880	83	360	125	65	1,059	13,376	1,356	4,660	0	0	29,964
Le Ray, Town of	7,002	16,330	257	222	414	112	12,841	143	7,982	17	0	45,321
Lorraine, Town of	6,678	16	12	3	18	0	6,100	8,645	3,092	0	0	24,564
Lyme, Town of	6,909	21	39	10	99	0	16,304	3,494	7,626	0	0	34,502
Mannsville, Village of	200	36	4	1	7	13	83	33	187	6	0	569
Orleans, Town of	11,194	99	826	771	310	54	17,658	8,194	5,402	81	0	44,588
Pamelia, Town of	5,122	245	880	906	135	80	8,924	2,444	2,605	1	0	21,342
Philadelphia, Town of	2,851	8,281	108	14	13	107	9,661	439	1,681	3	0	23,159
Philadelphia, Village of	218	10	18	3	13	22	69	8	148	13	0	522
Rodman, Town of	5,841	28	0	47	1,501	0	11,464	5,456	2,248	0	0	26,585
Rutland, Town of	5,944	25	65	81	389	1	15,544	710	5,086	0	0	27,845
Sackets Harbor, Village of	472	48	21	40	8	12	363	94	337	0	0	1,394
Theresa, Town of	10,391	27	367	64	80	0	11,131	3,059	15,094	19	0	40,232
Theresa, Village of	383	88	7	0	10	0	52	11	199	0	0	750
Watertown, Town of	7,122	446	817	543	160	209	5,684	430	6,495	0	0	21,928
Watertown, City of	1,858	479	535	299	427	65	7	482	905	0	214	5,272
West Carthage, Village of	270	20	39	26	45	10	32	26	336	0	0	804
Wilna, Town of	7,321	30,663	98	251	280	310	1,278	155	7,294	0	0	47,651
Worth, Town of	4,887	3	0	83	0	0	2,488	18,469	1,281	0	0	27,211
Jefferson County Totals:	184,071	91,425	7,081	6,610	5,807	2,417	293,472	77,622	130,562	361	215	799,644

Table 3d.2
Land Use Percentage Breakdowns by Municipality

Municipality	Residential	Community Services/Institutional	Offices/ General Business/Commercial	Industrial	Utilities	Transportation	Agriculture	Parks/Open Space / Conservation	Vacant	Under Water	Not Yet Classified	Total (Acres)
Adams, Town of	24.7%	0.4%	0.8%	1.9%	0.7%	0.4%	45.9%	1.0%	24.1%	0.0%	0.0%	3.2%
Adams, Village of	40.2%	8.2%	4.7%	2.9%	3.0%	2.2%	13.2%	4.0%	21.6%	0.0%	0.0%	0.1%
Alexandria, Town of	25.5%	0.1%	1.9%	0.8%	0.1%	0.0%	45.9%	10.3%	15.1%	0.2%	0.0%	5.6%
Alexandria Bay, Village of	46.5%	16.1%	17.1%	0.5%	0.9%	0.0%	0.0%	3.9%	15.1%	0.0%	0.0%	0.1%
Antwerp, Town of	13.2%	47.3%	0.1%	0.4%	0.0%	0.1%	27.0%	3.9%	8.0%	0.0%	0.0%	8.5%
Antwerp, Village of	34.3%	15.9%	0.4%	0.5%	1.1%	2.1%	36.4%	0.7%	8.6%	0.0%	0.0%	0.1%
Black River, Village of	34.0%	4.7%	1.6%	0.1%	11.9%	0.0%	3.4%	2.6%	41.8%	0.0%	0.0%	0.1%
Brownville, Town of	37.1%	0.3%	0.2%	0.4%	0.4%	0.0%	35.5%	7.9%	18.2%	0.0%	0.0%	4.6%
Brownville, Village of	47.6%	5.5%	1.6%	2.0%	1.4%	0.1%	17.8%	0.0%	24.1%	0.0%	0.0%	0.0%
Cape Vincent, Town of	22.4%	0.7%	0.1%	0.5%	0.1%	0.0%	53.4%	3.7%	18.9%	0.1%	0.0%	4.4%
Cape Vincent, Village of	46.8%	11.3%	1.9%	0.4%	2.0%	0.0%	12.4%	5.8%	19.4%	0.0%	0.0%	0.1%
Carthage, Village of	32.6%	4.0%	4.4%	5.1%	8.5%	2.9%	0.0%	6.8%	35.4%	0.2%	0.0%	0.2%
Champion, Town of	32.7%	3.4%	0.1%	3.1%	1.5%	0.0%	39.9%	2.2%	16.8%	0.3%	0.0%	3.4%
Chaumont, Village of	35.2%	5.5%	5.0%	0.0%	0.3%	0.0%	0.9%	1.1%	52.1%	0.0%	0.0%	0.1%
Clayton, Town of	30.2%	0.3%	1.2%	0.6%	0.3%	0.0%	45.4%	3.2%	18.8%	0.0%	0.0%	6.4%
Clayton, Village of	43.6%	5.4%	6.3%	1.4%	1.0%	0.0%	0.0%	14.3%	28.1%	0.0%	0.0%	0.1%
Deferiet, Village of	9.7%	0.7%	0.1%	10.7%	25.6%	0.0%	0.0%	1.3%	52.1%	0.0%	0.0%	0.1%
Dexter, Village of	31.7%	1.6%	1.3%	3.4%	5.3%	0.0%	42.7%	4.2%	9.7%	0.0%	0.0%	0.0%
Ellisburg, Town of	18.7%	0.2%	0.3%	0.4%	0.4%	0.2%	57.2%	13.9%	8.7%	0.0%	0.0%	6.6%
Ellisburg, Village of	23.2%	4.3%	0.5%	0.1%	0.0%	0.0%	66.4%	1.1%	4.4%	0.0%	0.0%	0.1%
Evans Mills, Village of	40.3%	7.7%	3.3%	2.1%	2.3%	2.2%	6.6%	8.0%	27.6%	0.0%	0.0%	0.1%
Glen Park, Village of	26.0%	6.6%	1.3%	0.6%	16.2%	0.5%	33.6%	1.2%	14.0%	0.0%	0.0%	0.1%
Henderson, Town of	19.7%	0.2%	1.2%	0.6%	0.0%	0.0%	50.4%	8.8%	19.1%	0.0%	0.0%	3.2%
Herrings, Village of	23.0%	0.8%	0.7%	0.0%	32.5%	0.0%	0.0%	1.0%	42.1%	0.0%	0.0%	0.0%
Hounsfield, Town of	29.6%	0.3%	1.2%	0.4%	0.2%	3.5%	44.6%	4.5%	15.6%	0.0%	0.0%	3.7%
Le Ray, Town of	15.4%	36.0%	0.6%	0.5%	0.9%	0.2%	28.3%	0.3%	17.6%	0.0%	0.0%	5.7%
Lorraine, Town of	27.2%	0.1%	0.0%	0.0%	0.1%	0.0%	24.8%	35.2%	12.6%	0.0%	0.0%	3.1%
Lyme, Town of	20.0%	0.1%	0.1%	0.0%	0.3%	0.0%	47.3%	10.1%	22.1%	0.0%	0.0%	4.3%
Mannsville, Village of	35.1%	6.4%	0.6%	0.1%	1.3%	2.3%	14.6%	5.7%	32.8%	1.0%	0.0%	0.1%
Orleans, Town of	25.1%	0.2%	1.9%	1.7%	0.7%	0.1%	39.6%	18.4%	12.1%	0.2%	0.0%	5.6%
Pamelia, Town of	24.0%	1.1%	4.1%	4.2%	0.6%	0.4%	41.8%	11.5%	12.2%	0.0%	0.0%	2.7%
Philadelphia, Town of	12.3%	35.8%	0.5%	0.1%	0.1%	0.5%	41.7%	1.9%	7.3%	0.0%	0.0%	2.9%
Philadelphia, Village of	41.8%	1.9%	3.4%	0.6%	2.6%	4.2%	13.3%	1.4%	28.3%	2.6%	0.0%	0.1%
Rodman, Town of	22.0%	0.1%	0.0%	0.2%	5.6%	0.0%	43.1%	20.5%	8.5%	0.0%	0.0%	3.3%
Rutland, Town of	21.3%	0.1%	0.2%	0.3%	1.4%	0.0%	55.8%	2.5%	18.3%	0.0%	0.0%	3.5%
Sackets Harbor, Village of	33.8%	3.5%	1.5%	2.8%	0.6%	0.8%	26.0%	6.7%	24.2%	0.0%	0.0%	0.2%
Theresa, Town of	25.8%	0.1%	0.9%	0.2%	0.2%	0.0%	27.7%	7.6%	37.5%	0.0%	0.0%	5.0%
Theresa, Village of	51.0%	11.7%	1.0%	0.0%	1.3%	0.0%	6.9%	1.5%	26.5%	0.0%	0.0%	0.1%
Watertown, Town of	32.5%	2.0%	3.7%	2.5%	0.7%	1.0%	25.9%	2.0%	29.6%	0.1%	0.0%	2.7%
Watertown, City of	35.2%	9.1%	10.1%	5.7%	8.1%	1.2%	0.1%	9.1%	17.2%	0.0%	4.1%	0.7%
West Carthage, Village of	33.6%	2.5%	4.8%	3.2%	5.6%	1.2%	3.9%	3.3%	41.8%	0.0%	0.0%	0.1%
Wilna, Town of	15.4%	64.3%	0.2%	0.5%	0.6%	0.7%	2.7%	0.3%	15.3%	0.0%	0.0%	6.0%
Worth, Town of	18.0%	0.0%	0.0%	0.3%	0.0%	0.0%	9.1%	67.9%	4.7%	0.0%	0.0%	3.4%
Jefferson County Totals	23.0%	11.4%	0.9%	0.8%	0.7%	0.3%	36.7%	9.7%	16.3%	0.0%	0.0%	100.0%

Land Use Planning

Land use planning in the State of New York is primarily a function of local communities, with Jefferson County serving a coordination function for those elements that are best served on a regional level. The Jefferson County Planning Department serves as technical staff to the County and its municipalities primarily in four major categories: (1) County Planning and Economic Development; (2) Community Planning and Development; (3) Resource and Environmental Management, and (4) Information, Demographic and Data Services.

In support of a multitude of specific County programs, staff provides project development and administration, grant writing, and research and analysis services. Specific program areas include: Community Development Block Grants, North Country HOME Consortium, Comprehensive Economic Development Strategy (CEDS) Committee, County Planning Board administration, Geographic Information System (GIS) Services, Fort Drum-related growth and development technical services, Agriculture and Farmland Protection Board administration, and Demographic\Census services. Many other County-wide project and program areas are also administered.

Also, the Department provides local government technical assistance to various town and village boards in the development and implementation of comprehensive plans, land use regulations, and community and economic development plans and strategies.

At the local level, 98 percent of municipalities have zoning statutes, 72 percent have subdivision statutes, and 63 percent have master plans in place. However, only 33 percent enforce the New York State Building Code at the local level (the County provides enforcement for the remaining 67 percent). Table 3d.3 presents a summary of standard land use regulation tools by municipality.

Table 3d.3
County Communities with Land Use Regulations
(Source: Jefferson County Planning Department – Land Use Controls Adopted by Towns/Villages)

Municipality	New York State Building Code Enforcement	Zoning Statutes	Subdivision Statutes	Comprehensive /Master Plan
Adams, Town of	County	Y	Y	Y
Adams, Village of	County	Y	Y	Y
Alexandria, Town of	County	Y	N	Y
Alexandria Bay, Village of	County	Y	Y	Y
Antwerp, Town of	County	Y	N	N
Antwerp, Village of	County	Y	N	Y
Black River, Town of	Local	Y	Y	N
Brownville, Town of	County	Y	Y	Y
Brownville, Village of	County	Y	Y	Y
Cape Vincent, Town of	County	Y	Y	Y
Cape Vincent, Village of	County	Y	Y**	Y
Carthage, Village of	Local	Y	Y	Y
Champion, Town of	County	Y	Y	Y
Chaumont, Village of	Local	Y	Y	Y
Clayton, Town of	Local	Y	Y	Y
Clayton, Village of	Local	Y	N	Y

Table 3d.3
County Communities with Land Use Regulations
(Source: Jefferson County Planning Department – Land Use Controls Adopted by Towns/Villages)

Municipality	New York State Building Code Enforcement	Zoning Statutes	Subdivision Statutes	Comprehensive /Master Plan
Deferiet, Village of	County	Y	Y	Y
Dexter, Village of	Local	Y	Y**	Y
Ellisburg, Town of	County	Y	N	Y
Ellisburg, Village of	County	Y	N	N
Evans Mills, Village of	Local	Y	Y	N
Glen Park, Village of	County	Y	N	N
Henderson, Town of	County	Y	Y	Y
Herrings, Village of	County	Y*	N	Y
Hounsfield, Town of	County	Y	Y	Y
Le Ray, Town of	County	Y	Y	N
Lorraine, Town of	County	N	N	Y
Lyme, Town of	County	Y	N	Y
Mannsville, Village of	County	Y	N	N
Orleans, Town of	County	Y	N	Y
Pamelia, Town of	Local	Y	Y	N
Philadelphia, Town of	Local	Y	Y	Y
Philadelphia, Village of	Local	Y	Y	N
Rodman, Town of	County	Y	Y	N
Rutland, Village of	County	Y	Y	N
Sackets Harbor, Village of	County	Y	Y	N
Theresa, Town of	Local	Y	Y	N
Theresa, Village of	Local	Y	Y	N
Watertown, City of	County	Y	Y	Y
Watertown, Town of	Local	Y	Y	N
West Carthage, Village of	County	Y	Y	N
Wilna, Town of	Local	Y	Y	Y
Worth, Town of	County	Y	Y	Y

*** Village of Herrings has a site plan law.**

**** Village Boards of Cape Vincent and Dexter have passed a resolution authorizing the Planning Board to review subdivisions.**

At both the County and municipal levels, land use and development planners in departments, federations, boards and councils are active in guiding Jefferson County's growth and providing a unified framework for development that coordinates activities between municipalities and the county overall. Some of these efforts are discussed in more detail below.

Jefferson County Department of Planning

Jefferson County does have a Planning Department. The Jefferson County Department of Planning works to assist and guide efforts at both the County and local levels, to develop and implement planning and development programs which will have positive impacts on the area's economy, environment, rural character and land uses. Their support is provided in the four key areas described as follows.

County Planning and Economic Development

Community Development Block Grant Program (CDBG). The Jefferson County Department of Planning manages the County's CDBG program. Staff undertakes program planning, application development, and Federal and State administration and reporting requirements for various CDBG funded programs (i.e., housing rehabilitation assistance program, first-time homebuyer program). The County partners with local non-profit housing providers in the administration of these programs. Both of the housing programs were initiated to help address community housing needs in response to growth pressures resulting from the expansion of Fort Drum.

HOME Consortium. HOME is the largest Federal block grant to State and local governments designed exclusively to create affordable housing for low-income households. It is administered by HUD. Forming a consortium is a way for local governments that would not otherwise qualify for funding to join with other contiguous units of local government to directly participate in the HOME program. The three county (Jefferson, St. Lawrence, Lewis) North Country HOME Consortium was established for this very purpose. The Jefferson County Department of Planning has an administrative role in support of Jefferson County's status as the lead county in the consortium.

Jefferson County Planning Board. The Jefferson County Planning Board assesses potential county-wide or inter-municipal impacts of various types of activities undertaken throughout the County. The Jefferson County Department of Planning provides staff assistance on a monthly basis in support of the County Planning Board's authorized functions. Any town, village or city in Jefferson County which adopts or amends a zoning law or ordinance, adopts or amends a comprehensive plan, issues a special permit, approves a site plan or grants use or area variances pursuant to their zoning law or ordinance or other authorizations which a referring body may issue under the provisions of any zoning ordinance or local law must refer such actions to the County Planning Board prior to taking any final action thereon if the real property affected by this action lies within 500 feet of the following: the boundary of any city, village or town; the boundary of any existing or proposed County or State Park or any other recreation area; the right-of-way of any existing or proposed County or State road, highway, parkway, etc.; the existing or proposed right-of-way of any stream or drainage channel owned by the County or for which the County has established channel lines; the existing or proposed boundary of County or State owned land on which a public building or institution is situated; or the boundary of a farm operation located in an Agricultural District, as defined by Article 25-AA of NYS Ag and Markets Law, except this sub-paragraph shall not apply to the granting of area variances.

Fort Drum Growth Management Assistance. The Jefferson County Planning Department is active in a number of technical assistance projects related to land use and encroachment management, housing, and force structure initiatives occurring at Fort Drum.

Comprehensive Economic Development Strategy (CEDS) Committee. The Jefferson County Planning Department provides staff assistance to the CEDS Committee, which develops and maintains Jefferson County CEDS Plan for use by various agencies in their

economic development programs. The Committee's work includes partnerships with the Jefferson County Job Development Corporation (JCJDC), and other local economic development interests to identify and promote local economic development strategies. The Department also coordinates with the Federal Economic Development Administration (EDA) on behalf of the CEDS Committee to profile and endorse local capital projects that might be eligible for funding assistance.

Community Planning and Development

As resources permit, the Jefferson County Planning Department provides staff assistance to Jefferson County communities in support of their land use, comprehensive planning, and community development projects. The office also assists with the coordination of several training opportunities each year for local municipal planning officials.

Development Site Research and Analysis. The Jefferson County Planning Department often coordinates with local and state development organizations to aid with research and assessment of potential development sites. The Department utilizes maps and GIS resources to help identify sites meeting specific criteria such as conditions related to utilities, location/zoning characteristics and natural resource features as requested by development prospects.

Resource and Environmental Management

Agriculture. The Jefferson County Planning Department manages administration of the County Agriculture Districts Program, which includes nearly 190,000 acres of land in three separate Districts in the County. These Districts offer a number of benefits to agricultural landowners to encourage continued agriculture production and activities. Under NYS Department of Agriculture and Markets guidelines, the Department is responsible for undertaking periodic comprehensive reviews of the viability of each District. In addition, local landowners have a 30 day period in June to request addition of viable agricultural property to any of the County's three consolidated Districts. Through administrative support to the County's Agricultural and Farmland Protection Board, the Department also assists with maintenance and implementation of the County's Agriculture and Farmland Protection Plan. Most recently, the Department has worked in concert with the American Farmland Trust, the County Agriculture Coordinator, and others to implement a Purchase of Development Rights program that will utilize voluntary agriculture conservation easements to protect important agricultural lands from non-farm conversion.

Snowmobile Grant-In-Aid Program. The Jefferson County Planning Department works with snowmobile clubs and administers this NYS grant pass-through program on behalf of the County to enable access to trail maintenance funds.

County Recreational Trail System Planning and Coordination. The Jefferson County Planning Department provides technical assistance, as requested, to the County Soil and Water Conservation District for recreational trail planning activities.

Information, Demographic and Data Services

Geographic Information Services (GIS) Management and Implementation. The Jefferson County Planning Department offers GIS services to the County through two major software platforms. First, the Department developed and oversees the County's on line, web-based map and parcel viewer which can be found at www.jeffcountymaps.com. The system operates on ArcGIS Server platform. Numerous data layers are can be viewed including aerial imagery, Agriculture District coverage, and existing land uses. The system is integrated with the County's Real Property parcel database. Secondly, the office maintains an ArcMap GIS platform in support of the digital map products required for Department programs, projects, and local community assistance.

Census 2010. The Jefferson County Planning Department leads County efforts in municipal preparation for the 2010 Census. The Office coordinated County and local participation in the Local Update of Census Addresses (LUCA) to improve the Census Bureau's database of addresses throughout the County and on Fort Drum. The office will also participate in the 2010 Participant Statistical Areas Program (PSAP) to suggest any changes in Census geography boundaries.

Population Estimates. The Jefferson County Planning Department has worked to challenge three annual U.S. Census Bureau population estimates over the past five year period. The County believes its large military population affects the accuracy of the Census Bureau's standard annual estimating methodology. As a result of the County's challenges, several thousand residents have been added to the Bureau's original estimates.

General Technical Assistance. The Jefferson County Planning Department responds to hundreds of technical assistance and informational inquiries from the general public, local businesses, the development community, and other governmental agencies. These requests typically cover a broad range of topics, such as Census information, environmental and development requirements, economic demographics, and grant opportunities.

Jefferson County Agricultural Development Corporation

The Jefferson County Agricultural Development Corporation, a local development corporation focused on agriculture, was created by an ad-hoc committee appointed by the Jefferson County Board of Legislators. The Corporation’s mission is to assist in the retention, growth and promotion of Jefferson County’s agricultural industry.

Black River / St. Lawrence River Resource Conservation and Development Area Council

The Black River- St. Lawrence RC&D area is located in Northern New York State and includes Franklin, St. Lawrence, Jefferson, Oswego, Lewis, Oneida and Herkimer Counties. It is bordered by the St. Lawrence River and Canada to the North, Lake Ontario and Canada to the West, Central New York RC&D to the South, and Hudson Mohawk RC&D and Greater Adirondack RC&D to the East. The Black River-St. Lawrence RC&D Area is located in the northern portion of NY State. The mission of the Black River - St. Lawrence RC&D Council is to work with partners to provide local leadership and coordination for projects devoted to environmental conservation, community improvement, economic development, and the wise use of natural resources. The Council’s vision is to be recognized as an integral local leader

in the wise utilization of natural and human resources to improve the local economy and enhance the quality of life throughout the seven county RC&D area.

Development Authority of the North Country

The Development Authority of the North Country was created to institute a comprehensive, coordinated program of economic development activities in Jefferson, Lewis, and St. Lawrence Counties, which surround the United States Army base at Fort Drum, in order to provide the region with the capability to effectively plan and develop the infrastructure needs of the region required by the population increase due to the expansion at Fort Drum. The Development Authority is notable among public authorities in New York State because it serves multiple purposes - to address the infrastructure needs and promote economic development in the North Country.

Fort Drum Regional Liaison Organization

There has been a long-standing, mutually supportive relationship between Fort Drum and the North Country, in part due to the region's partnership approach to solving problems and leveraging opportunities. The Fort Drum Regional Liaison Organization is a regional entity that has played a significant role in facilitating and strengthening a partnership between stakeholders in the Fort Drum region – not only with neighboring communities but also with other regional planning agencies such as the Development Authority of the North Country and the New York State Tug Hill Commission. It originated in 1990 as a community-based membership organization with the mission of fostering effective communication, understanding and mutual support by serving as the primary point of coordination for resolution of those issues which transcend the specific interests of the military and civilian communities of the Fort Drum region. The FDRLO is active in the region, and has a history of conducting various plans, studies and reports in areas such as housing, economic development, and growth management.

New York State Tug Hill Commission

The Tug Hill region is a 2,100 square mile, 1 million acre, 62 municipality region lying between Lake Ontario, the Black River and Oneida Lake, encompassing forest, farmland, and waters important to the State, and deemed by New York State to be deserving of technical assistance due to its small population and relative poverty. The rural Tug Hill region lies within portions of Jefferson, Lewis, Oneida and Oswego Counties. While much of the area is controlled by New York State, small privately-owned parcels do exist. The region is renowned for its excessive snowfall – the heaviest east of the Rockies.

Almost a quarter of Jefferson County's municipalities lie within the Tug Hill Region: the seven Towns of Adams, Champion, Lorraine, Rodman, Rutland, Watertown and Worth; and the three Villages of Adams, Black River, and West Carthage.

The New York State Tug Hill Commission was established as a non-regulatory state agency that provides technical assistance to the member towns and villages and to community organizations of the Tug Hill region with the mission of "municipal assistance, conservation, preservation and development in the region." The commission's approach is viewed by many as a model for fostering environmental protection and appropriate rural economic development in a way that retains "home rule." The Commission provides technical assistance to local governments, economic development organizations, and other local groups in the areas of land use planning, community economic development, and natural resource management. They also provide skill development and information for local officials through workshops and issues papers on a variety of topics. The Commission utilizes a model "circuit rider" program and helps local governments cut costs and save public funds through use of its computerized (GIS) mapping

system and by fostering intermunicipal cooperation. The Tug Hill Commission has a long-standing tradition of partnering with public agencies and the private sector to leverage resources (both human and financial), expertise and skills to help meet the needs of the region's communities.

The Tug Hill Commission's annual budget is about $1.3 million, most of it state appropriations. In any given year the Commission helps local communities and organizations find an average of $5 million to $10 million annually in grants and loans to help with advancing their projects. Projects include: land use planning and zoning; infrastructure financing and development (sewer and water systems, municipal facilities, telecommunications and technology development; siting and review of energy facilities; parks and historic preservation; watershed management; rural economic development (especially in the areas of forestry, farming, recreation and "Main Street" revitalization); leadership and capacity development through workshops and the Commission's annual Local Government Conference; and, a series of technical issue papers.

Most Tug Hill towns and villages belong to one of five councils of governments. Each is served by one or more "circuit riders" who, working out of their home offices, help in sharing good ideas between communities and help individual towns and villages take advantage of a more regional perspective in trying to enhance their communities. Circuit riders also help communities in identifying and solving problems and, when more specialized assistance is needed, call upon commission staff for help in land use planning, finding grants and loans for community improvement, and providing technical assistance and training opportunities for local officials. The five councils of government (COGs) in the Tug Hill region are: Cooperative Tug Hill Council (CTHC), North Shore Council of Governments (NorCOG), Northern Oneida County Council of Governments (NOCCOG), River Area Council of Governments (RACOG) and Salmon River Council of Governments (SRCG).

In Jefferson County, nine jurisdictions are affiliated with a COG while the remaining five are unaffiliated. The five unaffiliated municipalities are the Towns of Adams, Rutland and Watertown and the Villages of Adams and Black River. The River Area Council of Governments is made up solely of Jefferson County municipalities and consists of the Towns of Champion and Wilna and the Villages of Carthage, Deferiet, Herrings, and West Carthage. The Cooperative Tug Hill Council consists of representation within Jefferson, Lewis and Oswego counties; in Jefferson County, this includes the Towns of Lorraine, Rodman and Worth.

Future Development Trends – County Overview

Over the past few years Jefferson County has experienced significant population growth and corresponding increases in economic, employment, and construction activity. Jefferson County is striving to achieve new development in a manner that is sustainable and adds to the character, desirability, and quality of rural areas and neighborhoods while minimizing the potential to negatively impact current communities and their transportation systems, infrastructure, open space and parks, and quality of life.

Current deployments, the national recession, and delays in multi-family housing tax credits for certain housing projects have tempered the County's housing growth. Total new housing units represented by Building Permits issued by the Jefferson County Code Enforcement Office (29 of 43 County municipalities) dropped from 703 in 2007 to 543 in 2008. Commercial growth has also curtailed somewhat in recent years.

The County is working hard to help retain and also to attract business investment and employment. Significant acreage is being added to industrial and commerce parks. New broadband telecommunications infrastructure is being expanded to enhance business development competitiveness. Many communities are pursuing development, redevelopment, and revitalization in urban areas to improve the appearance and physical condition of their downtowns and village centers.

Like many rural areas, Jefferson County and its municipalities also face the challenges of new development, which often include sprawling, chain-type, highway-oriented businesses. The region is beginning to focus more on the ideas of "centered growth", where possible, guiding a portion of new growth into areas that are already developed. This approach can, over time, revitalize historic downtowns and housing stock, taking development pressure off of the rural landscape, resulting in lower costs for providing community services and infrastructure, preserving open space, and making the most of the region's current investments.

Prior to the Army's announcement in 1984 that Fort Drum would be the new home of the 10th Mountain Division, Jefferson County experienced a very slow historical growth rate (only 14,9 percent from 1900 to 1980. With the arrival of the 10th Mountain Division troops, their families, associated civilian employees, development and population growth increased dramatically in Jefferson County. In fact, between 1980 and 1990 the US Census estimated that the County's population grew by nearly 26 percent. Since 1990, however, Census figures show a return to the County's historically slow growth rate, with only a 0.7 percent increase observed from 1990 to 2000. Municipalities county-wide continue to work toward minimizing the impacts of new development, and leveraging private sector expansion in both military and non-military support businesses and sectors.

In recent years, Jefferson County has observed population growth through residential development in rural areas, while populations have tended to decline in urban areas. As rural populations increase, so does the potential for land development and the likelihood that additional agricultural lands will be converted to non-agricultural uses. Farmland conversion to residential uses is occurring incrementally in certain rural areas and suburban pockets in the County. Land development in Southern and Central regions of the County has been relatively minimal as compared to trends observed in the Northern and Tug Hill regions. A significant amount of new development county-wide is being sent into new, undeveloped areas, and along highway corridors – particularly those at the edge of population centers such as the NYS Route 3 and US Route 11 corridors. This is expected to continue, though programs are in place to provide incentives for redevelopment in existing population centers and developed areas. The NYS Route 3 Sewer Development Project (Great Bend to the City of Watertown), for example, increases the potential for higher density development along the Black River.

Jefferson County is one of the State's most productive agricultural counties (9th out of 62 by market value of agricultural products sold), and highly concentrated in dairy. It also leads the state in honey production. The agriculture industry in Jefferson County contributes millions of dollars to the local economy each year: According to the USDA Agricultural Census, the total market value of farm products sold in 2007 was more than $139 million. Active agriculture, abandoned agriculture, and forests are the most predominant land use types in the County. Recent trends have shown an increase in the amount of land in farms (i.e., 11 percent increase from 1997 to 2002 as per US Department of Agriculture), though the number of farms has tended to decline. There has been a focus in recent years on not only continuing to support agricultural land use and development in the County, but also to expand the local tourism and agri-tourism industries and foster increased growth of and improvements to basic tourism infrastructure. Examples of recent agri-tourism incentives include the Thousand Islands Seaway Wine Trail.

Jefferson County has more waterfront than any other County in the State. Seasonal waterfront residential development (primarily single family) continues along the Lake Ontario and St. Lawrence River. Some existing seasonal waterfront units are being converted to year round units. Waterfront areas are also the dominant tourism resource in the County. Historically, the waterfront of Lake Ontario and the St. Lawrence River (including the Thousand Islands) saw the development of hotels and grand summer homes. This continues today, with tourism being a critical component of Jefferson County's economy not only on Lake Ontario and the St. Lawrence River but also in areas along the County's rivers and streams, particularly the Black River. The County and its municipalities recognize the importance of the waterfront to the tourism industry, and are working to ensure that future development in waterfront areas not only maintains access to the waterfront itself but also that local land management policies assure commercial access to the waterfront for tourism interests. Clayton is redeveloping an important riverfront Brownfield parcel and adding a Riverwalk District along the St. Lawrence River. Watertown is working to transform the Black River Corridor and its vacant and abandoned industrial sites in to a driver for economic revitalization. Carthage, West Carthage and Dexter are also pursuing important waterfront improvements. Alexandria Bay is developing a riverwalk along the St. Lawrence River. Other planning and development initiatives include the implementation of the Black River "Blueway" plan, continued recreational trail development initiatives, and the growth of the hospitality sector in the greater Watertown area.

Jefferson County is also working to promote future development in areas related to wind, hydro, nuclear, biomass, geothermal and fuel cell technologies. At the time of writing, up to five industrial wind turbine farms were proposed for eastern Jefferson County. Transmission capacity is currently a limiting factor for the full build-out of all proposed farms.

The Black River region is an area of largely unspoiled scenery, a friendly and small-town atmosphere with a rich history and diverse character. Municipalities along the Black River and areas adjacent are working to establish a "blueway". Blueways are small boat and paddling routes that combine recreation and environmental awareness and allow users to travel to designated stops along the way for rest, overnight stays, and enjoyment of land-based attractions in the vicinity. The Black River Blueway Trail is becoming the impetus for the revitalization of communities adjacent to the Black River through tourism and sustainable development. From Carthage to Dexter, including the City of Watertown, communities are actively re-developing the Black River waterfront for access and recreational purposes.

Transportation infrastructure improvements are being considered along the Route 11 corridor between Interstates 81 and 87 to improve safety, travel time, and quality of life along the corridor and ultimately serve as the building blocks of a full expressway in order to improve mobility in the North Country and, in turn, foster future development in various economic sectors. In Jefferson County, Route 11 runs through the Town of Ellisburg, Village of Mannsville, Town and Village of Adams, Town and City of Watertown, Town of Pamelia, Town of LeRay, Village of Evans Mills, Town and Village of Philadelphia, and the Town and Village of Antwerp.

The Route 3 corridor (Olympic Trail Scenic Byway) is also an area where future new development is being targeted, particularly with regard to the tourism industry as it allows communities in the corridor to benefit from their close proximity to the Adirondack Park. The NYS Route 3 Sewer Development Project (Great Bend to the City of Watertown) increases the potential for higher density development along the Black River.

The Route 81 Fort Drum Connector Project is to improve the transportation link between Interstate 81 and Route 11, north of the City of Watertown, in the Towns of LeRay and Pamelia, Jefferson County, New York State.

Fort Drum

Growth in Jefferson County has been influenced by the military since as early as 1809, when a company of infantry soldiers was stationed at Sackets Harbor to control smuggling between northern New York and Canada. Military presence in the area has continued to grow, often in large bursts. Notably, in 1906 Pine Camp was established in the area that is now Fort Drum, and grew steadily until World War II. In 1941, an additional 75,000 acres were purchased for the construction of over 800 buildings. The first permanent assignments at the post were in 1974, the same year the Fort received its current name. The 10th Mountain Division has been the primary tenant at Fort Drum since 1984, with most existing facilities constructed between 1986 and 1992.

Communities in the Fort Drum region have experienced substantial population growth and development since the arrival of the 10th Mountain Division in 1984, particularly increases in the number and scale of residential and commercial development projects. No new on-base units are being built at the Fort; therefore, existing community housing stock is being depleted, driving up sale and rental costs. The County is working to create new opportunities for single and multi-family housing construction and rehabilitation. Residential and commercial development related to Fort Drum's 3rd Brigade expansion has slowed over the past year. The most concentrated development construction related to the 2006-2008 build-up occurred in the LeRay/Rt 11 Corridor and in the City and Town of Watertown. The10th Mountain Division continues to be actively deployed and brigade units are constantly in rotation to the Middle East. These cycles continue to impact the local housing market, especially the rental market, with peaks and valleys in demand. Additional troop increases are expected by 2013 with the addition of a Maneuver Enhancement Brigade.

In addition, the Fort has created significant demand for transient rooms/lodging. Much of the County's lodging operations have undertaken substantial renovations in recent years in response to this demand, in combination with construction of new facilities. The County recognizes that the development of new lodging facilities in proximity to Fort Drum can not only support activities at the Fort itself but the larger tourism industry in the County. Jefferson County is in the process of capitalizing upon many of its resources with regard to the tourism industry. The County has to offer scenic resources (trails, byways), water resources (blueways), cultural and historic resources, recreational resources (i.e., boating, fishing, camping, hiking, biking, cross country skiing, etc.). Much new development in the county is being undertaken with an eye toward attracting future visitors.

The general aesthetic condition of many communities in Jefferson County is blighted when compared to national standards. In some cases, this extends outside of population centers to major highway routes. The County and its municipalities recognize the benefits of redressing blight to support both local tourism investment and Fort Drum expansion activities (i.e., construction of new housing, transportation links and businesses). New development is often undertaken with an eye toward revitalization and support of tourism.

The Residential Communities Initiative (RCI) on Fort Drum has resulted in the construction of approximately 900 new on-base family units through May 2009 with another 500 units still planned through the end of 2010. The Timbers, a 192 unit one and two bedroom apartment community on-base

will open for occupancy in 2009. In addition the RCI effort will result in the renovation of 2,272 "legacy" homes on the base.

Today, much of the land along the Fort border remains undeveloped, wooded or in agricultural uses. However, much recent growth has taken the form of small subdivisions which accumulate over time. If this pattern continues over the long term, it is expected that the region will be increasingly transformed from one with compact villages surrounded by rural landscapes to a more homogeneously developed and sprawling landscape. The Fort Drum Regional Liaison Organization is working with local communities and other regional planning agencies to encourage future growth in existing centers already serviced by infrastructure, and/or appropriately-established growth centers. This would not only take development pressures off the area's rural landscape but also would have the added benefit of maintaining the buffer areas around Fort Drum, thus minimizing future Fort-Community land use conflicts, particularly regarding noise and safety concerns. Fort Drum and neighboring communities and landowners are increasingly sensitive to encroachment potential near the base, and are beginning the use of encroachment protection tools, such as optional conservation easements.

Jefferson County Planning Board Growth and Development Guidelines

The Jefferson County Planning Board is appointed by the Jefferson County Legislature. Operating under the provisions of NYS General Municipal Law, the Board accepts zoning and development project referrals that meet certain submission criteria from local municipalities. On a monthly basis, the Board reviews projects to make recommendations concerning countywide and inter-municipal issues that may result from municipal zoning actions and projects. As a technical assistance service to aid local officials and planners, the Board also provides non-binding project review suggestions that are typically related to local concerns and issues. Staff assistance to the Board is provided by members of the Jefferson County Department of Planning.

Under New York State Law, the County Planning Board lacks the jurisdiction to directly regulate the location, density, and design of development. However, it is has proposed the following set of growth and development principles to aid its review of local zoning actions and development projects under the GML 239-m process.

The Jefferson County Planning Board promotes the use of these principles at the local level by those municipal boards, Town and Village Planning Boards, and Zoning Boards of Appeals that are working diligently on a daily basis on land use and development issues. It is hoped that the following principles and policies will reinforce good planning practices countywide and demonstrate the Board's ideals for ensuring sustainable development that enhances community character and promotes the wise and efficient use of community resources.

County-wide Growth and Development Guidelines:

1. Development should enhance and build upon community character. Open space and rural character should be preserved to maintain the sense of place, uniqueness, and quality of life of our communities.
2. Infill development should be favored over the linear expansion of development in greenfields along highways that expand commercial areas and services in previously undeveloped rural areas. Infill development where services and infrastructure already exist maintains the integrity of our existing communities.

3. When development in rural areas does occur, it should be designed and sited to encourage the retention of rural character through innovative techniques such as clustering. Commercial and residential rural development should minimize conflicts with traditional rural land uses and the economic activity of agriculture and natural resource business enterprises.
4. Growth and development adjacent to Fort Drum should be compatible with its land use character and military aircraft, artillery, and training operations. Efforts to ensure appropriate development types and scale should be incorporated into municipal planning and land use regulations. Fort Drum and local communities should communicate and coordinate on a regular basis to offset potential land use conflicts.
5. Locally significant scenic vistas, viewshed corridors, ridge lines, and working landscapes should be protected. For example, the visual impact of development on coastal and waterfront areas, including the National and State Seaway Trail Scenic Byway should be minimized and avoided where possible.
6. Prime farmland and agriculture should be preserved and protected from development pressure and incompatible uses.
7. Communities should consider the regional impacts of development in conjunction with its local and community impacts.
8. Planning and development along road corridors should incorporate effective traffic management techniques, such as reduction of curb cuts, shared access points, etc., to maintain the function and capacity of the area's highway network.
9. Development in or near environmentally sensitive areas, such as flood plains, wetlands, wildlife habitat, surface waters, aquifer recharge areas, etc., should limit negative impacts on these resources.
10. Growth and development should be compatible and build upon the area's unique historic, cultural, and tourism assets.

Future Development Trends in Each Municipality

A "Land Uses and Development Trends Questionnaire" was distributed to all jurisdictions in the County and asked jurisdictions to:

(1) describe development trends occurring within their jurisdiction, such as the predominant types of development occurring, location, expected intensity, and pace by land use; and
(2) describe any regulations/ordinances/codes their jurisdiction enforces to protect new development from the effects of natural hazards.

A full summary of responses contained within all the completed Land Use and Development Questionnaires returned by individual jurisdictions is presented in Table 3d.4

Summary of Responses – Land Use and Development Trends Questionnaire

Table 3d.4
Summary of Responses
Land Uses and Development Trends Questionnaire
(Source: Core Planning Group Members – responses current as of 12/11/2009)

Community	Land Uses and Development Trends in Hazard Areas	Regulations/Codes/Ordinances To Protect New Development From Natural Hazards
Jefferson, County of	Noteworthy Jefferson County Development Trends Observations for Hazard Mitigation Study, late summer 2009: • Seasonal waterfront residential development (primarily single family) continues along the Lake Ontario and St. Lawrence River. • Some existing seasonal waterfront units are being converted to year round units. • Residential and commercial development related to Fort Drum's 3rd Brigade expansion has slowed over the past year. The most concentrated development construction related to the 2006-2008 build-up occurred in the LeRay/Rt 11 Corridor and in the City and Town of Watertown. • Farmland conversion to residential uses is occurring incrementally in certain rural areas and suburban pockets in the County. • The NYS Route 3 Sewer Development Project (Great Bend to the City of Watertown) increases the potential for higher density development along the Black River. • Fort Drum and neighboring communities and landowners are increasingly sensitive to encroachment potential near the base, and are beginning the use of encroachment protection tools, such as optional conservation easements. • Up to five industrial wind turbine farms are proposed for eastern Jefferson County. Transmission capacity is currently a limiting factor for the full build-out of all proposed farms.	*N/A*

Table 3d.4
Summary of Responses
Land Uses and Development Trends Questionnaire
(Source: Core Planning Group Members – responses current as of 12/11/2009)

Community	Land Uses and Development Trends in Hazard Areas	Regulations/Codes/Ordinances To Protect New Development From Natural Hazards
	• From Carthage to Dexter, including the City of Watertown, communities are actively re-developing the Black River waterfront for access and recreational purposes. • Clayton and Alexandria Bay are developing riverwalks along the St. Lawrence River.	
Adams, Town of	*No response was received from this municipality.*	*No response was received from this municipality.*
Adams, Village of	*No response was received from this municipality.*	*No response was received from this municipality.*
Alexandria, Town of	*No response was received from this municipality.*	*No response was received from this municipality.*
Alexandria Bay, Village of	*No response was received from this municipality.*	*No response was received from this municipality.*
Antwerp, Town of	*No response was received from this municipality.*	*No response was received from this municipality.*
Antwerp, Village of	*No response was received from this municipality.*	*No response was received from this municipality.*
Black River, Village of	*No response was received from this municipality.*	*No response was received from this municipality.*
Brownville, Town of	*No response was received from this municipality.*	*No response was received from this municipality.*
Brownville, Village of	*No response was received from this municipality.*	*No response was received from this municipality.*
Cape Vincent, Town of	*No response was received from this municipality.*	*No response was received from this municipality.*
Cape Vincent, Village of	*No response was received from this municipality.*	*No response was received from this municipality.*
Carthage, Village of	*No response was received from this municipality.*	*No response was received from this municipality.*
Champion, Town of	The Town of Champion is seeing quite a bit of single-family residential development in the areas where water and sewer districts have been established. This is occurring in abandoned agricultural land. There is also some commercial development along Route 26	The Town enforces floodplain management.
Chaumont, Village of	*No response was received from this municipality.*	*No response was received from this municipality.*
Clayton, Town of	Single family residential development is occurring in presently undeveloped areas.	*No response was received from this municipality*
Clayton, Village of	The former Frink America factory site on the waterfront at the corner of Riverside Drive and Webb Street is vacant and will eventually be sold for development.	*No response was received from this municipality.*
Deferiet, Village of	There is currently no growth within the village limits. The former paper mill property is currently being cleaned up	There are zoning laws in effect in the village and all new growth must be at the consent of the village planning board.

Table 3d.4
Summary of Responses
Land Uses and Development Trends Questionnaire
(Source: Core Planning Group Members – responses current as of 12/11/2009)

Community	Land Uses and Development Trends in Hazard Areas	Regulations/Codes/Ordinances To Protect New Development From Natural Hazards
	and plans for commercial/residential zones are being discussed. There will be a need for growth in the coming years to support the tax base.	
Dexter, Village of	*No response was received from this municipality.*	*No response was received from this municipality.*
Ellisburg, Town of	*No response was received from this municipality.*	*No response was received from this municipality.*
Ellisburg, Village of	*No response was received from this municipality.*	*No response was received from this municipality.*
Evans Mills, Village of	*No response was received from this municipality.*	*No response was received from this municipality.*
Glen Park, Village of	Currently there are no new residential developments in progress and none are currently planned. On the north side of the village there are several acres of farmland that are not used at this time.	Presently there are no specific codes etc. that protect new development from the effects of natural hazards.
Henderson, Town of	Proposed power transmission lines crossing the center of the town – 200 foot wide path through farmland and vacant undeveloped land. Establishment of municipal water district, providing water to approximately 500 residences. Establishment of municipal sewer district to waterfront and water district residences.	With the proposed wind power generation site, limits have been made by local law to height and proximity to residential and commercial buildings. Laws established for setback of homes and businesses from the waterfront to protect from erosion and flooding.
Herrings, Village of	*No response was received from this municipality.*	*No response was received from this municipality.*
Hounsfield, Town of	*No response was received from this municipality.*	*No response was received from this municipality.*
Le Ray, Town of	*No response was received from this municipality.*	*No response was received from this municipality.*
Lorraine, Town of	Single-family residential development is occurring in currently undeveloped woodland/farmland, in particular on the old Brown Farm just outside Lorraine on CR 189. Several new houses have been built and others are developing the land on the Gulf out back.	State and County regulations/ordinances cover building codes. The town is establishing subdivision laws and eventually zoning.
Lyme, Town of	*No response was received from this municipality.*	*No response was received from this municipality.*
Mannsville, Village of	*No response was received from this municipality.*	*No response was received from this municipality.*
Orleans, Town of	*No response was received from this municipality.*	*No response was received from this municipality.*
Pamelia, Town of	*No response was received from this municipality.*	*No response was received from this municipality.*
Philadelphia, Town of	*No response was received from this municipality.*	*No response was received from this municipality.*
Philadelphia, Village of	*No response was received from this municipality.*	*No response was received from this municipality.*

Table 3d.4
Summary of Responses
Land Uses and Development Trends Questionnaire
(Source: Core Planning Group Members – responses current as of 12/11/2009)

Community	Land Uses and Development Trends in Hazard Areas	Regulations/Codes/Ordinances To Protect New Development From Natural Hazards
Rodman, Town of	*No response was received from this municipality.*	*No response was received from this municipality.*
Rutland, Town of	*No response was received from this municipality.*	*No response was received from this municipality.*
Sackets Harbor, Village of	*No response was received from this municipality.*	*No response was received from this municipality.*
Theresa, Town of	*No response was received from this municipality.*	*No response was received from this municipality.*
Theresa, Village of	*No response was received from this municipality.*	*No response was received from this municipality.*
Watertown, City of	.Multi-family income-dependent housing is being built and proposed in the remote undeveloped areas of the City. Hotels and restaurants are proposed on the western side of the City with limited infrastructure. There are no plans to extend the City boundary.	The City has zoning issues dealing with floodplains. Wind and seismic activities are dealt with via the building codes. Landslides and wildfires are not common occurrences to plan for in the City.
Watertown, Town of	*No response was received from this municipality.*	*No response was received from this municipality.*
West Carthage, Village of	*No response was received from this municipality.*	*No response was received from this municipality.*
Wilna, Town of	*No response was received from this municipality.*	*No response was received from this municipality.*
Worth, Town of	*No response was received from this municipality.*	*No response was received from this municipality.*

Potential for Future Development in Delineated Hazard Areas

While future development patterns are subject to many regulatory and market-driven factors, it is possible to prepare general estimates of the relative potential for future development to occur in hazard areas by analyzing vacant parcels and their relation to the various hazard areas. As discussed in detail in the Risk Assessment, the planning area is susceptible to certain hazards uniformly. However, the nature of other hazards is such that only delineable portions of the study area are at risk. Using GIS, land use mapping provided by the County was evaluated to estimate the number of vacant and potentially developable parcels in each municipality. Vacant and potentially developable parcels have been assumed to be inclusive of currently unused agricultural lands, forested lands that are not in State ownership or otherwise protected, and barren lands. It was assumed that all of these land uses would be potentially developable in the immediate future, at least to some extent. In this way the analysis is quite conservative, since it does not include currently productive agricultural land, any part of which in the County may face development pressure at some point further in the future.

Next, "vacant" parcels were combined with geographically delineated hazard area boundaries to tally the acreage of vacant, potentially developable parcels within each municipality and further, the relative percentage of this acreage lying within each of the geographically delineated hazard areas.

According to the analysis, it is estimated that there are 130,562 acres of vacant, potentially developable land in the County's 43 jurisdictions – about 16 percent of the County's total land area. On a municipal level, this ranges from a minimum of 26 acres in the village of Ellisburg to a maximum of 15,094 acres in the Town of Theresa. In the Jefferson County communities, there are 9,524 acres of vacant land in the 100 and 500 year floodplain hazard areas; 65,207 acres of vacant land in wildfire hazard areas; 13 acres of vacant land in CEHA hazard areas; 32,926 acres of vacant land in the earthquake zone 4-5; 87,301 acres in soil types D & E; and 57,769 acres of vacant land in the moderate susceptibility and low incidence landslide hazard area.

Table 3d.5 lists the estimated acreage of potentially developable vacant parcels in each municipality, and quantifies the acres of vacant land as a percentage of the total acreage of each municipality. It further indicates the percentage of each municipality's vacant land area that lies within geographically delineated hazard zones. Ideally, municipalities would strive to minimize future development in hazard areas, or to impose certain development restrictions which would offer some form of protection from hazard events.

Table 3d.5; Summary of Vacant Land in Delineated Hazard Areas

Municipality	Total Acres Vacant Land	Vacant Land as % of Municipality's Total Acreage	% of Municipality's Vacant Land in Flood Hazard Areas (100 and 500 year floodplains)	% of Municipality's Vacant Land in Wildfire Hazard Areas	% of Municipality's Vacant Land in CEHAs	% of Municipality's Vacant Land in Earthquake Hazard Area Zone (4-5)	%of Municipality's Vacant Land in Earthquake Hazard Zone (Soils D&E)	% of Municipality's Vacant Land in Land slide Hazard Area (Moderate Susceptibility and low Incidence)
Adams, Town of	6,104	24%	16%	43%	0%	0%	67%	42%
Adams, Village of	163	22%	6%	31%	0%	0%	85%	0%
Alexandria, Town of	6,798	15%	14%	54%	0%	84%	82%	89%
Alexandria Bay, Village of	64	15%	11%	35%	0%	100%	12%	90%
Antwerp, Town of	5,446	8%	6%	61%	0%	100%	95%	9%
Antwerp, Village of	51	9%	0%	58%	0%	100%	100%	0%
Black River, Village of	470	42%	0%	43%	0%	0%	35%	0%
Brownville, Town of	6,667	18%	2%	41%	0%	0%	76%	73%
Brownville, Village of	87	24%	0%	13%	0%	0%	93%	0%
Cape Vincent, Town of	6,599	19%	6%	52%	0%	0%	87%	77%
Cape Vincent, Village of	78	19%	1%	20%	0%	0%	93%	100%
Carthage, Village of	578	35%	38%	37%	0%	40%	69%	0%
Champion, Town of	4,549	17%	2%	46%	0%	0%	2%	0%
Chaumont, Village of	304	52%	9%	43%	0%	0%	89%	100%
Clayton, Town of	9,594	19%	3%	52%	0%	0%	85%	71%
Clayton, Village of	272	28%	9%	27%	0%	0%	97%	98%
Deferiet, Village of	234	52%	0%	64%	0%	0%	18%	0%
Dexter, Village of	38	10%	3%	35%	0%	0%	100%	64%
Ellisburg, Town of	4,575	9%	4%	60%	< 1%	0%	53%	60%
Ellisburg, Village of	26	4%	20%	15%	0%	0%	72%	100%
Evans Mills, Village of	133	28%	19%	29%	0%	0%	27%	0%
Glen Park, Village of	62	14%	0%	40%	0%	0%	25%	0%
Henderson, Town of	4,936	19%	7%	59%	0%	0%	72%	99%
Herrings, Village of	74	42%	24%	61%	0%	0%	47%	0%
Hounsfield, Town of	4,660	16%	18%	34%	0%	0%	72%	58%
Le Ray, Town of	7,982	18%	3%	31%	0%	2%	79%	0%
Lorraine, Town of	3,092	13%	0%	67%	0%	0%	8%	0%
Lyme, Town of	7,626	22%	16%	40%	0%	0%	92%	93%
Mannsville, Village of	187	33%	0%	67%	0%	0%	8%	68%
Orleans, Town of	5,402	12%	2%	58%	0%	1%	73%	50%
Pamelia, Town of	2,605	12%	3%	42%	0%	0%	97%	0%
Philadelphia, Town of	1,681	7%	4%	51%	0%	94%	100%	0%
Philadelphia, Village of	148	28%	29%	48%	0%	100%	100%	0%
Rodman, Town of	2,248	8%	7%	68%	0%	0%	9%	0%
Rutland, Town of	5,086	18%	5%	52%	0%	0%	1%	0%
Sackets Harbor, Village of	337	24%	5%	20%	0%	0%	96%	99%
Theresa, Town of	15,094	38%	12%	58%	0%	85%	89%	70%
Theresa, Village of	199	27%	26%	50%	0%	100%	2%	0%
Watertown, Town of	6,495	30%	4%	30%	0%	0%	46%	0%
Watertown, City of	905	17%	13%	15%	0%	0%	78%	0%
West Carthage, Village of	336	42%	23%	33%	0%	0%	44%	0%
Wilna, Town of	7,294	15%	3%	69%	0%	88%	37%	0%
Worth, Town of	1,281	5%	0%	64%	0%	0%	0%	0%
Jefferson, County of	*130,562*	*16%*	*7%*	*50%*	*0%*	*25%*	*67%*	*44%*

Future Development Trends in Hazard Areas – Study Area Overview

Future development trends in Jefferson County will likely to continue to be impacted heavily by Fort Drum, the tourism industry, and the agriculture industry. The County is striving to achieve new development in a manner that is sustainable and adds to the character, desirability, and quality of its rural areas and neighborhoods while minimizing the potential to negatively impact current communities and their transportation systems, infrastructure, open space and parks, and quality of life.

The County's relative abundance of open space combined with a steady demand for new construction has historically lead to sprawl type of development along major roadways. The region is now beginning to focus more on the ideas of "centered growth", where possible, guiding a portion of new growth into areas that are already developed. This approach can, over time, revitalize historic downtowns and housing stock, taking development pressure off of the rural landscape, resulting in lower costs for providing community services and infrastructure, preserving open space, and making the most of the region's current investments.

Jefferson County is cognizant of the risks that it faces due to the impacts of natural hazards. Many municipalities have programs in place today which address certain natural hazards – whether it is a comprehensive or master plan, a floodplain management ordinance, or erosion hazard area construction limitations.

Together, Jefferson County's 43 municipalities have a total of 130,562 acres of vacant (potentially developable) land. This represents 16 percent of the County's total area. Thirteen natural hazards were identified earlier in this plan as having a significant impact on the planning area and have been analyzed in detail in this plan. The paragraphs below analyze the likelihood for future development in each of the identified hazard areas to incorporate hazard-resistant design. Overall, while new development is expected to result in an increasing number of structures present in Jefferson County municipalities, codes and standards in place today will require that they be designed to provide a certain degree of protection from the hazards to which the County is susceptible.

Future Development Trends – Extreme Temperatures Hazard Area

The extreme temperature hazard area covers the whole of Jefferson County and is essentially uniform for all jurisdictions, therefore future development trends for the extreme temperature hazard area would be the same as those county-wide. If current demographic trends continue, the proportion of the population whose health can be particularly vulnerable to extremes in temperature is likely to increase somewhat in the foreseeable future.

Future Development Trends – Extreme Wind and Tornado Hazard Area

The extreme wind hazard area encompasses the whole of Jefferson County and is essentially uniform from one jurisdiction to the next. Therefore, future development trends for the wind hazard area would be the same as those county-wide. This would include future development trends for the tornado hazard area, as a tornado is simply one example of a specific type of high wind event. While an increased number of new structures could be exposed in the future, all municipalities must adhere to the New York State Building Code in addition to any local changes

that they may have made, so that they will be constructed with a certain degree of protection from the most frequent high wind events.

Future Development Trend – Lightning Hazard Area

The lightning hazard area encompasses the whole of Jefferson County and is essentially uniform from one jurisdiction to the next. Therefore, future development trends for the lightning hazard area would be the same as those county-wide. While an increased number of new structures could be exposed in the future, all municipalities must adhere to the New York State Building Code in addition to any local changes that they may have made, so that they will be constructed with a certain degree of protection from the most frequent lightning events.

Future Development Trends – Winter Storm Hazard Area

The risk of significant snow and ice storms encompasses the entire County and is uniform from one jurisdiction to the next. Therefore, future development trends for the winter storm hazard area would be the same county-wide. It is anticipated that while an increasing number of new structures will be present in the County, they will be constructed at least in accordance with currently adopted building codes which include basic measures to minimize damages caused by winter storms, particularly with regard to snow loading and the protection of utilities.

Future Development Trends – Coastal Erosion Hazard Area

The Coastal Erosion Hazard Areas Act (CEHA) (Article 34 of the Environmental Conservation Law) regulates construction in areas where buildings and structures could be damaged by erosion and flooding. NYCRR Part 505 provides procedural requirements for development, new construction, and erosion protection structures. At present there is only one CEHA program in Jefferson County, covering the Lake Ontario shoreline in the Town of Ellisburg. However, while there already exists significant improved property within this zone, further development is limited not only by the constraints of the existing CEHA program, but also by the fact that much of the shoreline in the Town of Ellisburg also lies within two wildlife management areas and one state park. Elsewhere in the County, while there is likely to be increasing development pressures on shoreline land due to the high demand for waterfront property (for both residential and tourism uses), the actual risk of erosion along the rest of the County shoreline is generally minimal.

Future Development Trends – Dam Failure Hazard Area

The New York State Department of Environmental Conservation Dam Safety Program maintains an inventory of dams in the State and conducts safety inspections of dams, completes technical reviews of proposed dam construction or modification, monitors remedial work for dam safety compliance, and is involved in emergency preparedness activities. At the time of writing, research of readily available data sources did not reveal any dams proposed or under construction in Jefferson County in addition to those listed by the US Army Corps of Engineers National Inventory of Dams, or the Stanford University National Performance of Dams Program.

Future Development Trends – Drought Hazard Area

The drought hazard area encompasses the entire County and is essentially uniform from one jurisdiction to the next, although the local impact depends on the prevalence of agricultural land in individual municipalities. While the individual jurisdictions would prefer to focus on the preservation of farmland and other open space, possible pressures on agricultural land in Jefferson County to be zoned for residential and other development, may reduce the economic effects of drought on agriculture, while the impact on potable water supplies may increase.

Future Development Trends – Flood Hazard Area

Individuals and larger developers often look toward land along rivers, streams, canals, bays, and lakes for development because of the passive and active recreational opportunities that they offer. In turn, flood hazard areas are often areas where development pressures are high due to the recreational and aesthetic value of these lands, particularly in communities where the amount of undeveloped land is small and the density of development is high. Various County plans explicitly recommend the creation of additional recreational, entertainment and retail uses along various waterfront areas, in particular the Black River. Specifically, the aim is to foster the economic success of the County's waterfront communities by promoting increased water-related and water-dependent activities, fostering cooperative planning and promotional activities between waterfront communities, accommodating water-dependent uses with landside impacts, developing waterfront linkages, creating special waterfront zoning techniques for adoption by local municipalities, and assisting in the coordination and implementation of local waterfront revitalization plans.

Development within mapped flood hazard areas is currently regulated for communities participating in FEMA's National Flood Insurance Program (NFIP). All municipalities in the County except for the Town of Lorraine and Village of Mannsville participate in FEMA's National Flood Insurance Program (based on FEMA's Community Status Book Report (April 17, 2009), and thereby must have in place a floodplain management ordinance to regulate activities in the floodplain, as well as a designated floodplain manager/NFIP Coordinator to enforce the relevant ordinances. This will work to protect new development and substantial improvements in the County's floodplains. While it is likely that an increased number of assets could be susceptible to flooding, it is assumed that new structures will be built to codes that will offer a certain degree of protection from the most frequent events.

Future Development Trends – Ice Jam Hazard Area

While there exists no formal mapping of ice jam hazard areas, due to the unpredictable and localized nature of the hazard, the ice jam hazard is similar to the flood hazard in that ice jams may cause rivers and streams to overflow their banks. If a structure is near the banks of the rivers or streams, it may also be subject to structural damage from the impact of ice striking the structure. The jurisdictions' flood hazard ordinances are assumed to currently deal with the flooding aspect of the ice jam hazard, and future damages due to this hazard will depend on development within the floodplain and adherence to the relevant building codes. While an increased number of assets could be susceptible, it is assumed that they will be built to codes that will offer a certain degree of protection from the most frequent events.

Future Development Trends – Earthquake Hazard Area

For the whole of Rockland County, PGA values of between 3 and 5%g have a 10 percent chance of being exceeded over 50 years. The earthquake hazard area encompasses the entire County and is nearly uniform from one jurisdiction to the next, although the effects of an earthquake may vary from one jurisdiction and across jurisdictions as the soil type varies. Therefore, future development trends for the earthquake hazard area would be the same as those observed county-wide. All communities have adopted the New York State Building Code in addition to any local changes that they may have made. While an increased number of assets could be susceptible, it is assumed that they will be built to codes that will offer a certain degree of protection from the most frequent events.

Future Development Trends – Landslide Hazard Area

No areas within Jefferson County have been specifically identified as experiencing a high landslide incidence or susceptibility. However, according to the USGS, the western portion of Jefferson County lying nearest to Lake Ontario and the St. Lawrence River (roughly 40% of the County's total land area) is most vulnerable, being classified as moderately susceptible to landslide events. Research conducted as part of this project did not reveal any known recorded examples of historic landslide events in Jefferson County. Future development in landslide hazard areas is expected to mirror those trends observed County-wide. All communities have adopted the New York State Building Code in addition to any local changes that they may have made. While an increased number of assets could be susceptible, it is assumed that they will be built to codes (such as those regulating development in areas with steep slopes) that will offer a certain degree of protection from the most frequent events.

Future Development Trends – Wildfires

Half of the currently vacant parcels in Jefferson County are located in delineated wildfire hazard areas - a total of 65,207 acres of potentially developable land. The severity of the hazard is greatest in areas of high fuel loading and steep slopes. Areas that are typically considered to be safe from wildfires include highly urbanized, developed areas that are not contiguous with vast areas of wild lands. Areas typically considered to be prone to wildfires include large tracts of wild lands containing heavier fuels with high continuity such as those forested areas in many parts of the study region. Pressure to develop some forested areas and open land adjacent to forested areas, especially for residential use, will generally result in increases to the wildland-urban interface and the value of improved property within these areas in most jurisdictions, and hence an increased risk of future property damage and public danger due to wildfires.

SECTION 4 - CAPABILITIES AND RESOURCES

This capability assessment examines the ability of the Jefferson County Communities and other participating jurisdictions to implement and manage a comprehensive mitigation strategy, which includes a range of mitigation actions. The strengths, weaknesses, and resources of participating jurisdictions are identified in this assessment as a means to develop an effective hazard mitigation program. Furthermore, the capabilities identified in this assessment are evaluated collectively to develop recommendations, which support the implementation of effective mitigation actions throughout the County.

URS Corporation provided questionnaires to the Jefferson County Office of Fire and Emergency Management (JCOFEM) for distribution to the municipal representatives in order to initiate this capability assessment. The questionnaires requested information pertaining to existing plans, polices, and regulations that contribute to or hinder the ability to implement hazard mitigation actions. They also requested information pertaining to the legal and regulatory capability, technical and administrative capacity, and fiscal capability of each jurisdiction. Jefferson County, three towns, two villages and a city submitted completed questionnaires in a timely manner (by the end of October 2009) illustrating their capability to implement a mitigation strategy.

This section describes the activities currently underway, which contribute to or can be utilized for hazard mitigation. Due to the limited response received from participating jurisdictions, the capability assessment emphasizes the technical and financial resources available at the State and Federal levels, which the communities in the County can access to effectively implement a hazard mitigation program.

Capabilities and Resources – Jefferson County Jurisdictions

Legal and Regulatory Capability

As indicated in Table 4-1, the Jefferson County jurisdictions have several policies, programs, and capabilities, which help to prevent and minimize future damages resulting from hazards. These tools are valuable instruments in pre and post disaster mitigation as they facilitate the implementation of mitigation activities through the current legal and regulatory framework. These policies, programs, and capabilities are described in greater detail for the participating jurisdictions, as well as the State and Federal levels.

Table 4-1
Jurisdictional Legal and Regulatory Capabilities

Jurisdiction	Building Code	Zoning Ordinance	Subdivision Ordinance	Special Purposes Ordinance	Growth Mgmt Ordinance	Site Plan Review Requirements	Comprehensive Plan	Capital Improvements Plan	Economic Development Plan	Emergency Response Plan	Post-Disaster Recovery Plan	Post-Disaster Recovery Ordinance	Real Estate Disclosure Ordinance
Jefferson County	√	√	√	√	√	√	√	√	√	√			
Adams, Town of	√	√	√				√						
Adams, Village of	√	√√	√				√						
Alexandria, Town of	√	√	√				√						
Alexandria Bay, Village of	√	√	√				√						
Antwerp, Town of	√	√	√										
Antwerp, Village of	√	√	√				√						
Black River, Village of	√	√	√										
Brownville, Town of	√	√	√				√						
Brownville, Village of	√	√	√				√						
Cape Vincent, Town of	√	√	√				√						
Cape Vincent, Village of	√	√	√				√						
Carthage, Village of	√	√	√				√						
Champion, Town of	√	√	√	√	√	√	√			√			
Chaumont, Village of	√	√	√				√						
Clayton, Town of	√	√	√	√		√	√	√	√	√	√	√	
Clayton, Village of	√	√	√	√		√	√	√	√	√	√	√	
Deferiet, Village of	√	√	√	√	√	√	√	√		√			√
Dexter, Village of	√	√	√				√						
Ellisburg, Town of	√	√					√						
Ellisburg, Village of	√	√											
Evans Mills, Village of	√	√	√										
Glen Park, Village of	√	√				√							
Henderson, Town of	√	√	√	√	√	√	√			√			√
Herrings, Village of	√	√				√	√						
Hounsfield, Town of	√	√	√				√						
Le Ray, Town of	√	√	√										
Lorraine, Town of	√						√						
Lyme, Town of	√	√					√						

Table 4-1
Jurisdictional Legal and Regulatory Capabilities

Jurisdiction	Building Code	Zoning Ordinance	Subdivision Ordinance	Special Purposes Ordinance	Growth Mgmt Ordinance	Site Plan Review Requirements	Comprehensive Plan	Capital Improvements Plan	Economic Development Plan	Emergency Response Plan	Post-Disaster Recovery Plan	Post-Disaster Recovery Ordinance	Real Estate Disclosure Ordinance
Mannsville, Village of	√	√											
Orleans, Town of	√	√					√						
Pamela, Town of	√	√	√										
Philadelphia, Town of	√	√	√				√						
Philadelphia, Village of	√	√	√										
Rodman, Town of	√	√	√										
Rutland, Town of	√	√	√										
Sackets Harbor, Village of	√	√	√										
Theresa, Town of	√	√	√										
Theresa, Village of	√	√	√										
Watertown, Town of	√	√	√										
Watertown, City of	√	√	√	√		√	√			√			
West Carthage, Village of	√	√	√										
Wilna, Town of	√	√	√				√						
Worth, Town of	√	√	√				√						

Building Code

Building codes regulate construction standards and are developed for specific geographic areas of the country. They consider the type, frequency, and intensity of hazards present in the region. Structures built to applicable building codes are inherently resistant to many hazards such as strong winds, floods, and earthquakes. Due to the location specific nature of the building codes, these are very valuable tools for mitigation.

All of the communities in Jefferson County regulate construction through the use of a building code. The Towns of Black River, Clayton, Pamelia, Philadelphia, Theresa, Watertown and Wilna; and the Villages of Carthage, Chaumont, Clayton, Dexter, Evans Mills, Philadelphia and Theresa; and Jefferson County adhere to a building code through local authority. The remainder of the communities adhere to a building code through County authority. Several communities noted that the authority for enforcing the building code comes from the New York State Unified Code.

Zoning Ordinance

Zoning is a useful tool to consider when developing a mitigation strategy. It can be used to restrict new development, require low-density development, and designate specific uses (e.g. recreational) in the hazard prone areas. Private property rights must be considered, but enacting a zoning ordinance can reduce or potentially eliminate damages from future hazard events.

All of the jurisdictions have adopted a zoning ordinance with the exception of Town of Lorraine.

Subdivision Ordinance

Subdivision ordinances offer an opportunity to account for natural hazards prior to the development of land as they formulate regulations when the land is subdivided. Subdivision design that incorporates mitigation principles can reduce the exposure of future development to hazard events

The Towns of Adams, Black River, Brownville, Cape Vincent, Champion, Clayton, Henderson, Hounsfield, Le Ray, Pamelia, Philadelphia, Rodman Teresa, Watertown, Wilna and Worth; the Villages of Adams, Alexandria Bay, Brownville, Cape Vincent, Carthage, Chaumont, Deferiet, Dexter, Evans Mills, Philadelphia, Rutland, Sackets Harbor, Teresa and West Carthage; City of Watertown; and Jefferson County have adopted subdivision ordinances. The Town of Lorraine is in the process of creating a planning board.

Special Purpose Ordinance

A special purpose ordinance is a form of zoning in which specific standards dependent upon the special purpose or use must be met. For example, many special purpose ordinances include basic development requirements such as setbacks and elevations. The special purpose ordinance is a useful mitigation technique particularly when implemented to reduce damages associated with flooding and coastal erosion. The only special purpose ordinance identified by any of the jurisdictions was their floodplain ordinances.

Jefferson County; the Towns of Champion and Henderson; the Village of Deferiet; and the City of Watertown recorded that they have adopted special purpose ordinances.

Growth Management Ordinance

Growth management ordinances are enacted as a means to control the location, amount, and type of development in accordance with the larger planning goals of the jurisdiction. These ordinances often designate the areas in which certain types of development is limited and encourage the protection of open space for reason such as environmental protection and limitation of sprawl.

Jefferson County; the Towns of Champion and Henderson; and the Village of Deferiet have adopted growth management ordinances. The Town of Lorraine is in the process of creating a planning board.

Site Plan Review Requirements

Site plan review requirements are used to evaluate proposed development prior to construction. An illustration of the proposed work, including its location, exact dimensions, existing and proposed buildings, and many other elements are often included in the site plan review requirements. The site plan reviews offer an opportunity to incorporate mitigation principles, such as ensuring that the proposed development is not in an identified hazard area and that appropriate setbacks are included.

Jefferson County; the Towns of Champion and Henderson; the Villages of Deferiet, Glen Park, and Herrings; and the City of Watertown have adopted site plan review requirements. The Town of Lorraine is in the process of creating a planning board.

Comprehensive Plan

A comprehensive plan is a document which illustrates the overall vision and goals of a community. It serves as a guide for the community's future and often includes anticipated demographics, land use, transportation, and actions to achieve desired goals. Integrating mitigation concepts and policies into a comprehensive plan provides a means for implementing initiatives through legal frameworks and enhances the opportunity to reduce the risk posed by hazard events.

Jefferson County; the Towns of Adams, Alexandria, Brownville, Cape Vincent, Champion, Clayton, Orleans, Philadelphia, Wilna and Worth; the Villages of Adams, Alexandria Bay, Antwerp, Brownville, Cape Vincent, Carthage, Chaumont, Clayton, Deferiet, and Dexter; and the City of Watertown each have a Comprehensive Plan or Master Plan.

Capital Improvement Plan

Capital Improvement Plans schedule the capital spending and investments necessary for public improvements such as schools, roads, libraries, and fire services. These plans can serve as an important mechanism to reduce growth in identified hazard areas through limited public spending and can be used as a to develop a match for mitigation projects.

Of the jurisdictions that completed the Capability Assessment Questionnaire, only Jefferson County and the Village of Deferiet have a Capital Improvement Plan.

Economic Development Plan

Economic Development Plans offer a comprehensive overview of the local or regional economic state, establish policies to guide economic growth, and include strategies, projects, and initiatives to improve the economy in the future.

Furthermore, economic development plans, similar to capital improvement plans, offer an opportunity to reduce development in hazard prone areas by encouraging economic growth in areas less susceptible to hazard events.

Only Jefferson County has an economic development plan; however, some of the communities in the County have participated in the planning process.

Emergency Response Plan

Emergency response plans provide an opportunity for local governments to anticipate an emergency and plan the response accordingly. In the event of an emergency, a previously established emergency response plan can improve response and reduce negative effects as the responsibilities and means by which resources are deployed has been previously determined.

Jefferson County; the Towns of Champion and Henderson; the Village of Deferiet; and the City of Watertown have adopted emergency response plan or have a draft plan.

Post-Disaster Recovery Plan

A post-disaster recovery plan guides the physical, social, environmental, and economic recovery and reconstruction procedures after a disaster. Hazard mitigation principles are often incorporated into post-disaster recovery plans in order to reduce repetitive disaster losses.

No communities have recorded that they have developed post-disaster recovery plans.

Post-Disaster Recovery Ordinance

Post-disaster recovery ordinances are often produced in conjunction with post-disaster recovery plans. The ordinances are enacted after a hazard event to guide redevelopment in order to reduce future damages and mitigate repetitive loss.

No communities have recorded that they have adopted a post-disaster recovery ordinance.

Real Estate Disclosure Ordinance

A real estate disclosure ordinance requires individuals selling real estate to inform potential buyers of the hazards to which the property and/or structure is vulnerable prior to the sale. Such a requirement ensures that the new property owner is aware of the hazards to which the property is at risk of damage.

The Town of Henderson and the Village of Deferiet have recorded that they have adopted a real estate disclosure ordinance.

Administrative and Technical Capability

The ability of a local government to develop and implement mitigation projects, policies, and programs is contingent upon its staff and resources. Administrative capability is determined by evaluating whether there are an adequate number of personnel to complete mitigation activities. Similarly, technical capability can be evaluated by assessing the level of knowledge and technical expertise of local government employees, such as personnel skilled in surveying and Geographic Information Systems.

Table 4-2 provides a summary of the administrative and technical capabilities currently in place in each participating jurisdiction. The checkmark (√) indicates that the local government has documented that it maintains a staff member or has access to the services of an appropriate person for the given function.

Table 4-2
Jurisdictional Administrative and Technical Capabilities

Jurisdiction	Planner(s) or engineer(s) with knowledge of land development and management practices	Engineer(s) or professional(s) trained in construction practices related to buildings and/or infrastructure	Planner(s) or engineer(s) with an understanding of natural and/or human caused hazards	Floodplain manager	Surveyors	Staff with education or expertise to assess the community's vulnerability to hazards	Personnel skilled in GIS and/or HAZUS	Scientists familiar with the hazards of the community	Emergency Manager	Grant writers
Jefferson County	√	√	√			√	√		√	√
Adams, Town of										
Adams, Village of										
Alexandria, Town of										
Alexandria Bay, Village of										
Antwerp, Town of										
Black River, Village of										
Brownville, Town of										
Brownville, Village of										
Cape Vincent, Town of										
Cape Vincent, Village of										
Carthage, Village of										
Champion, Town of	√	√	√	√*	√					√
Chaumont, Village of										
Clayton, Town of	√	√	√				√		√	√
Clayton, Village of	√	√	√				√		√	√
Deferiet, Village of				√*		√			√	
Dexter, Village of										
Ellisburg, Town of										
Ellisburg, Village of										
Evans Mills, Village of										
Glen Park, Village of				√*		√				
Henderson, Town of	√			√*						√
Herrings, Village of										
Hounsfield, Town of										
Le Ray, Town of										
Lorraine, Town of									√	√
Lyme, Town of										
Mannsville, Village of										
Orleans, Town of										
Pamela, Town of										

Table 4-2
Jurisdictional Administrative and Technical Capabilities

Jurisdiction	Planner(s) or engineer(s) with knowledge of land development and management practices	Engineer(s) or professional(s) trained in construction practices related to buildings and/or infrastructure	Planner(s) or engineer(s) with an understanding of natural and/or human caused hazards	Floodplain manager	Surveyors	Staff with education or expertise to assess the community's vulnerability to hazards	Personnel skilled in GIS and/or HAZUS	Scientists familiar with the hazards of the community	Emergency Manager	Grant writers
Philadelphia, Town of										
Philadelphia, Village of										
Rodman, Town of										
Rutland, Town of										
Sackets Harbor, Village of										
Theresa, Town of										
Theresa, Village of										
Watertown, Town of										
Watertown, City of	√	√		√*	√				√	√
West Carthage, Village of										
Wilna, Town of										
Worth, Town of										

*****These communities were unable to name their floodplain managers but do participate in the National Flood Insurance Program; as such, they are required by the regulations to have an appointed floodplain manager.

It should be noted that at least one community indicated that the administrative and technical capabilities are handled by a consultant. It is recommended that the Core Planning Group confirms which jurisdictions use outside parties to provide these capabilities.

Fiscal Capability

The ability of a local government to implement mitigation activities is also associated with the funding available for policies and projects. Funding for such initiatives is often locally based revenue and financing, as well as outside grants. Costs associated with mitigation activities range from staffing and administrative costs to the actual cost of the mitigation project.

Table 4-3 provides a summary of the fiscal capabilities currently in place in each participating jurisdiction. The checkmark (√) indicates that the financial resource is available in the local jurisdiction for mitigation purposes.

Table 4-3
Jurisdictional Fiscal Capabilities

Jurisdiction	Community Development Block Grants (CDBG)	Capital Improvements Project Funding	Authority to Levy Taxes for Specific Purposes	Fees for Water, Sewer, Gas, or Electric Service	Impact Fees for Homebuyers or Developers for New Developments/Homes	Incur Debt through General Obligation Funds	Incur Debt through Special Tax and Revenue Bonds	Incur Debt through Private Activity Bonds	Withhold Spending in Hazard-Prone Areas	Other
Jefferson County	√	√	√			√				
Adams, Town of										
Adams, Village of										
Alexandria, Town of										
Alexandria Bay, Village of										
Antwerp, Town of										
Black River, Village of										
Brownville, Town of										
Brownville, Village of										
Cape Vincent, Town of										
Cape Vincent, Village of										
Carthage, Village of										
Champion, Town of	√	√	√	√		√	√			
Chaumont, Village of										
Clayton, Town of	√	√	√	√	√	√	√		√	
Clayton, Village of	√	√	√	√	√	√	√		√	
Deferiet, Village of			√	√		√	√			
Dexter, Village of										
Ellisburg, Town of										
Ellisburg, Village of										
Evans Mills, Village of										
Glen Park, Village of			√	√						
Henderson, Town of	√	√	√	√						
Herrings, Village of										
Hounsfield, Town of										
Le Ray, Town of										
Lorraine, Town of	√	√								
Lyme, Town of										
Mannsville, Village of										
Orleans, Town of										

Table 4-3
Jurisdictional Fiscal Capabilities

Jurisdiction	Community Development Block Grants (CDBG)	Capital Improvements Project Funding	Authority to Levy Taxes for Specific Purposes	Fees for Water, Sewer, Gas, or Electric Service	Impact Fees for Homebuyers or Developers for New Developments/Homes	Incur Debt through General Obligation Funds	Incur Debt through Special Tax and Revenue Bonds	Incur Debt through Private Activity Bonds	Withhold Spending in Hazard-Prone Areas	Other
Pamela, Town of										
Philadelphia, Town of										
Philadelphia, Village of										
Rodman, Town of										
Rutland, Town of										
Sackets Harbor, Village of										
Theresa, Town of										
Theresa, Village of										
Watertown, Town of										
Watertown, City of	√	√	√	√		√	√	√		
West Carthage, Village of										
Wilna, Town of										
Worth, Town of										

It should be noted that several of the communities answered that they did not know whether they had various financial capabilities available to them. It is recommended that one of the proposed actions of this plan be to research the capabilities further.

Conclusion

This capability assessment finds that most of the Jefferson County participating jurisdictions collectively have legal, technical, and fiscal tools and resources necessary to implement hazard mitigation strategies

Capabilities and Resources – State of New York

The State of New York, through the New York State Consolidated Laws, Executive Law Article 2-B entitled "*State and Local: Natural and Man-Made Disaster Preparedness*" established the Disaster Preparedness Commission (DPC) to examine all aspects of natural and human induced disasters. While the law emphasized local authority and responsibility in the development and maintenance of plans and programs for natural and human induced disaster mitigation, DPC is tasked to examine all aspects of disaster prevention, response, and recovery, as well as prepare the state disaster preparedness plans.

The DPC consists of commissioners, directors, and chairs of State agencies and the American Red Cross. State agencies such as the New York State Emergency Management Office (SEMO), the Department of State (DOS), the Department of Environmental Conservation (DEC), and the Department of Transportation (DOT) are participants in the DPC. The DPC, with the support of the Mitigation Section of the SEMO, developed the New York State Multi-Hazard Mitigation Plan. The State Plan was not only designed to fulfill the requirements of the Disaster Mitigation Act of 2000, but was also created to serve as a resource for local governments in the development of local hazard mitigation plans.

The State's Plan includes an evaluation of the State's pre and post hazard mitigation policies, programs, and capabilities; the policies related to development in hazard prone areas; and the State's funding capabilities. The Jefferson County Multi-Jurisdictional Hazard Mitigation Plan incorporates many of the resources identified in the State Plan to demonstrate the capabilities present for local jurisdictions to consider in the development of local hazard mitigation. Many of these capabilities are described in further detail in this portion of the assessment.

New York State Emergency Management Office (SEMO)

In addition to facilitating the development of the New York State Multi-Hazard Mitigation Plan, SEMO offers a variety of assistance to local governments in the preparation and implementation of mitigation activities. For example, the SEMO Mitigation and Planning Sections recently coordinated to develop the "Empire Plan," a comprehensive emergency management plan which addresses the aspects of emergency management: readiness, mitigation, response, and recovery. SEMO developed the "Empire Plan" as a model for local governments to use in the creation of local comprehensive emergency management plans. In addition to the "Empire Plan" SEMO also offers direct funding support and technical assistance for the preparation of all-hazards mitigation plans for those communities to which funding for such assistance is not available. Beyond these activities, SEMO also coordinates with agencies such as the New York Department of State and the Department of Environmental Conservation to provide resources for hazard mitigation.

New York State Department of State (DOS)

DOS offers local governments many forms of assistance for preparing, implementing, and sustaining mitigation activities. The DOS Division of Coastal Resources, for example, provides local governments with technical assistance in the completion of Local Waterfront Revitalization Plans (LWRP). These plans are comprehensive land and water use plans which contain many components and address issues such as coastal erosion management and waterfront development. Upon completion of the LWRP, the plan is reviewed by the SEMO Mitigation Section to ensure that the policies and strategies outlined do not place people or property at undue risk to a hazard event. Approximately sixty-six local jurisdictions in the State have approved LWRPs.

New York State Department of Environmental Conservation (DEC)

The DEC directs many programs and forms of assistance useful to local governments developing mitigation strategies.

DEC provides technical assistance to local governments through the Floodplain Management Program and the Flood Protection Bureau. The Floodplain Management Program provides assistance to local governments adopting and administering local floodplain management ordinances. Similarly, the Flood Protection Bureau provides technical assistance in eligibility requirements for the National Flood Insurance Program in order to qualify local governments for entrance into the program. Each of these forms of assistance aids local governments in the development and implementation of flood mitigation activities to eliminate or reduce future flood damages.

Further technical assistance in floodplain management is provided through "Community Assistance Visits" administered by the DEC in collaboration with the SEMO. These two agencies partner in this effort to provide technical assistance on floodplain management program development. The Visits are prioritized by an assessment of needs conducted by the DEC and the SEMO. In addition to the "Community Assistance Visits," these agencies also coordinate to provide assistance for flood mitigation planning and sponsor technical assistance workshops for local governments interested in developing flood mitigation programs.

New York State Department of Transportation (DOT)

The Department of Transportation incorporates mitigation techniques into routine design, construction, and maintenance procedures throughout the State and also engages in mitigation projects, technical assistance activities, and training. For example, DOT provides guidance to local communities developing plans for the long-term re-routing of traffic due to a disaster. Furthermore, DOT engages in mitigation projects such as the elevation of roads in flood prone areas, cleaning of ditches and streams, management of stormwater erosion, tree pruning, and bi-annual inspection of bridges. DOT also develops and conducts training sessions on heavy snow removal and snow plowing for highway maintenance supervisors and equipment operators.

State Resources

This capability assessment finds that the State of New York's various departments collectively have a significant level of legal, technical, and fiscal tools and resources necessary to implement hazard mitigation strategies.

Capabilities and Resources – Federal

The Federal government offers a wide range of funding and technical assistance programs to help make communities more disaster resistant and sustainable. Many of these are included in Table Z, the Federal Technical Assistance and Funding matrix. Programs associated with the construction or reconstruction of housing and businesses, public infrastructure (transportation, utilities, water, and sewer), and supporting overall hazard mitigation and community planning objectives are emphasized in the matrix. Some programs are disaster-specific, activated by a Presidential Disaster Declaration under the provisions of the Stafford Act. Also included are programs or grants that are not specifically disaster related.

Federal Resources

FEMA has developed a large number of documents that address implementing hazard mitigation at the local level. Five key resource documents are briefly described.

How-to Guides. Some communities in Jefferson County have chosen not to participate in the planning process at this time, but could participate during future updates of the plan. Those communities can find additional information about the hazard mitigation planning process on the FEMA web site. FEMA has developed a series of nine "how-to guides" to assist States, communities, and tribes in enhancing their hazard mitigation planning capabilities. The first four guides mirror the four major phases of hazard mitigation planning used in the development of the Jefferson County Multi-jurisdictional Hazard Mitigation Plan. The last five how-to guides address special topics that arise in hazard mitigation planning such as using benefit-cost analysis and integrating man-made hazards. The use of worksheets, checklists, and tables make these guides a practical source of guidance to address all stages of the hazard mitigation planning process. They also include special tips on meeting DMA 2000 requirements.

Post-Disaster Hazard Mitigation Planning Guidance for State and Local Governments. FEMA, DAP-12, September 1990. This handbook explains the basic concepts of hazard mitigation, and shows State and local governments how they can develop and achieve mitigation goals within the context of FEMA's post-disaster hazard mitigation planning requirements. The handbook focuses on approaches to mitigation, with an emphasis on multi-objective planning.

Mitigation Resources for Success CD. FEMA 372, September 2001. This CD contains a wealth of information about mitigation and is useful for State and local government planners and other stakeholders in the mitigation process. It provides mitigation case studies, success stories, information about Federal mitigation programs, suggestions for mitigation measures to homes and businesses, appropriate relevant mitigation publications, and contact information.

A Guide to Federal Aid in Disasters. FEMA 262, April 1995. When disasters exceed the capabilities of State and local governments, the President's disaster assistance program (administrated by FEMA) is the primary source of Federal assistance. This handbook discusses the procedures and process for obtaining this assistance, and provides a brief overview of each program.

The Emergency Management Guide for Business and Industry. FEMA 141, October 1993. This guide provides a step-by-step approach to emergency management planning, response, and recovery. It also details a planning process that companies can follow to better prepare for a wide range of hazards and emergency events. This effort can enhance a company's ability to recover from financial losses, loss of market share, damages to equipment, and product or business interruptions. This guide could be of great assistance to Jefferson County industries and businesses located in hazard prone areas.

2010 Hazard Mitigation Assistance Unified Guidance. June 1, 2009. This guide provides information regarding applying for each of FEMA's hazard mitigation grant programs including the Hazard Mitigation Grant Program (HMGP), the Pre-Disaster Mitigation Program (PDM), the Flood Mitigation Assistance Program (FMA), the Repetitive Flood Claims Program (RSC) and the Severe Repetitive Loss Program (SRL). This guidance is updated annually and can be found on FEMA's web site at: http://www.fema.gov/library/viewRecord.do?id=3649.

Important Websites

The following are important websites that provide focused access to valuable planning resources for communities interested in sustainable development initiatives.

- http://www.fema.gov - Web site of the Federal Emergency Management Agency includes links to information, resources, and grants that communities can use in planning and implementation of sustainable measures.

- http://www.planning.org – Web site of the American Planning Association, a non-profit professional association that serves as a resource for planners, elected officials, and citizens concerned with planning and growth initiatives.

- http://www.ibhs.org – Web site of the Institute for Business and Home Safety, an initiative of the insurance industry to reduce deaths, injuries, property damage, economic losses, and human suffering caused by natural disasters. Online resources provide information on natural hazards, community land use, and ways you can protect your property from damage.

Federal Technical Assistance and Funding

The Federal government offers a wide range of funding and technical assistance programs that communities can access to assist in their long-term recovery. Some of these programs are geared to disaster preparedness and mitigation planning, while the focus of others is the long-term vitality of the communities. To assist communities in their rebuilding efforts and to better prepare for the future, the information in Table 4-4 is divided under the headings of conservation and environment, economic development, emergency management, historic preservation, housing, infrastructure, and mitigation.

For further information on these and other Federal programs, see the Catalog of Federal Domestic Assistance (CFDA) available on online at http://www.cfda.gov/.

Table 4-4a
Federal Technical Assistance and Funding

Agency	Program	Type of Assistance/ Projects Funded	Purpose	Eligible Applicants	Where To Obtain Application	Application Process	Application Deadline	For More Information
CONSERVATION & ENVIRONMENT								
DOC; NOAA	Habitat Conservation	Cooperative grants to support a wide variety of research, habitat restoration, construction, management and public education activities for marine and estuarine habitats.	To benefit US fisheries, conserve protected resources, and add to the economic and social well being of the nation.	Local governments, universities and colleges, Indian Tribes, private profit and non-profit research and conservation organizations and individuals.	State coordinating official.	Submit application through Grants.gov. Proposals are evaluated for technical merit, soundness of design, competency of applicant to perform the proposed work, potential contribution of the project to national goals and appropriateness and reasonableness of costs.	90 days prior to the start date of the project.	Regional or local office. http://www.nmfs.noaa.gov/regional.htm
DOC; NOAA; Marine Fisheries Service	Unallied Management Costs	Cooperative grants to support management activities for high priority marine and estuarine resources.	To provide economic, sociological, public policy and other information needed by administrators for conserving and managing fishery resources and protected species in their environment.	Local governments, universities and colleges, Indian Tribes, private profit and non-profit research organizations and individuals.	State coordinating official.	Submit application through Grants.gov. Proposals are evaluated for technical merit, soundness of design, competency of applicant to perform the proposed work, potential contribution of the project to national goals and appropriateness and reasonableness of costs.	90 days prior to the start date of the project.	Southeast Federal Program Officer http://www.nmfs.noaa.gov/regional.htm (727) 824-5304.
DOD; USACE	Beach Erosion Control Projects	Specialized services to design and construct projects under a cost share method.	To protect beach and shore erosion through projects not specifically authorized by Congress.	Political subdivisions of the state and other responsible local agencies.	Consult with the nearest District Engineer.	Formal letter to District Engineer. Approval is subject to the availability of funds.	None.	Corps of Engineers District Office. http://www.usace.army.mil/howdoi/where.html
DOI; FWS	Conservation Grants Private Stewardship for Imperiled Species	Grants to fund voluntary restoration management, or enhancement of habitat on private lands for endangered, threatened, proposed, candidate or other at risk species.	To provide Federal financial and other assistance to individuals and groups engaged in local, private and voluntary conservation efforts to be carried out on private lands that benefit species listed or proposed as endangered or threatened.	Sponsored organization, individuals / families, specialized groups, public non-profit institutions/ organizations, private non-profit institutions/ organizations, small business, profit organizations and other private	See www.grants.gov or http;//endangered.fws.gov/grants/private_stewardship/index.html	See www.grants.gov or http;//endangered.fws.gov/grants/private_stewardship/index.html	See www.grants.gov or http://endangered.fws.gov/grants/private_stewardship/index.html	Regional or local office. http://endangered.fws.gov/grants/private_stewardship/index.html

Table 4-4a
Federal Technical Assistance and Funding

Agency	Program	Type of Assistance/ Projects Funded	Purpose	Eligible Applicants	Where To Obtain Application	Application Process	Application Deadline	For More Information
CONSERVATION & ENVIRONMENT								
				institutions/ organizations.				
DOI; FWS	North American Wetland Conservation Fund	Grants to acquire real property interest in lands and water, including water rights, and to restore, manage, and/or enhance wetland ecosystems and other habitats for migratory birds, and other fish and wildlife.	To provide grant funds for wetland conservation projects.	Public or private organizations or to individuals who have developed partnerships to carry our wetland conservation projects.	Grants.gov	Submit applications.	March and July of each year.	Regional or local office. http://www.fws.gov/birdhabitat/Grants/NAWCA/CouncilAct.shtm
DOI; National Park Service	Save America's Treasures	Project Grants to protect and preserve nationally significant historical sites and wall as nationally significant collections of intellectual and cultural artifacts.	To provide matching grants for preservation and/or conservation work on nationally significant intellectual and cultural artifacts and nationally significant historical structures and sites.	Intrastate, interstate, local agencies, public or private non-profit institutions/organizations, public or private colleges and universities, including state colleges and universities and federally recognized Indian tribes.	Contact Save American Treasures at http://www.cr.nps.gov/hps/treasures/ (202) 513-7270, ext. 6.	Contact Save American Treasures at http://www.cr.nps.gov/hps/treasures/ (202) 513-7270, ext. 6.	Contact Save American Treasures at http://www.cr.nps.gov/hps/treasures/ or (202) 513-7270, ext. 6.	Contact Save American Treasures at http://www.cr.nps.gov/hps/treasures/ or (202) 513-7270, ext. 6.
EPA; Office of Brownfields Cleanup and Redevelopment, Office of Solid Waste and Emergency Response	Brownfields Assessment and Cleanup Cooperative Agreements.	A revolving loan fund and project grants to provide funding to inventory, characterize, assess and conduct planning and community involvement related to Brownfield sites; to capitalize a revolving loan fund and provide sub-grants to carry out	To assist in the expansion, redevelopment, or reuse of sites complicated by the presence of a hazardous substance, pollutant, or contaminant.	A general purpose unit of local government, a land clearance authority or a quasi – government entity acting under the authority of the local government, a regional council or a group of general purpose units of	EPA Regional Office. http://www.epa.gov/epahome/locate2.htm	Competitive grant program. See Grant Announcement available from EPA.	Contact Regional Office. http://www.epa.gov/epahome/locate2.htm	Brownfields Regional Office Coordinator, Dallas, Texas (214) 665-6737. http://www.epa.gov/epahome/locate2.htm

Table 4-4a
Federal Technical Assistance and Funding

Agency	Program	Type of Assistance/ Projects Funded	Purpose	Eligible Applicants	Where To Obtain Application	Application Process	Application Deadline	For More Information
CONSERVATION & ENVIRONMENT								
		cleanup activities at the sites; and, to carry out cleanup activities on land owned by the grant recipient.		government, a redevelopment agency, Indian Tribes, and non-profit organizations (subject to conditions).				
EPA, Office of Water	Regional Wetland Program Development Grants	Project Grants to encourage wetland program development by promoting the coordination and acceleration of research, investigations, experiments, training, demonstration, survey and studies related to the causes, effects, extent, prevention, reduction and elimination of water pollution.	To assist State, Tribal, local government agencies and interstate/intertribal entities to build capacity to protect, manage and restore wetlands.	Tribes, local governments, interstate agencies and intertribal consortia.	EPA Regional Office.	EPA Regional Office will review grant application and any grants will be awarded by the regional Administrator.	Contact EPA Regional Office. http://www.epa.gov/epahome/locate2.htm	EPA Regional Office, Wetland Coordinator. http://www.epa.gov/epahome/locate2.htm
USDA; Forest Service	Forest Land Enhancement Program	Project Grants for technical assistance to develop management plans, educational programs and assistance to increase awareness, and cost-share assistance to implement sustainable forestry practices on the ground.	Sustainable management of non-industrial private forests and other rural land suitable for sustainable forest management.	State Forestry Agencies and Landowners, managers of non-industrial private forests lands, nonprofit organization, consultant foresters, universities, other state, local and private organization and agencies.	State Forestry Agency. http://www.fs.fed.us/spf/coop/programs/loa/flep.shtml	The State must prepare a State Priority Plan that is approved by the Forest Service. After Approval a property owner is eligible for cost share assistance.	Deadlines are determined by State Forestry Agencies. http://www.fs.fed.us/spf/coop/programs/loa/flep.shtml	Regional or local office of US Forest Service. http://www.fs.fed.us/spf/coop/programs/loa/flep.shtml

Table 4-4a Federal Technical Assistance and Funding								
Agency	Program	Type of Assistance/ Projects Funded	Purpose	Eligible Applicants	Where To Obtain Application	Application Process	Application Deadline	For More Information
CONSERVATION & ENVIRONMENT								
USDA; Forest Service	Urban and Community Forestry Program	Project grants for assistance in urban forestry programs.	To plan for, establish, manage and protect trees, forests, green spaces and related resources in and adjacent to cities and towns.	State Forestry, interested members of the public, private nonprofit organizations in urban and community forestry programs in cities and communities.	Contact Regional Offices.	Contact Regional Offices.	Contact Regional Offices. http://www.fs.fed.us/ucf/	Regional or local office of US Forest Service. http://www.fs.fed.us/ucf/

Table 4-4b
Federal Technical Assistance and Funding

Agency	Program	Type of Assistance/ Projects Funded	Purpose	Eligible Applicants	Where To Obtain Application	Application Process	Application Deadline	For More Information
ECONOMIC DEVELOPMENT								
DOC; EDA	Economic Adjustment Assistance	Project Grants to help local interests design and implement strategies to adjust or bring about changes in the economy.	Aids the long-range economic development of areas with severe unemployment, and low family income problems, aids in the development of public facilities and private enterprises to create new, permanent jobs.	Economic Development Districts, cities or other political subdivisions of the state or a consortium of political subdivisions, Indian tribes or a consortium of Indian tribes, institutions of higher learning or a consortium of such institutions, or public or non-profit organizations or association acting in cooperation with the political subdivisions.	Meet with EDA's Economic Development Representative (EDR) to determine whether the preparation of a project proposal is appropriate.	After meeting with EDR the Regional Director will decide whether to invite an application. More information will be given at that time.	Continuing basis.	Regional or Local Office. http://www.eda.gov/Contacts/Contacts.xml
DOC; EDA	Economic Development Support for Planning Organizations	Project grants to establish economic development strategies designed to reduce unemployment and increase incomes.	To strengthen economic development planning capacity.	Economic Development Districts, Indian Tribes, units of local government, institutions of higher education and private non-profit organizations.	Submit a letter of interest, a statement of distress and a proposed work program not to exceed 10 pages and SF 424 to regional or Local Office.	Following invitation by agency a formal application is made to the regional office and to the EDA state representative.	None.	Regional or Local Office. http://www.eda.gov/Contacts/Contacts.xml
DOD; Office of Economic Adjustment	Growth Management Planning Assistance	To provide project grants to assist local governments to undertake community economic adjustment planning activities.	Planning in response to the establishment or expansion of Department of Defense military Installation.	Local governments or regional organizations.	http://www.oea.gov	Application is reviewed and approved by the Department of Defense's Office of Economic Adjustment.	None.	Regional or Local Office. http://www.eda.gov/Contacts/Contacts.xml

Table 4-4b
Federal Technical Assistance and Funding

Agency	Program	Type of Assistance/ Projects Funded	Purpose	Eligible Applicants	Where To Obtain Application	Application Process	Application Deadline	For More Information
ECONOMIC DEVELOPMENT								
DOL	Disaster Unemployment Assistance	Direct Payments for Specified Use; Provision of Specialized Services.	Disaster Unemployment Assistance provides financial assistance to individuals whose employment or self-employment has been lost or interrupted as a direct result of a major disaster declared by the President of the United states. Before an individual can be determined eligible for Disaster Unemployment Assistance, it must be established that the individual is not eligible for regular unemployment insurance benefits (under any state or federal law). The program is administered by states as agents of the federal government.	In order to qualify for this benefit your employment or self-employment must have been lost or interrupted as a direct result of a major disaster and you must have been determined not eligible for regular state unemployment insurance. With exceptions for persons with an injury and for self-employed individuals performing activities to return to self-employment, individuals must be able to work and available for work, which are the same requirements to be eligible for state unemployment insurance benefits.	An applicant should consult the office or officials designated as the single point of contact in his or her State for more information on the process the State requires to be followed in applying for assistance, if the State has selected the program for review.	Claims should be filed in accordance with the state's instructions published in announcements about the availability of Disaster Unemployment Assistance, or contact the State Unemployment Insurance agency.	Applications for DUA must be filed within 30 days after the date of the SWA announcement regarding availability of DUA. When applicants have good cause, they may file claims after the 30-day deadline. However, no initial application will be considered if filed after the 26th week following the declaration date.	More information about this program and where to apply for benefits under this program is available at: http://workforcesecurity.doleta.gov/unemploy/disaster.asp To determine your eligibility for unemployment insurance (UI) benefits, you should contact the state unemployment insurance agency in the state where you are located as soon as possible after becoming unemployed. In some states, you can now file a claim by telephone and the Internet.
EDA	Economic Development and Adjustment Program, Sudden and Severe Economic Dislocation	Grants	To help States and localities to develop and/or implement strategies that address adjustment problems resulting from sudden and severe economic dislocation.	States, Localities, Non-Profit Organizations, and Indian Tribes.	Information regarding EDA's program procedures, regulations, and other requirements are available at EDA's website, www.eda.gov	Project grants can be funded in response to natural disasters including improvements and reconstruction of public facilities.	Contact the Disaster Recovery Coordinator, Economic Adjustment Division.	Disaster Recovery Coordinator, Economic Adjustment Division, EDA, DOC, Herbert C. Hoover Building, Washington, DC 20230. Telephone: 800.345.1222 or

Table 4-4b
Federal Technical Assistance and Funding

Agency	Program	Type of Assistance/ Projects Funded	Purpose	Eligible Applicants	Where To Obtain Application	Application Process	Application Deadline	For More Information
ECONOMIC DEVELOPMENT								
	(Title IX)							202.482.6225. http://www.doc.gov/eda/html/prgtitle.htm
FHWA; Maritime Administration	Development and Promotion of Ports and Intermodal Transportation	Advisory Services and Counseling, Technical Information.	Promote and plan for the development and utilization of domestic waterways, ports and port facilities.	Local government Agencies, Metropolitan Planning Organizations, Public Port and Intermodal Authorities, Trade Associations and Private Intermodal and Terminal Operators.	Regional or Local Office.	Personal Conference or Explanation of Problem.	None.	Regional or Local Office. http://www.marad.dot.gov/welcome/regional%20off_directory.html
HUD; Community Planning and Development	Community Development Block Grants / Brownfields Economic Development Initiative	Project Grants to carry out economic development projects on contaminated building s or land.	To return Brownfields to productive economic use.	Units of local government.	Application Procedures will be published in Notice of Funding Availability in the Federal Register.	The Process will be published in Notice of Funding Availability in the Federal Register.	Deadline will be published in Notice of Funding Availability in the Federal Register.	Regional or local Office. http://www.hud.gov/offices/cpd/economicdevelopment/programs/bedi/index.cfm
HUD; Office of Community Planning and Development	Community Development Block Grants Section 108 Loan Guarantees	Guaranteed/Insured Loans for financing of economic development, housing rehabilitation, public facilities, and large scale physical development projects.	To provide communities with a source of financing for economic development, housing rehabilitation, public facilities, and large scale physical development projects.	Metropolitan Cities and Urban Counties.	See 24 Code of Federal regulations, Section 570.704 for application requirements.	See 24 Code of Federal regulations, Section 570.704 for application process.	Continuing basis.	Regional or Local Office. http://www.hud.gov/offices/cpd/communitydevelopment/programs/108/index.cfm
HUD; Office of Community Planning and Development	Community Development Block Grants / Technical Assistance Program	Project Grants (Cooperative Agreements) to transfer skills and knowledge of planning, developing and administering CDBG programs to eligible block grant entities.	To help units of local government, Indian tribes and area wide planning organizations to plan, develop and administer local CDBG programs.	Units of local government, national or regional non-profit organizations that have membership comprised predominantly of entities or officials of entities of	In answer to competitions and solicitations. They will be detailed in the Federal Register.	Applicants will be notified of acceptance or rejections.	Deadlines are in solicitation documents.	Regional or Local Office. http://www.hud.gov/offices/cpd/communitydevelopment/programs/index.cfm

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Federal Technical Assistance and Funding

Agency	Program	Type of Assistance/ Projects Funded	Purpose	Eligible Applicants	Where To Obtain Application	Application Process	Application Deadline	For More Information
ECONOMIC DEVELOPMENT								
				CDBG recipients, professional and technical service companies, public or private non-profit organizations including educational institutions and area-wide planning organizations.				
HUD; Policy Development and Research	Hispanic-Serving Institutions Assisting Communities	Project Grants for neighborhood revitalization, housing and economic development projects.	To assist Hispanic serving institutions of higher education to expand their role and effectiveness in addressing community development needs in their localities, consistent with the purposes of Title 1 of the housing and Community Development Act of 1974.	Nonprofit accredited Hispanic serving institutions of higher education that are on the US Dept. of Educations list of eligible HSI's or certify that they meet the statutory definition of an HIS.	Application Procedures will be published in Notice of Funding Availability in the Federal Register.	The Process will be published in Notice of Funding Availability in the Federal Register.	Deadline will be published in Notice of Funding Availability in the Federal Register.	HUD Office of University Partnerships http://www.oup.org/ (202) 708-3061.
HUD; Policy Development and Research	Historically Black Colleges and Universities Program	Project Grants for those activities that are eligible for CDBG funds as listed in 24 Code of Federal regulations, part 570, subpart C, particularly paragraphs 570,201 through 570.206.	To assist historically black colleges and universities to expand their role and effectiveness in addressing community development needs in their localities, including neighborhood revitalization, housing, and economic development, principally for persons of low-moderate income.	Historically Black Colleges and Universities as determined by the U.S. Dept. of Education.	Application Procedures will be published in Notice of Funding Availability in the Federal Register.	The Process will be published in Notice of Funding Availability in the Federal Register.	Deadline will be published in Notice of Funding Availability in the Federal Register.	HUD Office of University Partnerships http://www.oup.org/ (202) 708-3061.
USDA;	Assistance to	Project Grants and	Assistance to rural	Political	Application	Grants Awarded on a Competitive	Deadline will be published in	DOA Electric Program

Table 4-4b Federal Technical Assistance and Funding								
Agency	Program	Type of Assistance/ Projects Funded	Purpose	Eligible Applicants	Where To Obtain Application	Application Process	Application Deadline	For More Information
ECONOMIC DEVELOPMENT								
Rural Utilities Service	High Energy Cost Rural Communities	Direct loans use to acquire construct, extend, upgrade and improve energy generation, transmission, or distribution facilities in rural communities where the average expenditure on home energy cost is at least 275% of the national average.	communities with extremely high energy costs.	subdivisions of states, for-profit and non-profit businesses, cooperatives, association, organization, and other entities organized under the laws of States, Indian tribes, tribal entities, and individuals.	Procedures will be published in Notice of Funding Availability in the Federal Register.	Basis.	Notice of Funding Availability in the Federal Register.	http://www.usda.gov/rus/electric/regs/fedreg.htm (202) 720-9545.
USDA; Rural Business-Cooperative Service	Business and Industry Loans	Direct Loans and Guaranteed/Insured Loans. Direct Loans for modernization, development cost, purchasing and developing land, easements, tights-of-way, buildings, facilities, leases or materials, purchasing equipment, leasehold improvements, machinery and supplies, and pollution control and abatement equipment. Guaranteed Loans are for the same actions mentioned above plus for agricultural production, when not eligible for the Farm Service Agency farmer	To assist public, private and cooperative organizations, Indian Tribes or individuals in rural areas to obtain quality loans for the purpose of improving, developing or financing business, industry, and employment and improving the economic and environmental climate in rural communities including pollution abatement controls.	A cooperative, corporation, partnership, trust or other legal entity organized and operated on a profit or nonprofit basis, an Indian tribe, a municipality, county or other subdivision of state or individuals in rural areas.	Rural Development State Office.	Contact the Rural Development State Office or the State Coordinating Agency. http://www.rurdev.usda.gov/recd_map.html	Not Applicable.	Rural Development State Office. http://www.rurdev.usda.gov/recd_map.html

Table 4-4b
Federal Technical Assistance and Funding

Agency	Program	Type of Assistance/ Projects Funded	Purpose	Eligible Applicants	Where To Obtain Application	Application Process	Application Deadline	For More Information
ECONOMIC DEVELOPMENT								
		program assistance and when it is part of an integrated business also involved in the processing of agricultural products.						
USDA; Rural Utilities Service	Community Connect Grant Program	Project grants for the deployment of broadband transmission services to critical community facilities, rural residents and rural businesses and for the construction, acquisition, expansion, and/or operation of a community center which would provide such services free to residents for at least 2 years.	To encourage community oriented connectivity in rural areas where such service does not currently exist.	Indian Tribe or tribal organization, local units of government or other legal entity, including cooperatives or private corporations of limited liability companies organized on a for profit or nonprofit basis, and have the legal authority to own and operate the broadband facilities as proposed in its application, to enter into contracts and to comply with federal statutes and regulations.	Application in accordance with 7 Code of Federal regulations, Section 1739.	Grants Awarded on a Competitive Basis.	Deadline will be published in Notice of Funding Availability in the Federal Register.	DOA Telecommunications Program http://www.usda.gov/rus/telecom/index.htm (202) 720-9554.
USDA; Rural Housing Service	Community Facilities Loans and Grants	Guaranteed/Insured Loans, Direct Loans or Project Grants for community facilities such as child care facilities, food recovery and distribution centers,	To construct, enlarge, extend or otherwise improve community facilities providing essential service to rural residents.	City and County agencies, political and quasi-political subdivisions of the state, associations including corporations, Indian tribes and	Obtain SF-424 from the rural Development Area Office for a pre-application.	The pre-application is reviewed by the Rural Development area office and state office and the applicant is advised whether to file an application.	None.	Regional or local office. http://www.rurdev.usda.gov/rd/pubs/pa1557.htm

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Federal Technical Assistance and Funding

Agency	Program	Type of Assistance/ Projects Funded	Purpose	Eligible Applicants	Where To Obtain Application	Application Process	Application Deadline	For More Information
ECONOMIC DEVELOPMENT								
		assisted living facilities, group homes, mental health clinics, shelters and education facilities. Projects comprise community, social, cultural, transportation, industrial park sites, fire and rescue services, access ways, and utility extensions. All facilities must be for public use.		existing private corporations which are operated on a not-for-profit basis, have or will have the authority necessary for constructing operating and maintaining the proposed facility or service and for obtaining, giving security for and repaying the loans, and are unable to finance the project fro its own resources or through commercial credit at a reasonable rate.				
USDA; Cooperative State Research, Education, and Extension Service	Community Food Projects	Project grants a comprehensive approach to develop long term solutions to help ensure food security in communities by linking the food sector community development, economic opportunity, and environmental enhancement (50/50 program).	To support the development of community food projects designed to meet the food needs of low income people; increase the self-reliance of communities in providing their own needs; and promote comprehensive responses to local food, farm, and nutrition issues.	Private nonprofit entities.	Application Procedures will be published in Notice of Funding Availability in the Federal Register.	The Process will be published in Notice of Funding Availability in the Federal Register.	Deadline will be published in Proposal Solicitation in the Federal Register.	DOA Competitive Research Grants and Awards Management (202) 401-1761.
USDA	Livestock Assistance Program	Direct Payments.	To provide direct payments to eligible livestock producers who suffered grazing losses	Citizens of, or legal resident alien in the United States; a farm		Applicants visit the county or parish Farm Service Agency (FSA) office in the eligible county or parish to make application, certify eligibility and report	Sign-up for assistance under the 2000 LAP began January 18, 2000. Date for ending the sign-up will be determined at	Regional or Local Office: Consult the local phone directory for location of the nearest county FSA office.

Table 4-4b
Federal Technical Assistance and Funding

Agency	Program	Type of Assistance/ Projects Funded	Purpose	Eligible Applicants	Where To Obtain Application	Application Process	Application Deadline	For More Information
ECONOMIC DEVELOPMENT								
			due to drought, hot weather, disease, insect infestation, fire, hurricane, flood, fire, earthquake, severe storm, or other disasters during the 2000 crop year. Benefits will be provided to eligible livestock producers only in those counties where a severe natural disaster occurred. A county must have been approved as a primary disaster area under a Secretarial disaster designation or Presidential disaster declaration after January 1, 2000, and subsequently approved for participation in the Livestock Assistance Program (LAP) by the Deputy Administrator for Farm Programs.	cooperative, private domestic corporation, partnership, or joint operation in which a majority interest is held by the members, stockholders, or partners who are citizens of, or legal resident alien of the United States; Indian tribe or tribal organization of the Indian Self-Determination and Education Assistance Act; any organization under the Indian Reorganization Act or Financing Act; and economic enterprise under the Indian Financing Act of 1974.		percent of grazing loss, number of grazing acres, and number of eligible livestock by type and weight on Form CCC-740.	a later date.	If no listing, contact the appropriate State FSA office listed in the Farm Service Agency section of Appendix IV of the Catalog or on the WEB at http://www.fsa.usda.gov/edso/ Headquarters Office: Department of Agriculture, Farm Service Agency, Production, Emergencies, and Compliance Division, Emergency Preparedness and Program Branch, Stop 0517, 1400 Independence Avenue SW., Washington, DC 20250-0517. Telephone: (202) 720-7641. http://www.fsa.usda.gov
USDA; Rural Business-Cooperative Service	Renewable Energy Systems and Energy Efficient Improvements Program	To create a program to make direct loans, loan guarantees and grants to agricultural producers and rural businesses to help reduce energy costs and consumption.	To create a program to make direct loans, loan guarantees and grants to agricultural producers and rural businesses to help reduce energy costs and consumption and help meet the nation's critical energy needs.	Agricultural producer or rural small business.	Rural Energy Coordinator in the State.	Application must be submitted to the rural Energy Coordinator who will score it and submit to the National Office. The Highest scored application nationally will receive funding.	Continual sign-up process.	The Rural Business-Cooperative Service State Office.
USDA; Rural Business–Cooperative	Rural Business Enterprise Grants	Project Grants to create, expand or operate rural distance learning	To facilitate the development of small emerging business, industry and related	Public bodies and nonprofit corporations serving rural	From the Rural Business Cooperative Service or the State Coordinating Agency.	The pre-application is filed with the local office. After review it will be reviewed and processed by the State office.	None.	Regional or local office.

Table 4-4b
Federal Technical Assistance and Funding

Agency	Program	Type of Assistance/ Projects Funded	Purpose	Eligible Applicants	Where To Obtain Application	Application Process	Application Deadline	For More Information
ECONOMIC DEVELOPMENT								
Service		networks or programs for education, job training instruction related to potential employment, job advancement; development, construction, acquisition, land, buildings, plants, equipment, access streets and roads, parking areas, utility extensions, water supply, waste water disposal facilities, refinancing, services and fees or to establish a revolving loan fund.	employment for improving the economy of rural areas.	areas.				
USDA; Rural Business–Cooperative Service	Rural Business Opportunity Grants	Project grants to be used to assist in economic development of rural areas by providing technical assistance, training, and planning for business and economic development.	To promote sustainable economic development in rural communities with exceptional needs.	Public bodies, nonprofit corporations, Indian tribes and cooperatives with members that are primarily rural residents and that conduct activities for the mutual benefit of their members.	From the Rural Development State office or the State Coordinating Agency.	Applications will be scored and awards announce.	None.	Regional or local office.
USDA; Rural Business–Cooperative Service	Rural Cooperative Development Grants	Project Grants to facilitate the creation or retention of jobs in rural area through the development of new rural cooperative, value added processing and rural business.	To improve economic conditions in rural areas through cooperative development.	Nonprofit corporation and institutions of higher learning.	From the Rural Business Cooperative Service or the State Coordinating Agency.	The National Office reviews all applications, scores and ranks them.	Published in Federal Register.	Regional or local office.
USDA;	Rural	Direct Loans and	For rural economic	Electric and	Rural Development	See 7 Code of Federal Regulation,	None.	Regional or local office.

Table 4-4b Federal Technical Assistance and Funding								
Agency	Program	Type of Assistance/ Projects Funded	Purpose	Eligible Applicants	Where To Obtain Application	Application Process	Application Deadline	For More Information
ECONOMIC DEVELOPMENT								
Rural Business–Cooperative Service	Economic Development Loans and Grants	Project Grants for project feasibility studies, start-up costs, incubator projects and other reasonable costs for the purpose of fostering rural development.	development and job creation projects.	telephone utilities that have current loans with the Rural Utilities Service or rural telephone Bank loans or guarantees outstanding.	State Office.	Section 1703.34.		
USDA; Farm Service Agency	Tree Assistance Program	Direct payments with unrestricted use to tree, bush and vine owners who have trees, bushes and vines lost to a natural disaster, to replant or rehabilitate said vegetation and produce annual crops for commercial.	To assist producers whose trees, bushes or vines are damaged or destroyed in natural disasters.	Individual owners.	A form provided by FSA; a written estimate of the number or trees, bushes or vines lost or damaged which is prepared by the owner or someone who is a qualified expert, as determined by the county Committee; the number of acres on which the loss was suffered; and sufficient evidence of the loss o allow the County Committee to calculate whether an eligible loss occurred.	The County Committee makes recommendations and eligibility determinations on those determinations that it wants to recommend to a higher approval official.	To be announced.	Regional or local office.
USTREAS	Casualties, Disasters, and Theft	Tax relief.	The program offers tax relief for casualty losses that result from the destruction of, or damage to your property from any sudden, unexpected, or unusual event such as a flood, hurricane, tornado, fire, earthquake or even volcanic eruption.	A victim of a Presidentially declared disaster and you must be a taxpayer who is interested in receiving tax information and preparation assistance.	Contact IRS, http://www.irs.gov/taxtopics/tc515.html	Casualty losses are claimed on Form 4684 (PDF), *Casualties and Thefts*. Section A is used for personal–use property and Section B is used for business or income-producing property. If personal-use property was destroyed or stolen, you may wish to refer to Publication 584, *Casualty, Disaster, and Theft Loss Workbook*, to help you catalog your property. If the property was business or income-producing property, refer to Publication 584B (PDF), *Business Casualty, Disaster, and Theft Loss Workbook*.	Check website, http://www.irs.gov/pub/irs-pdf/p547.pdf	For additional information contact: Internal Revenue Service Tax forms and Publications W:CAR:MP:FP 1111 Constitution Ave NW Washington, DC 20224. http://www.irs.gov/taxtopics/tc515.html

Table 4-4c Federal Technical Assistance and Funding								
Agency	Program	Type of Assistance/ Projects Funded	Purpose	Eligible Applicants	Where To Obtain Application	Application Process	Application Deadline	For More Information
EMERGENCY MANAGEMENT								
DHS	Community Disaster Loans	Loan.	To provide loans subject to Congressional loan authority, to any local government that has suffered substantial loss of tax and other revenue in an area in which the President designates a major disaster exists. The funds can only be used to maintain existing functions of a municipal operating character and the local government must demonstrate a need for financial assistance	Applicants must be in a designated major disaster area and must demonstrate that they meet the specific conditions of FEMA Disaster Assistance Regulations 44 CFR Part 206, Subpart K, Community Disaster Loans.		Upon declaration of a major disaster, application for a Community Disaster Loan is made through the Governor's Authorized Representative to the Regional Director of FEMA. The Associate Director of the Response and Recovery Directorate approves or disapproves the loan. The Designated Loan Officer will execute a Promissory Note with the applicant. The promissory note must be co-signed by the State, or if the State cannot legally co-sign the note, the local government must pledge collateral security.	The loan must be approved in the fiscal year of the disaster or the fiscal year immediately following.	Regional or Local Office. http://www.dhs.gov
DHS	Disaster Legal Services	Legal assistance.	To provide legal assistance to individuals affected by a major Federal disaster.	Low-income individuals, families, and groups.	An applicant should consult the office or official designated as the single point of contact in his or her State for more information on the process the State requires to be followed in applying for assistance, if the State has selected the	Upon declaration of an emergency or major disaster, individuals and households may register an application for assistance with FEMA via a toll-free number or by visiting a Disaster Recovery Center.	Not applicable.	Regional or Local Office. http://www.dhs.gov

Table 4-4c
Federal Technical Assistance and Funding

Agency	Program	Type of Assistance/ Projects Funded	Purpose	Eligible Applicants	Where To Obtain Application	Application Process	Application Deadline	For More Information
EMERGENCY MANAGEMENT								
					program for review.			
DHS	Disaster Unemployment Assistance	Direct Payments for Specified Use; Provision of Specialized Services.	To provide special federally funded weekly benefits to workers and self-employed individuals who are unemployed as a direct result of a Presidentially-declared major disaster, and who are not eligible for regular Unemployment Insurance benefits paid by States.	Disaster victims who have experienced direct loss of employment as a result of a Presidentially-declared major disaster designated for DUA.	From the local State Workforce Agency (SWA).	Upon declaration of a major disaster declaration designated for DUA, individuals may apply with their local State Workforce Agency (SWA).	Generally, applications for DUA must be filed within 30 days after the date of the SWA announcement regarding availability of DUA. When applicants have good cause, they may file claims after the 30-day deadline. However, no initial application will be considered if filed after the 26th week following the declaration date.	Regional or Local Office.
DOC; NOAA; Marine Fisheries Service	Fisheries Disaster relief	Cooperative Grants (75/25)	Assessment of the effects of Commercial Fishery failures, restoring fisheries, preventing future failures and assisting fishing communities affected by failures.	Fishing Communities.	National Marine Fisheries Service (NMFS).	Submit completed forms to NMFS through Grants.GOV	120 days before start of project.	National Marine Fisheries Service. http://www.nmfs.noaa.gov/
DOD	Emergency Rehabilitation of Flood Control Works or Federally Authorized Coastal Protection Works	Repair of Flood Control or Coastal Protection Works.	To assist in the repair and restoration of flood control works damaged by flood, or federally authorized hurricane flood and shore protection works damaged by extraordinary wind, wave, or water action.	Owners of damaged flood protective works, or State and local officials of public entities responsible for their maintenance, repair, and operation must meet current guidelines to become eligible for Public Law 84-99 assistance.	District Engineer or Corps of Engineers	Written application by letter or by form request if such form is locally used by the District Engineer of the Corps of Engineers.	Thirty days after a flood or unusual coastal storm.	Regional or Local Office: U.S. Army Corps of Engineers Division or District Engineers. Headquarters Office: Commander, U.S. Army Corps of Engineers, Attn: CECW-OE, Washington, DC 20314. Telephone: (202) 272-0251. FTS is not available. http://www.usace.army.mil/business.html
SBA	Economic Injury Disaster Loans	Loans to businesses suffering economic injury from Presidential, SBA, or Agricultural Disaster.	To provide working capital to small business, small agricultural cooperatives or nurseries who have actual economic injury.	Business owners who have suffered economic injury.	SBA Disaster Office.	File with nearest SBA Disaster Office.	Deadline established after each declaration.	SBA Disaster Office.

Table 4-4c
Federal Technical Assistance and Funding

Agency	Program	Type of Assistance/ Projects Funded	Purpose	Eligible Applicants	Where To Obtain Application	Application Process	Application Deadline	For More Information
EMERGENCY MANAGEMENT								
SBA	Physical Disaster Loans	Loans to victims of declared disasters for uninsured or otherwise uncompensated physical damage.	To repair or replace damaged or destroyed real and/or personal property to its pre-damage condition. The loan limit may increase by 20% to provide protective measures.	Loans to homeowners, renters, business and non-profit organizations who have suffered physical loss do to a Presidential or SBA declared disaster.	SBA Disaster Office.	File with nearest SBA Disaster Office.	60 days from disaster declaration unless extended by SBA.	SBA Disaster Office.
USDA	Direct Housing, Natural Disaster Grants and Loans	Repair or replace damaged Property.	To meet emergency assistance needs not provided by FEMA Programs.	Very-Low income owner-occupants of rural housing in declared disaster areas. Must be 62 years or older.	Rural Development Field Office of the applicants County.	Complete Form 410-4 and return to field office.	From Date of Declaration until appropriated funds are exhausted.	U.S.D.A. Rural Development Field Office.
USDA	Disaster Reserve Assistance	Direct Payments for Specified Use.	To provide emergency assistance to eligible livestock owners, in a State, county, or area approved by the Secretary or designee, where because of disease, insect infestation, flood, drought, fire, hurricane, earthquake, hail storm, hot weather, cold weather, freeze, snow, ice, and winterkill, or other natural disaster, a livestock emergency has been determined to exist.	An established producer or husbandry of livestock or a dairy producer. a farm cooperative, private domestic corporation, partnership, or joint operation in which a majority interest is held by the members, stockholders, or partners who are citizens of, or legal resident aliens of the United States. Any Indian tribe or tribal organization of the Indian Self-Determination and Education Assistance Act. Any organization under the Indian Reorganization Act or Financing Act.	Visit the county FSA office in the eligible county.	Applicants visit the county FSA office in the eligible county to make application, certify eligibility and report feed loss, feed available, and eligible livestock related to the disaster occurrence; and (2) applicants also receive authority to participate in the program as provided by the approving official.	Feeding periods for the disaster reserve assistance program begin (a) the first day of the 1996 crop year in counties approved for 1995 or 1996 livestock feed programs; (b) the date the producer filed an application, if the natural disaster began after the beginning of the 1996 crop year; the date of the occurrence for sudden natural disasters that occurred after the beginning of the 1996 crop year.	Regional or Local Office http://www.fsa.usda.gov
USDA	Emergency Loans	Direct Loans.	To assist established (owner or tenant) family farmers, ranchers and aquaculture operators with loans to cover losses resulting from	Be an established family farmer, rancher, or aquaculture operator (either tenant-operator or owner-operator), who was conducting a farming operation at the	Consult the appropriate FSA State office.	Application Form FSA 410-1 provided by the Farm Service Agency must be presented, with supporting information, to the FSA county office serving the applicant's	Deadline for filing applications for actual loss loans is 8 months from the date of declaration/designation for both physical and production losses. Applicants should consult the FSA county office	Regional or Local Office http://www.fsa.usda.gov

Table 4-4c Federal Technical Assistance and Funding								
Agency	Program	Type of Assistance/ Projects Funded	Purpose	Eligible Applicants	Where To Obtain Application	Application Process	Application Deadline	For More Information
EMERGENCY MANAGEMENT								
			major and/or natural disasters, which can be used for annual farm operating expenses, and for other essential needs necessary to return disaster victims' farming operations to a financially sound basis in order that they will be able to return to private sources of credit as soon as possible.	time of occurrence of the disaster either as an individual proprietorship, a partnership, a cooperative, a corporation, or a joint operation. Have suffered qualifying crop loss and/or physical property damage caused by a designated natural disaster. Be a citizen of the United States or legal resident alien, or be operated by citizens and/or resident aliens owning over a 50 percent interest of the farming entity. Have sufficient training or farming experience in managing and operating a farm or ranch. Be a capable manager of the farming, ranching, or aquaculture operations.		county. FSA personnel assist applicants in completing their application forms. This program is excluded from coverage under OMB Circular No. A-110.	serving their area for application deadlines.	

Table 4-4d
Federal Technical Assistance and Funding

Agency	Program	Type of Assistance/ Projects Funded	Purpose	Eligible Applicants	Where To Obtain Application	Application Process	Application Deadline	For More Information
HISTORIC PRESERVATION								
DOI; National Park Service	Civil War Battlefield Land Acquisition Grants	Grants for Fee simple acquisition of land, or for the acquisition of permanent protective interests in land at Civil War Battlefields.	To preserve threatened civil war battlefields.	Local governments or private non-profit organization in partnership with local governments.	SF 424 and attached documents including hard copies of proposals. See application requirements for list of attachments.	File forms with National Park Service Office.	Ongoing.	National Park Service. http://www.nps.gov/
DOI; National Park Service	National Maritime Heritage Grants	Education activities and preservation activities or projects, such as: 1) activities associated with acquiring ownership of, or responsibility for, historic maritime properties for preservation purposes; 2) preservation planning; 3) documentation of historic maritime properties; 4) protection and stabilization of historic maritime properties; 5) preservation restoration, or rehabilitation of historic maritime properties; 6) maintenance of historic maritime properties; and 7) reconstruction or reproduction of well-documented historic maritime properties.	To preserve historic maritime resources and increase public awareness and appreciation.	Local governments and private non-profit organizations.	National Maritime Initiative.	State Historical Preservation Office or National Maritime Initiative.	Contact State Historical Preservation Office or National Maritime Initiative.	National Park Service Office, National Maritime Initiative. http://www.cr.nps.gov/Maritime/
DOI; National Park Service	Technical Preservation Service	Advisory services and counseling, dissemination of technical information, provision of specialized services.	To assist local governments and owners of certified historical structures to preserve and maintain properties.	Local governments and individuals.	Historic Preservation Certification Application through Appropriate State Official or NPS Office.	File through State Official or NPS Office.	None.	National Park Service Office. http://www.nps.gov/

Table 4-4e
Federal Technical Assistance and Funding

Agency	Program	Type of Assistance/ Projects Funded	Purpose	Eligible Applicants	Where To Obtain Application	Application Process	Application Deadline	For More Information
HOUSING								
DHS	Disaster Housing Assistance To Individuals And Households In Presidential Declared Disaster Zones	Direct Payments for Specified Use.	To provide assistance to affected individuals and households within Presidential-declared disaster zones to enable them to address disaster-related housing and other necessary expenses and serious needs, which cannot be met through other forms of disaster assistance, insurance, or through other means.	Individuals and households, in areas declared an emergency or major disaster by the President, whose primary residence has been damaged or destroyed and whose losses are not covered by insurance are eligible to apply for this program. Must be a citizen of the United States, a non-citizen national, or a qualified alien.	An applicant should consult the office or official designated as the single point of contact in his or her State for more information on the process the State requires to be followed in applying for assistance, if the State has selected the program for review.	A Presidential Disaster or Emergency Declaration must be issued, before individuals and households can register an application for assistance with FEMA via a toll-free number or by visiting a Disaster Recovery Center.	Generally, individual and household applications for disaster assistance must be filed within 60 days of the disaster declaration.	Regional or Local Office.
DHS	Disaster Housing Program	Grant.	The Disaster Housing Program provides housing assistance in the form of a grant to individuals whose homes sustained damage as a result of a Presidentially declared disaster. To qualify for assistance, the damaged home must be your primary residence, and be	Applicant must be a national, citizen or dual citizen of the US whose home was destroyed or damaged by a Presidentially declared major disaster.	Contact FEMA.	Individuals can apply for assistance by calling 1-800-621-FEMA. Insured homeowners should first file a claim with their home insurer before contacting FEMA. An inspection is performed and a determination is made on	Contact FEMA.	Additional general information can be found at: http://www.fema.gov/tabs_disaster.shtm

Table 4-4e
Federal Technical Assistance and Funding

Agency	Program	Type of Assistance/ Projects Funded	Purpose	Eligible Applicants	Where To Obtain Application	Application Process	Application Deadline	For More Information
HOUSING								
			located in the disaster-declared area. If insured, a claim should be filed. This program provides grants for lodging expense reimbursement, minimal home repairs and rental assistance. A determination of the types of housing assistance you are eligible to receive will be made if you apply.			your eligibility for one of the following types of assistance: Lodging expense reimbursement, minimal home repairs, rental assistance and Mortgage and Rental Assistance.		
DHS	Federal Assistance To Individuals And Households-Disaster Housing Operations	Direct Payments for Specified Use.	To address disaster-related housing needs of individuals and households suffering hardship who are within an area declared as a disaster zone, by the President.	Individuals and households, in areas declared an emergency or major disaster by the President, whose primary residence has been damaged or destroyed and whose losses are not covered by insurance are eligible to apply for this program. The individual or a member of the household must be a citizen of the	An applicant should consult the office or official designated as the single point of contact in his or her State for more information on the process the State requires to be followed in applying for assistance, if the State has selected the program for review.	Upon declaration of an emergency or major disaster, individuals and households may register an application for assistance with FEMA via a toll-free number or by visiting a Disaster Recovery Center.	Generally, individual and household applications for disaster assistance must be filed within 60 days of the disaster declaration.	Regional or Local Office.

Table 4-4e
Federal Technical Assistance and Funding

Agency	Program	Type of Assistance/ Projects Funded	Purpose	Eligible Applicants	Where To Obtain Application	Application Process	Application Deadline	For More Information
HOUSING								
				United States, a non-citizen national, or a qualified alien.				
DOI, Bureau of Indian Affairs	Indian Housing Assistance	Construction of housing, technical assistance to establish housing plans and determine extent and use of the Bureau's housing Improvement Program.	To eliminate substantially substandard Indian owned to inhabited housing for very low income individuals living in tribal service areas.	Individual members of Federally recognized tribes or tribal governments or organizations.	An informal conference should be scheduled with Bureau of Indian Affairs. Applications for Tribes or Tribal organizations should be submitted to Bureau of Indian affairs local office. Individuals may submit applications to the Bureau or to the tribal Servicing Housing Office.	Process is determined through annual Tribal work plan.	For Tribes or Tribal Organizations there is no deadline. For individuals the deadline is set at the local office.	Regional or Local Office of the Bureau of Indian Affairs.
HUD	Community Development Block Grant (CDBG)	Grant.	To develop viable urban communities by providing decent housing and a suitable living environment. Principally for low-to moderate-income individuals.	Eligible CDBG grant recipients include States, units of general local government (city, county, town, township, parish, village or other general purpose political subdivision determined to be eligible for assistance by the Secretary), the District of Columbia, Puerto Rico, Guam, the Virgin Islands, American Samoa, the Commonwealth of the Northern Marianas, and	http://www.hud.gov/offices/cpd/about/cpd_programs.cfm	Community Development activities that meet long-term needs. These activities can include acquisition, rehabilitation, reconstruction of properties and facilities damaged by a disaster, and redevelopment of disaster affected areas.	Consolidated Plans may be submitted between November 15 and August 16 of each fiscal year in which the State will administer funds.	State and Small Cities Division, Office of Block Grant Assistance, CPD, HUD, 451 7th Street, S.W., Washington, DC 20410-7000. Telephone: 202.708.3587. http://www.hud.gov/bdfy2000/summary/cpd/cdbg.html

Table 4-4e
Federal Technical Assistance and Funding

Agency	Program	Type of Assistance/ Projects Funded	Purpose	Eligible Applicants	Where To Obtain Application	Application Process	Application Deadline	For More Information
HOUSING								
				recognized Native American tribes and Alaskan Native villages.				
HUD	Demolition and Revitalization of Severely Distressed Public Housing (HOPE VI)	Demolition of all or parts of severely distressed public housing projects, relocation cost of affected resident, disposition activities, rehabbing of units or community facilities, development of new units or community facilities, homeownership activities, acquisition activities, management improvements and administrative cost, community and supportive services.	To fund revitalization of severely distressed public housing developments.	Public housing authorities and Indian Housing Authorities, plus local governments for HOPE VI Main Street Grants.	Submission requirements and application are listed in Notice of Federal Assistance in the Federal Register.	HUD HQ reviews the application and rates them. Highest rated applications are funded.	As indicated in the Federal Register Notice.	HUD local or regional Office.
HUD	Mortgage insurance-Homes for Disaster Victims	Guaranteed / Insured Loans.	To insure lenders against losses on mortgage loans used to finance purchase or reconstruction of one-family home that will be the principal residence of a borrower that is a victim of a disaster.	Individuals and Families that are victims of a disaster designated by the President.	Mortgagee submits Application to HUD Field Office.	Mortgagee submits Application to HUD Field Office.	None.	HUD local or regional Office.

Table 4-4e
Federal Technical Assistance and Funding

Agency	Program	Type of Assistance/ Projects Funded	Purpose	Eligible Applicants	Where To Obtain Application	Application Process	Application Deadline	For More Information
HOUSING								
HUD	Rehabilitation Mortgage Insurance	Guaranteed / Insured Loans.	To insure lenders against losses on mortgage loans for 1 to 4 unit structures used to finance the purchase of a structure and land and rehabilitate the structure; the purchase, relocation and rehabilitation of a structure from another site; refinance existing debt and rehabilitating a structure; finance the rehabilitating of a structure.	Individual purchasers.	A HUD Approved Lending Institution	Review by Lending Institution.	None.	HUD local or regional Office.
HUD	Rural housing and Economic Development	Grants for Capacity Building, Support of Innovative Housing and Economic Development Activities.	To build capacity for rural housing and economic development activities in rural areas.	Local Rural Non-Profit Organizations, Community Development Corporations, Indian Tribes, State agencies.	Submission requirements and application are listed in Notice of Federal Assistance in the Federal Register	As indicated in the Federal Register Notice.	As indicated in the Federal Register Notice.	HUD local or regional Office.
HUD	Self-Help Homeownership Opportunity Program (SHOP)	Land Acquisition and Infrastructure Improvements	To facilitate and encourage innovative homeownership opportunities were homeowner are low-income and contribute a significant	National or regional non-Profit Organizations or Consortia.	Submission requirements and application are listed in SHOP Notice of Federal Assistance in the Federal Register.	As indicated in the Federal Register Notice.	As indicated in the Federal Register Notice.	HUD local or regional Office.

Table 4-4e
Federal Technical Assistance and Funding

Agency	Program	Type of Assistance/ Projects Funded	Purpose	Eligible Applicants	Where To Obtain Application	Application Process	Application Deadline	For More Information
HOUSING								
			amount of sweat equity.					
HUD	Supplemental Loan Insurance-Multifamily Rental Housing	Financing of repairs, additions and improvements to multifamily projects, group practice facilities, hospitals and nursing homes already insured by HUD.	To insure lenders against losses on loans to finance additions and improvements to eligible properties.	Owners of Multifamily projects or facilities subject to mortgage insured by HUD or individual s/families and owners of multifamily projects.	HUD Multifamily HUB and Program Center.	Pre-application conference and then submittal of formal application through HUD approved mortgage.	Case-by-case basis.	HUD local or regional 0ffice.
USDA	Direct Housing-Natural Disaster	Direct loans.	To assist qualified lower income rural families to meet emergency assistance needs resulting from natural disaster to buy, build, rehabilitate, or improve dwellings in rural areas. Funds are only available to the extent that funds are not provided by the Federal Emergency Management Agency (FEMA). For the purpose of administering these funds, natural disaster	Applicants must be without adequate resources to obtain housing or related facilities. Applicants must be unable to secure the necessary credit from other sources at prevailing terms and conditions for residential financing.	Rural Development Field office.	Applicants must file Form RD 410-4 at the Rural Development field office serving the county where the dwelling is located. This program is excluded from coverage under OMB Circular No. A-110.	Applicants must file applications from the date of declaration/designation and until supplemental appropriated funds are exhausted.	Regional or Local Office. Consult your local telephone directory under United States Department of Agriculture for Rural Development field office number. If no listing, contact appropriate Rural Development State Office at: http://www.rurdev.usda.gov/recd_map.html.

Table 4-4e
Federal Technical Assistance and Funding

Agency	Program	Type of Assistance/ Projects Funded	Purpose	Eligible Applicants	Where To Obtain Application	Application Process	Application Deadline	For More Information
HOUSING								
			will only include those areas identified by a Presidential declaration.					
USDA; Rural Housing Service	Farm Labor Housing Loans and Grants	Project grants and Guaranteed/insured Loans for the construction, repair or purchase of year-around or seasonal housing; acquiring land and making improvements for housing; developing related support facilities.	To provide decent, safe and sanitary low-rent housing and related facilities for domestic farm laborers.	Farmers, farm family partnerships, family farm corporations, or an association of farmers.	Applicant must furnish the following information: the number of farm laborers currently being used in the area; the kind of labor performed; the future need for labor; the kind, condition, and adequacy of current housing; the ownership of current housing; the ability of workers to pay rent; and information that it is unable to provide housing from its own resources or terms and conditions that would enable it to provide labor housing.	Applications will be scored and reviewed by State and National Offices.	None.	Regional or Local Office of Rural housing Service. http://www.rurdev.usda.gov/rhs/
USDA; Rural Housing Service	Rural Housing Preservation Grants	Loans, grants or other assistance to individual homeowners, rental properties or coops to pay any part of the cost for repair and rehabilitation of structures.	To assist very low- and low-income residents individual homeowners, rental property owners (single/multi-unit and consumer cooperative housing projects to complete necessary repairs and rehabilitation of dwellings.	Political subdivision of state, public non-profit corporation, or Indian tribal Corporations authorized to receive and administer housing preservation grants, private nonprofit corporations, or consortia.	Contact your regional or local office.	Consult with Rural Development Office prior to application and submit pre-application. An Environmental Impact Assessment is required.	See Federal Register of Notice of Funds Availability.	Regional or Local Office of Rural housing Service. http://www.rurdev.usda.gov/rhs/
USDA; Rural Housing Service	Section 538 Rural rental Housing Guaranteed Loans	Guaranteed/Insured Loans to supply affordable multi-family housing in rural areas.	To encourage private and public lenders to make loans for affordable rental	Lenders.	Lender provides documentation required by RHS.	RHS will review applications for compliance and issue conditional Commitment of guarantee with	See Federal Register of Notice of Funds Availability.	Regional or Local Office of Rural housing Service. http://www.rurdev.usda.gov/rhs/

Table 4-4e
Federal Technical Assistance and Funding

Agency	Program	Type of Assistance/ Projects Funded	Purpose	Eligible Applicants	Where To Obtain Application	Application Process	Application Deadline	For More Information
HOUSING								
			properties.			conditions. Once Conditions are met the final Contract of guarantee will be issued.		
USDA; Rural Housing Service	Very Low-Income housing Repair Loans and Grants	Direct Loans and Project Grants to Very-Low Income Homeowners in rural areas to repair, improve or modernize their dwellings or to remove health and safety hazards.	To make essential repairs to homes to make them safe and remove health hazards.	Applicant must own and occupy the home in a rural area, have sufficient income to repay a loan, be 62 years of age or older and be unable to repay a loan for that part of the assistance that comes as a grant.	Rural Development State or District Office.	The Loan must be submitted to RHS field office serving county where structure is located.	None.	Regional or Local Office of Rural housing Service. http://www.rurdev.usda.gov/rhs/
USDA; Rural Housing Service	Very Low to Moderate Income Housing Loans	Direct and Guaranteed Loans to buy, build, or improve applicant's permanent residence. New manufactured loans on a permanent site may also be approved.	To assist very low, low-income, and moderate households to obtain modest, decent, safe, and sanitary housing for use as a permanent residence in a rural area.	Very low, low-income, and moderate households.	For Direct Loans the application is made to the local Rural Development Office. For Guaranteed Loans application is made to the lender.	For Direct Loans the Rural Development Office makes a decision within 30 – 60 days. For Guaranteed Loans the decision is made within 3 days.	None.	Regional or Local Office of Rural housing Service. http://www.rurdev.usda.gov/rhs/

Table 4-4f Federal Technical Assistance and Funding								
Agency	Program	Type of Assistance/ Projects Funded	Purpose	Eligible Applicants	Where To Obtain Application	Application Process	Application Deadline	For More Information
INFRASTRUCTURE								
DHS	National Dam Safety Program	State grants distributed directly to State dam safety programs.	To reduce the risks to life and property from dam failure in the United States through the establishment and maintenance of an effective national dam safety program to bring together the expertise and resources of the Federal and non-Federal communities in achieving national dam safety hazard reduction.	For a State to be eligible for primary assistance under the National Dam Safety Program, the State dam safety program must be working toward meeting the following criteria: The authority to review and approve plans and specifications to construct, enlarge, modify, remove, and abandon dams; the authority to perform periodic inspections during dam construction to ensure compliance with approved plans and specifications. All inspections be performed under the supervision of a State-registered professional engineer with experience in dam design and construction.	www.fema.gov/fima/damsafe	States wishing to participate in the National Dam Safety Program must submit a proposal with their application package including a program narrative statement, goals and objectives, performance measures, travel budget and related activities.	Applications should be submitted to FEMA by November 30 of each fiscal year.	*Headquarters Office*: Director, National Dam Safety Program, Mitigation Directorate, FEMA, DHS, 500 C Street SW., Washington, DC 20472; Telephone: (202) 646-3885. Additional information is available on the National Dam Safety Program web site, www.fema.gov/fima/damsafe
DOC; EDA	Grants for Public Works and Economic Development Facilities	Project grants for water and sewer improvements, industrial access roads, industrial and business parks, port facilities, railroad sidings, distance learning facilities, skill-training facilities, redevelopment of brown fields, eco-industrial facilities, business incubator facilities, and	To promote long-term economic development in areas experiencing substantial economic stress.	Cities, counties, institutions of higher education or a consortium of institutions of higher education, other political subdivision, Indian Tribes, Economic Development Districts and non-profit organizations.	The Economic Development Representative servicing the state or EDA.	Meet with EDR. If deemed appropriate the applicant will be invited to apply.	30 days after invitation.	Regional or Local Office. http://www.eda.gov/Contacts/Contacts.xml

Table 4-4f
Federal Technical Assistance and Funding

Agency	Program	Type of Assistance/ Projects Funded	Purpose	Eligible Applicants	Where To Obtain Application	Application Process	Application Deadline	For More Information
INFRASTRUCTURE								
		telecommunication infrastructure improvement needed for business retention and expansion.						
DOC; National Telecommunication and Information Administration	Public Tele-communications Facilities Planning and Construction	Grants for planning and construction of public telecommunications facilities.	To assist in the planning, acquisition, installation, and modernization of public telecommunications facilities through planning grants and matching construction grants.	Public or non-commercial educational broadcast station, noncommercial telecommunication entity, non-profit foundation, corporation, institution or association organized primarily for educational or cultural purposes, local government, tribal government or an agency thereof, or a political or special purpose subdivision of the state.	Request from agency or go to the web at: www.ntia.doc.gov/ptfp.	File application form, project narrative, project budget forms, relevant exhibits, CD-511, CD 346, SF 424B, and SF LLL. Contact State telecommunications agency where applicable.	See annual notification in the Federal Register.	Regional or Local Office. http://www.ntia.doc.gov/
DOD; USACE	Flood Control Works / Emergency Rehabilitation	Provision of Specialized Services.	To assist in the repair and restoration of public works damaged by flood, extraordinary wind, wave, or water action.	Owners of damaged flood protective works, or State and local officials of public entities responsible for their maintenance, repair, and operation.	Regional or Local Office: U.S. Army Corps of Engineers Division or District Engineers.	The Corps provides public works and engineering support to supplement State and local efforts toward the effective and immediate response to a natural disaster.	Thirty days after a flood or unusual coastal storm.	Program Manager PL 84-99 USACE, 20 Massachusetts Ave, N.W. Washington, DC 20314 Telephone: 202.761.0001. http://www.spd.usace.army.mil/hqpam.html
DOD; USACE	Protection of Essential Highways, Highway Bridge Approaches and Public Works	Protection of highways, highway bridges, essential public works, churches, hospitals, schools and other non-profit public services.	To provide bank protection for locations endangered by flood-caused erosion.	Political subdivision of states and other responsible local agencies established under state law with full authority and ability to undertake legal and financial responsibilities.	Formal letter to District Engineer.	Consult with District Engineer.	None.	Regional or Local Office. http://www.usace.army.mil/business.html
DOI; Bureau of Reclamation	Water Desalination	Demonstration and development projects	To develop cost-effective,	Local entities, public/nonprofit	A proposal solicitation is announced by the Bureau of	There will be a general solicitation	Varies, contact	Bureau of Reclamation http://www.usbr.gov/

Table 4-4f
Federal Technical Assistance and Funding

Agency	Program	Type of Assistance/ Projects Funded	Purpose	Eligible Applicants	Where To Obtain Application	Application Process	Application Deadline	For More Information
INFRASTRUCTURE								
	Research and Development Program	and related activities.	technically efficient and implementable methods by which water can be produced.	institutions/organizations, other public institutions/organizations.	Reclamation.	d one for pilot plants or demonstration projects, SF 424 and DI-2010 forms are required.	Bureau of Reclamation.	(303) 445-2432.
FHWA; FAA	Airport Improvement Program	Project Grants and advisory services and counseling.	Integrated airport system planning and airport master planning, construction and rehabilitation at public-use airports.	Counties, municipalities, other public agencies, Indian tribes, private owners of public-use reliever airports or airports having at least 2,500 passengers boarding annually and receiving scheduled passenger aircraft.	Contact the States single-point contact for aviation.	Pre-application is filed with the FAA office and reviewed regionally and/or in Washington D.C.	January 31 or another date specified in the Federal Register.	Regional or Local Office. http://www.faa.gov/about/office_org/
FHWA; FTA	Federal transit Capital Investment Grants	Formula Grants and Project Grants.	To assist in financing the acquisition, construction, reconstruction and improvement of facilities, rolling stock and equipment for use in public transportation service.	Municipalities and other subdivisions of the state, public agencies and instrumentalities of one or more states, public corporations. Boards and commissions.	Federal Transportation Authority or State single point of contact.	Applicant should contact the State single point of contact.	Contact FTA.	Regional or local office. http://www.fta.dot.gov/4_ENG_HTML.htm
FHWA; FTA	Transit Planning and Research	Project Grants, Technical Information, and Training.	Increase public ridership, improve safety and emergency preparedness, improve capital operating efficiencies, protect the environment and promote energy independence.	Public bodies, non-profit institutions, local agencies, universities and legally constituted public agencies and operators of public transportation services, and non-profit organizations.	Federal Transportation Authority.	Pre-Application Coordination.	None.	Associate Administrator for Research, Demonstration and Innovation, FTA (202) 366-4209. http://www.fta.dot.gov/4_ENG_HTML.htm
FHWA	Transportation: Emergency	Special funding and technical assistance to	To provide aid for repair of Federal-	State highway/transportation	www.fhwa.dot.gov	It is the responsibility of individual States to	Contact FHWA.	Director, Office of Engineering, FHWA, DOT, 400 7th Street, S.W.,

Table 4-4f
Federal Technical Assistance and Funding

Agency	Program	Type of Assistance/ Projects Funded	Purpose	Eligible Applicants	Where To Obtain Application	Application Process	Application Deadline	For More Information
INFRASTRUCTURE								
	Relief Program	States and Federal agencies.	aid roads.	agency or Federal agency.		request ER funds for assistance in the cost of necessary repair of Federal-aid highways damaged by natural disasters or catastrophic failures. A notice of intent to request ER funds filed by the State Department of Transportation with the FHWA Division Office located in the State will initiate the ER application process.		Washington, DC 20590. Telephone: 202.366.4655. http://www.fhwa.dot.gov/programadmin/erelief.html
USDA; Rural Utilities Service	Water and Waste Disposal Systems for Rural Communities	Project Grant, Direct Loans, guaranteed/Insured Loans for the installation, repair, improvement or expansion of rural water facilities including distribution lines, well pumping facilities and cost related thereto, and the installation, repair, improvement, or expansion or rural waste disposal facilities including the collection, and treatment of sanitary, storm and solid wastes.	To provide basic human amenities, alleviate health hazards and promote orderly growth of rural area.	Municipalities, counties and other political subdivisions of a states, such as authorities, associations, cooperatives, corporations operated on a not for profit basis, and federally recognized tribes. Serving rural businesses and rural residents.	Local USDA Rural Development Office.	Application is reviewed at the local level and forwarded to Rural Development State Director for review.	None.	Regional or local office. http://www.rurdev.usda.gov/recd_map.html
USDA; Rural Utilities Service	Water and Waste Disposal Loans and Grants (Section 306C)	Project Grants, Direct Loans to construct enlarge, extend or otherwise improve community water or	Provide water and waste disposal facilities and services to low income rural	Local levels of government, federally recognized tribes and non-profit associations. Per capita income may	Local USDA Rural Development Office.	Application is reviewed at the Rural Development State office and must compete on a	None.	Regional or local office. http://www.rurdev.usda.gov/recd_map.html

Table 4-4f
Federal Technical Assistance and Funding

Agency	Program	Type of Assistance/ Projects Funded	Purpose	Eligible Applicants	Where To Obtain Application	Application Process	Application Deadline	For More Information
INFRASTRUCTURE								
		waste systems; extend lines; and connect individual residences to the system.	communities whose residents face significant health risks.	not exceed 70% of national average, unemployment rate is not less than 125% of national average, and residents must face significant health risks due to not having access to an affordable community water and/or waste disposal system.		national basis for review.		

Table 4-4g
Federal Technical Assistance and Funding

Agency	Program	Type of Assistance/ Projects Funded	Purpose	Eligible Applicants	Where To Obtain Application	Application Process	Application Deadline	For More Information
MITIGATION								
DHS	Emergency Management Performance Grants (EMPG)	Formula Grants.	To encourage the development of comprehensive emergency management, including for terrorism consequence management, at the State and local level and to improve emergency management planning, preparedness, mitigation, response, and recovery capabilities.	Funding provided to States, which can be used to educate people and protect lives and structures from natural and technological hazards.	An applicant should consult the office or official designated as the single point of contact in his or her State for more information on the process the State requires to be followed in applying for assistance, if the State has selected the program for review. Technical assistance is available for application preparation from the FEMA Regional Offices.	Applications must be submitted online using the OJP GMS and must contain information and meet the requirements outlined in the program guidelines and application kit.	Applications will be made available on December 2, 2004, and must be received by ODP no later than January 16, 2005.	Office of Financial Management, FEMA, 500 C Street, S.W., Washington, DC 20472 Telephone: 202.646.7057. http://www.fema.gov
DHS	Flood Mitigation Assistance Program	Grants to States.	To help States and communities plan and carry out activities designed to reduce the risk of flood damage to structures covered under contracts for flood insurance.	The State or community must first develop (and have approved by FEMA) a flood mitigation plan that describes the activities to be carried out with assistance provided under this program. The plan must be consistent with a comprehensive strategy for mitigation activities, and be adopted by the State or community	Applications can be obtained from the State Hazard Mitigation Officer. Eligible projects include acquisition, elevation, or relocation of National Flood Insurance Program (NFIP)-insured structures, especially those that have been repetitively flooded or substantially damaged.	The State Hazard Mitigation Officer applied to the Federal Emergency Management Agency for annual funds.	Annual.	Risk Reduction Branch, Mitigation Division, FEMA, DHS 500 C Street SW., Washington, DC 20472; Telephone: (202) 646-2856. Additional information is available on FEMA's web site, www.fema.gov/fima/planfma.shtm

Table 4-4g
Federal Technical Assistance and Funding

Agency	Program	Type of Assistance/ Projects Funded	Purpose	Eligible Applicants	Where To Obtain Application	Application Process	Application Deadline	For More Information
MITIGATION								
				following a public hearing.				
DHS	Hazard Mitigation Grant Program	Grants.	To prevent future losses of lives and property due to disasters; to implement State or local hazard mitigation plans; to enable mitigation measures to be implemented during immediate recovery from a disaster; and to provide funding for previously identified mitigation measures to benefit the disaster area.	State and local governments; certain private and nonprofit organizations or institutions; Indian tribes or authorized tribal organizations; and Alaska Native villages or organizations.	For more information on where to obtain application go to website, http://www.fema.gov/fima/hmgp/hmgp_ref.shtm	Eligible applicants apply for the program through the State, as the State administers the program. Applicants are encouraged to contact the State Hazard Mitigation Officer for details. Each State has a hazard mitigation administrative plan that explains procedures for administering the HMGP. When the State requests a disaster declaration, it must also request that HMGP funding be made available. Individuals applying for a Hazard mitigation Grant can do it through their communities.	The State will submit all selected local applications or summaries to the Regional Director within 90 days after the State Hazard Mitigation Plan is approved. (Approximately 9-18 months after disaster declaration.)	Branch Chief, Risk Reduction Branch, Mitigation Division, FEMA, DHS, 500 C Street SW., Washington, DC 20472; Telephone: (202) 646–2856. Additional information is available on FEMA's web site, www.fema.gov
DHS	National Flood Insurance Program	Formula grants to States.	To enable persons to purchase insurance against physical damage to or loss of buildings and/or	Flood insurance can be made available in any community (a State or political	Contact State Hazard Mitigation Officer for details.	Community officials must submit an NFIP eligibility application form, which is available	Communities with one or more identified special flood hazard areas	Regional or Local Office. Contact the appropriate FEMA regional office, or the State office responsible for coordinating the program's activities.

Table 4-4g
Federal Technical Assistance and Funding

Agency	Program	Type of Assistance/ Projects Funded	Purpose	Eligible Applicants	Where To Obtain Application	Application Process	Application Deadline	For More Information
MITIGATION								
			contents therein caused by floods, mudslide (i.e., mudflow), or flood-related erosion, thereby reducing Federal disaster assistance payments, and to promote wise floodplain management practices in the Nation's flood-prone and mudflow- prone areas.	subdivision thereof with authority to adopt and enforce floodplain management measures for the areas within its jurisdiction) that submits a properly completed application to FEMA.		from the FEMA, together with: copies of adopted floodplain management measures meeting the minimum standards of 44 CFR Section 60.3(a), 60.3(b), 60.3(c), 60.3(d), and/or 60.3(e), as appropriate for the type of flood hazards identified; a list of any incorporated communities within the applicant's boundaries; and estimates of population and, by kind, of buildings situated in the known flood-prone areas of the community. Such Applications should be submitted to the Mitigation Directorate, FEMA, Washington, DC 20472. This program is excluded from coverage under OMB Circular No. A-110.	must enter the program within 1 year after the identification of those areas or else prohibitions against Federally related financial assistance for acquisition or construction purposes in identified special flood hazard areas take force. Once the community does qualify, after the prescribed date, these prohibitions are removed. Adequate floodplain management measures must be in effect within 6 months of the date that the special flood hazard area is identified and within 6 months of the date flood water surface elevations are provided.	
DHS	Public Assistance Program	Grants to States and Communities.	To provide supplemental assistance to States,	State and local governments and any political	An applicant should consult the office or official designated as the point-of-contact in the State for more information.	Application for Public Assistance (PA)	A Request for Public Assistance is	Public Assistance Branch, Recovery Division, FEMA, DHS, 500 C Street SW., Washington, DC 20472; or the State Emergency office.

Table 4-4g
Federal Technical Assistance and Funding

Agency	Program	Type of Assistance/ Projects Funded	Purpose	Eligible Applicants	Where To Obtain Application	Application Process	Application Deadline	For More Information
MITIGATION								
			local governments, and certain private nonprofit organizations to alleviate suffering and hardship resulting from major disasters or emergencies declared by the President.	subdivision of a State, Indian tribes, and Alaskan Native villages are eligible. Also eligible are private nonprofit organizations that operate educational, utility, emergency, or medical facilities, or that provide custodial care or other essential services of governmental nature to the general public. As a condition of grants under the Stafford Act, applicants are encouraged to mitigate natural hazards.		is made through the Governor's Authorized Representative to the FEMA Regional Director in accordance with FEMA Disaster Assistance Regulations, 44 CFR 206, except as provided in Part 206.35(d) for emergency declarations involving primarily Federal responsibility.	normally submitted by the applicant within 30 days of a declaration.	Additional information is available on FEMA's web site, http://www.fema.gov/rrr/pa/
DOC; NOAA; NWS	Automated Flood Warning Systems	Funding for creating, renovating, or enhancing Automated Flood Warning Systems.	To provide funding to communities with flood or flash flood problems that affect safety of life and property for warning systems.	Counties, municipalities, educational institutions and non-profit organizations.	http://www.ofa.noaa.gov %7Egrants/appkit.html. Applicants must also provide statement of work, project description and detailed budget narrative and justification.	Submit to: NOAA/NWS, 1325 East-West Highway, AFWS Program Manager, W/OS31, Room 13396, Silver Spring, MD. 20910.	Check with local NWS Office.	AFWS Operations Manager (631) 224-0112.
DOC; Census	Census Geography	Provide Computer	Showing results of surveys	Interested persons,	Written request.	None.	None.	Regional or Local Census Bureau Office http://www.census.gov/field/www/

Table 4-4g
Federal Technical Assistance and Funding

Agency	Program	Type of Assistance/ Projects Funded	Purpose	Eligible Applicants	Where To Obtain Application	Application Process	Application Deadline	For More Information
MITIGATION								
Bureau		generated set of maps for use in conducting surveys.	geographically, determine names and current boundaries of selected statistical areas.	organizations and government agencies.				
DOC; NOAA	Geodetic Surveys and Services	To provide national, coordinated spatial reference system at various specified intervals which provide scale, orientation, coordinated positions and elevation of specific points for use in surveying, boundary delineations and demarcation, mapping, planning, and development.	To provide assistance to State local and regional agencies in the development and implementation of Multipurpose Land Information Systems/Geographic Information Systems pilot projects and spatial reference system development and/or enhancement and height modernization.	Local, municipal, universities and regional agencies.	NOAA Grants Management Division (301) 713-3228.	45-90 day review time after submittal of all documents.	Must be submitted at least 90 days in advance of desired effective date.	NOAA Grants Management Division http://www.ago.noaa.gov/grants/ (301) 713-3228.
DOD; USACE	Flood Control Projects	Design and construction of projects.	To reduce flood damages through projects not specifically authorized by Congress.	Political subdivisions of States, or other responsible agencies established under state law. Project must be engineering feasible, complete within itself and economically	Formal Letter to District Engineer From A Prospective Sponsoring Agency.	Consult with the District Office.	None.	District Office. http://www.usace.army.mil/howdoi/where.html

Table 4-4g
Federal Technical Assistance and Funding

Agency	Program	Type of Assistance/ Projects Funded	Purpose	Eligible Applicants	Where To Obtain Application	Application Process	Application Deadline	For More Information
MITIGATION								
				justified. Non-federal sponsor will share equally in feasibility study, project cost, provide a cash contribution for land enhancement benefits and for features other than flood control, prevent future encroachments which might interfere with function and maintain the project.				
DOD; USACE	Flood Plain Management Services	Advisory Services and Counseling; Dissemination of Technical Information.	To promote appropriate recognition of flood hazards in land and water us planning and development through the provision of flood and floodplain related data, technical services and guidance.	Political subdivisions of States, other non-public organizations and the public.	None needed. A letter should be sent to the District Engineer of the Corps of Engineers.	Send letter of Request.	None.	District Office. http://www.usace.army.mil/howdoi/where.html
DOD; USACE	Snagging and Clearing for Flood Control	Design and construction of projects. Non-federal sponsor must provide land, easement, right-of-way; provide costs in excess of the Federal limit; maintain	To reduce flood damages.	Political subdivisions of States, or other responsible agencies established under state law.	Formal Letter to District Engineer From A Prospective Sponsoring Agency.	Consult with the District Office.	None.	District Office. http://www.usace.army.mil/howdoi/where.html

Table 4-4g Federal Technical Assistance and Funding								
Agency	Program	Type of Assistance/ Projects Funded	Purpose	Eligible Applicants	Where To Obtain Application	Application Process	Application Deadline	For More Information
MITIGATION								
		project; Hold US free from damages; cost share for land enhancement or special benefits; prevent future encroachments which will interfere with proper functioning of project.						
DOI	National Fire Plan - Wildland Urban Interface Community Fire Assistance	Project Grants; Use of Property, Facilities, and Equipment; Provision of Specialized Services; Advisory Services and Counseling; Dissemination of Technical Information; Training.	To implement the National Fire Plan and assist communities at risk from catastrophic wildland fires by providing assistance in the following areas: Provide community programs that develop local capability including; assessment and planning, mitigation activities, and community and homeowner education and action; plan and implement hazardous fuels reduction activities, including the training, monitoring or maintenance associated with such hazardous fuels reduction activities, on federal land, or on adjacent nonfederal land for activities that mitigate the threat of catastrophic fire to	States and local governments at risk as published in the Federal Register, Indian Tribes, public and private education institutions, nonprofit organizations, and rural fire departments serving a community with a population of 10,000 or less in the wildland/urban interface.	Contact the appropriate State Office or the National Interagency Fire Center's web site at: http://www.nifc.gov.	Wildland Urban Interface Community Assistance is coordinated by Bureau State and Field Offices. No specific application forms apply, except for grants awarded, the standard application forms furnished by the Federal agency and required by 43 CFR Part 12, Subpart C, "Uniform Administrative Requirements for Grants and Cooperative Agreements to State and Local Governments," and 43 CFR Part 12, Subpart F,	None.	Regional or Local Office. http://www.blm.gov/nhp/index.htm http://www.nifc.gov

Table 4-4g
Federal Technical Assistance and Funding

Agency	Program	Type of Assistance/ Projects Funded	Purpose	Eligible Applicants	Where To Obtain Application	Application Process	Application Deadline	For More Information
MITIGATION								
			communities and natural resources in high risk areas; enhance local and small business employment opportunities for rural communities; enhance the knowledge and fire protection capability of rural fire districts by providing assistance in education and training, protective clothing and equipment purchase, and mitigation methods on a cost share basis.			"Uniform Administrative Requirements for Grants and Agreements With Institutions of Higher Education, Hospitals, and Other Nonprofit Organizations", must be used by this program.		
DOI; National Park Service	Technical Preservation Services	Advisory Services, Technical Information, Specialized Services.	Technical information is provided to assist local governments and owners to preserve and maintain historic properties.	Local governments and individuals.	State historic Preservation Office.	Apply through appropriate state official or NPS Regional Office.	None.	Regional or local office.
USDA; Natural Resources Conservation Service	Soil Survey	Dissemination of Technical Information.	Soil surveys for planners, environmentalists, engineers, zoning commissions, tax commissions, homeowners, farmers, ranchers, developers, landowners and operators.	Individuals and Groups that have a need for soil survey.	Contact Natural Resources conservation Service Office.	Request from Natural Resources Conservation Service District Office	None	Natural Resources Conservation Service District Office http://www.nrcs.usda.gov/
USDA; Natural Resources Conservation Service	Watershed Protection and Flood Prevention	Project Grants sharing the cost of watershed protection measures, flood prevention, agricultural water management,	Project Grants sharing the cost of watershed protection measures, flood prevention, agricultural water management, sediment control, wildlife, recreation	Counties, groups of counties, municipalities, towns or townships, soil and water conservation districts, flood	Standard Application obtained from NRCS.	Details available in State and field offices of NRCS.	None.	Natural Resources Conservation Service District Office http://www.nrcs.usda.gov/

Table 4-4g
Federal Technical Assistance and Funding

Agency	Program	Type of Assistance/ Projects Funded	Purpose	Eligible Applicants	Where To Obtain Application	Application Process	Application Deadline	For More Information
MITIGATION								
		sediment control, wildlife, recreation and in extending long term credit for these projects. Advisory Services and Counseling in designing and installing watershed works of improvement.	and in extending long term credit for these projects. Advisory Services and Counseling in designing and installing watershed works of improvement.	prevention or flood control districts, Indian tribes or tribal organizations, and non-profit agencies with authority under state law to carry out, maintain and operate watershed works of improvement.				
USDA; Natural Resources Conservation Service	Watershed Surveys and Planning	Technical assistance for planning activities to help solve water and land related resource problems.	To help solve problems of upstream rural community flooding, water quality improvement, wetland preservation and drought management.	Local water resource agency concerned with water and related land resource development, counties, municipalities, towns or townships, Indian Tribe and Tribal Organizations, and non-profit organizations.	NCRS Offices and Letter of request Addressed to State Conservationist.	NCRS Offices and Letter of request Addressed to State Conservationist.	None.	Natural Resources Conservation Service District Office http://www.nrcs.usda.gov/

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SECTION 5 - MITIGATION GOALS

Goals were developed by taking into consideration both state and jurisdictional goals for mitigation. The goals in this multi-jurisdictional plan are broadly aligned with the goals of the State Hazard Mitigation Plan. In fact, the Jefferson County Multi-Jurisdictional Hazard Mitigation Plan Goals are in support of furthering the State's goals in many ways.

New York State Hazard Mitigation Plan Goals

New York State's Hazard Mitigation Vision Statement reads:

"To create communities whose daily activities reflect a comprehensive commitment by government, business, non-profit organizations, and the public to eliminate or reduce risks and adverse impacts from natural, technological, and human-caused hazards."

As outlined in the New York State Hazard Mitigation Plan (approved by FEMA January 4th, 2008), the State's generic goals are:

1) Promote hazard mitigation awareness and education throughout the State.
2) Build a State and Local hazard mitigation infrastructure within the State and promote mitigation as the most effective means to reduce future disaster losses.
3) Implement, maintain, and update a comprehensive State Multi-Hazard Mitigation Plan.
4) Reduce risk to lives and property from frequent natural, technological and human caused disasters. Set priority on hazards that are repetitive and pose severe risk to life and property.
5) Promote the implementation of flood mitigation plans and projects in flood prone areas of the State, in accordance with the FMA program as well as the Severe Repetitive Loss (SRL) program.
6) Encourage the development and implementation of long-term, cost-effective and environmentally sound mitigation projects at the local level.
7) Promote Hazard Resistant Construction, especially in residential buildings throughout the State.

Jefferson County Multi-Jurisdictional Hazard Mitigation Plan Goals

The Jefferson County Multi-Jurisdictional Hazard Mitigation Plan Goals are broad, long-term statements of what the participating jurisdictions will work to achieve over time through implementation of the plan. They are based on the findings of the risk assessment, and will apply to each jurisdiction adopting this plan.

1. Promote disaster-resistant development.
2. Build and support local capacity to enable the public to prepare for, respond to, and recover from disasters.
3. Reduce the possibility of damage and losses due to extreme temperatures.
4. Reduce the possibility of damages due to high winds (including tornados).
5. Reduce the possibility of damage and losses due to lightning.
6. Reduce the possibility of damage and losses due to winter storms.
7. Reduce the possibility of damage and losses due to coastal erosion

8. Reduce the possibility of damage and losses due to ice jams.
9. Reduce the possibility of damage and losses due to dam failures.
10. Reduce the possibility of damage and losses due to drought.
11. Reduce the possibility of damage and losses due to flooding.
12. Reduce the possibility of damage and losses due to earthquakes.
13. Reduce the possibility of damage and losses due to landslides.
14. Reduce the possibility of damage and losses due to wildfires.
15. Reduce the possibility of damages to emergency and critical facilities due to flooding, wildfires, and extreme winds.

SECTION 6 - RANGE OF ALTERNATIVE MITIGATION ACTIONS CONSIDERED

For this hazard mitigation plan to be approved by FEMA, each participating jurisdiction was required to identify and analyze a comprehensive range of specific mitigation actions and projects being *considered* to reduce the effects of each hazard (as per Part 201.6(c)(3)(ii)). The plan must include a list of *potential* loss reduction actions (including a comprehensive range of specific mitigation actions for each profiled hazard), and document that each jurisdiction has *analyzed* these various actions to achieve the community's goals and objectives for reducing and/or avoiding the effects of the identified hazards. FEMA's guidance states that the plan *should* (though is not required to) describe the process by which the community decided on particular mitigation actions, and points out that some of the mitigation actions initially identified may ultimately be eliminated in the community's action plan after analysis. FEMA's guidance is clear that a comprehensive range of actions should be *considered* for each identified hazard (Part 201.6(c)(3)(ii). FEMA Region 2 requires that actions addressing each identified hazard (regardless of the degree of risk) shall be included in local municipal mitigation strategy / action plan for each municipality requesting approval of the plan. *(For more information, see FEMA's Local Multi-Hazard Mitigation Planning Guidance, July 2008).*

The following table (Table 6-1) represents a range of types of mitigation actions that were considered by the Core Planning Group to address each of the hazards identified in this plan. This table served as a launching point for the discussion and development of specific mitigation actions for each municipality, in conjunction with a mitigation action items "Tip Sheet", which was also distributed to members of the Core Planning Group. In addition to listing examples of mitigation actions, the Tip Sheet also provided background information regarding the selection of mitigation actions and information regarding the eligibility of mitigation actions under the various FEMA grant programs.

At a working session of the Core Planning Group on November 10, 2009, participating jurisdictions considered this range of actions and developed a mitigation strategy (action plan) for their jurisdiction. Each jurisdiction has identified and analyzed a comprehensive range of mitigation actions and projects for each hazard, and address reducing the effects of hazards on both new and existing buildings and infrastructure.

Range of Actions and Projects That Were Considered

As required by FEMA, the Core Planning Group began by ***identifying*** a comprehensive range of potential loss reduction actions and projects for each hazard. The range of potential actions that was considered is listed and described in Table 6-1, and is organized according to the Mitigation Goal the action is intended to help achieve. In addition to these general types of mitigation actions, the Core Planning Group and JATs also considered a series of more specific mitigation actions that had been identified throughout the course of the planning process as specific problems and/or problem areas were brought to light in their community.

Note: After considering this range of actions, some of the actions initially considered were ultimately eliminated from community action plans based on existing local conditions. Others were carried over for detailed analysis and prioritization (see page 6-7). The community and County action plans that were ultimately developed, together with action items spearheaded at the County level with local participation, include action items to address every hazard profiled in this mitigation plan (as further detailed in Sections 7, 8 and associated Appendices). Communities will consider widening the scope of their

implementation strategies at each update to encompass a greater range of hazards, following progress or completion of the actions in their initial strategies .

Table 6-1
Types of Actions Considered to Achieve Mitigation Goals

Goals		Actions	
Goal Number	**Description**	**Action Number**	**Description**
1	Promote disaster-resistant development.	1.A	Join the National Flood Insurance Program (for non-participating or suspended communities).
		1.B	Ensure that local comprehensive plans incorporate natural disaster mitigation techniques by requiring a courtesy- review of draft plans by the County Emergency Management Agency.
		1.C	Explore the need for hazard zoning, high-risk hazard land use ordinances, subdivision regulations, and development density controls.
		1.D	Organize an annual event / fair for homeowners, builders and county and local jurisdictions that includes sale of NOAA weather radios, dissemination of information brochures about disasters and building retrofits, demonstration of "defensible-space" concept and fire resistant construction materials (for roofs/exterior finishes and inflammable coverings for openings like chimneys and attics) etc.
		1.E	Develop a stormwater management plan that includes subdivision regulations to control run-off; both for flood reduction and to minimize saturated soils on steep slopes that can cause landslides.
2	Build and support local capacity to enable the public to prepare for, respond to, and recover from disasters.	2.A	Expand and disseminate GIS and other hazard information on the internet.
		2.B	Develop a plan and seek funding for backup electric and telecommunications systems in local government-owned critical facilities.
		2.C	Support and fund Community Emergency Response Team (CERT) programs that also include a mitigation component.
		2.D	Create a Hazard Information Center – a virtual and physical library that contains all technical studies, particularly natural resources.
		2.E	Implement public awareness, education, and outreach programs for all or targeted hazards.
		2.F	Expanding upon the parcel data in the County's GIS to include such information as building square footage, year built, type, foundation type, and condition, would allow for a more accurate assessment of vulnerability. Use information to update plan. Ensure information will be available to the public and to relevant communities and agencies.
		2.G	Implement public notification of imminent/ongoing disaster/hazard events via web-based reverse 911 technology and portable programmable message boards.
		2.H	Procure and implement web-based emergency management software to facilitate efficient and timely disaster response and management.
		2.I	Construct specific protected facility for storage and maintenance of hazard management assets.
		2.J	Provide training for inspection and enforcement of adopted codes and ordinances.

Table 6-1
Types of Actions Considered to Achieve Mitigation Goals

Goals		Actions	
Goal Number	**Description**	**Action Number**	**Description**
3	Reduce the possibility of damage and losses due to extreme temperatures.	3.A	Develop and distribute outreach tools for homeowners and building permit applicants on protection of structures against cold weather damage and proper maintenance of heating/cooling systems.
		3.B	Review existing emergency response plans for enhancement opportunities: work with social support agencies, homeowners associations and general public to develop and implement monitoring and warning systems focused on vulnerable populations and provision of adequate shelter facilities.
4	Reduce the possibility of damage and losses due to tornadoes and high winds.	4.A	Adopt an ordinance to require safe rooms in mobile home parks.
		4.B	Provide low interest loans (or other form of financial assistance) for building safe rooms.
		4.C	Provide technical assistance for building safe rooms.
		4.D	Adopt an ordinance to require hurricane clips on new construction.
		4.E	Install hurricane clips and wind shutters on existing development-particularly emergency facilities and shelters built before existing codes were adopted to offer some degree of wind protection.
5	Reduce the possibility of damage and losses due to lightning strikes	5.A	Carry out inventory of compliance with existing local codes/standards, especially for critical facilities.
		5.B	Encourage adoption of building safety codes such as National Fire Protection Association (NFPA) -780 Standard for the Installation of Lightning Protection Systems (1997).
		5.C	Public awareness/outreach regarding use of ground outlets and surge protectors in homes and businesses.
		5.D	Specific retrofit techniques to protect electrical power and communications equipment
6	Reduce the possibility of damage and losses due to winter storms	6.A	Promote (or purchase, for critical facilities) NOAA weather radios.
		6.B	Educate residents about driving in winter storms and handling winter-related health effects.
		6.C	Ice and windstorm-resistant trees and landscaping practices to reduce tree-related hazards.
		6.D	Bury or otherwise protect utility lines to avoid power outage due to winter storms (if risk is very high then only this action might be cost-effective).
7	Reduce the possibility of damage and losses due to coastal erosion	7.A	Establish erosion setback lines which located landward of the first stable natural vegetation at a specified distance based on the long-term rate of erosion.
		7.B	Protect erosion-prone shorelines and banks using structural measures such as beach renourishment, bulkhead construction, groins, revetments, and rock placement.
8	Reduce the possibility of damage and losses due to ice jams	8.A	Implement monitoring and early warning measures at key locations
		8.B	Investment in ice-clearing/breaking equipment and appropriate training for county personnel.
		8.C	Construction of ice control structures such as booms, tension weirs and sloped-block barriers.

Table 6-1
Types of Actions Considered to Achieve Mitigation Goals

Goals		Actions	
Goal Number	**Description**	**Action Number**	**Description**
9	Reduce the possibility of damage and losses due to dam failures	9.A	Enforce participation in/compliance with National and NYSDEC / NYSEMO Dam Safety Programs.
		9.B	Investigate sources of funding to assist private dam owners to complete required repairs/maintenance. Investigate low interest loans to owners and/or jurisdiction acting as guarantor of private owners' loans.
		9.C	Notify owners of property in dam break inundation areas of risks, implement restrictions for new development in these areas.
10	Reduce the possibility of damage and losses due to drought.	10.A	Encourage citizens to implement water conservation measures by distributing water saving kits which include replacement shower heads, flow restrictors, and educational pamphlets which describe water saving techniques. Also encourage conservation by offering rebates for ultra-low-flow toilets.
		10.B	Modify rate structure to influence consumer water use including: increasing rates during summer months and imposing excess use charges during times of water shortage.
		10.C	Reduce water use for landscaping by imposing mandatory water-use restrictions during times of water shortage. Also, develop a demonstration garden to exhibit water conservation techniques.
		10.D	Publish and distribute pamphlets on water conservation techniques and drought management strategies.
		10.E	Develop and adopt an emergency water allocation strategy to be implemented during severe drought.
		10.F	Implement water metering and leak detection programs followed by water main repair/replacement to reduce losses.
		10.G	Encourage beneficial re-use of treated wastewater effluent through cooperative projects with dischargers, agriculture and other major water users to distribute or provide this alternative source of water.
11	Reduce the possibility of damage and losses due to flooding.	11.A	Join the National Flood Insurance Program (NFIP). As a participant, floodplains within the participating community will be identified and mapped. In return, the participating community will become eligible for flood insurance as long as the local governing body adopts and enforces a floodplain ordinance.
		11.B	Join the NFIP Community Rating System (CRS), under which communities implementing actions that go beyond the specified NFIP minimum are eligible for discounted flood insurance premiums.
		11.C	Obtain specialist training and certification (e.g. Certified Floodplain Manager) for local staff tasked with enforcement of relevant codes and flood-related ordinances.
		11.D	Limit uses in floodways to those tolerant of occasional flooding, including but not limited to agriculture, outdoor recreation, and natural resource areas.
		11.E	Develop a Countywide gauging and warning system for flash and riverine flooding.

Table 6-1
Types of Actions Considered to Achieve Mitigation Goals

Goals		Actions	
Goal Number	**Description**	**Action Number**	**Description**
		11.F	Continue to implement best management practices for floodplain areas.
		11.G	Identify and document repetitively flooded properties. Explore mitigation opportunities for repetitively flooded properties, and if necessary, carry out acquisition, relocation, elevation, and flood-proofing measures to protect these properties.
		11.H	Identify locations/structures suitable for construction of floodwalls and other barriers such as raised roads.
		11.I	Conduct a routine stream maintenance program (for currently non-participating communities) and seek financial assistance to clean out stream segments with heavy sediment deposits.
		11.J	Develop specific mitigation solutions for flood-prone roadways and intersections. This can include, but is not limited to, actions such as culvert upgrades, drainage improvements, road raisings, etc.) Develop a work plan for when sites will be surveyed and what role can the local government play in selection and implementation of mitigation activities (e.g. any monetary or contextual support through the local capital improvement plan).
		11.K	Implement wetlands development regulations and restoration programs.
		11.L	Implement identified stormwater recharge, rate or volume projects identified in Regional Stormwater Management Plans to decrease “flash” in streams during/after storm events.
		11.M	Implement and enforce open space preservation programs.
		11.N	Implement specific actions to enhance/improve participation in/compliance with National Flood Insurance Program (NFIP).
12	Reduce the possibility of damage and losses due to earthquakes.	12.A	Retrofit/Reconstruct old critical facilities.
		12.B	Acquire dilapidated vulnerable structures.
		12.C	Public awareness through video/brochures about simple steps homeowners can take to mitigate damage.
		12.D	Examine provisions for earthquake resistant retrofits for existing structures and infrastructure, paying particular attention to unreinforced masonry structures built prior to the adoption of building codes requiring earthquake resistant design for new construction.
		12.E	Implement hillside and steep slope development regulations.
13	Reduce the possibility of damage and losses due to landslides	13.A	Create comprehensive geological mapping to areas prone to landslides and rockslides.
		13.B	Locally identify and map specific areas of potential slope failure and limit future development in these areas.
		13.C	Develop a public outreach program that addresses the economic impacts of landslides on personal property.

Table 6-1
Types of Actions Considered to Achieve Mitigation Goals

Goals		Actions	
Goal Number	**Description**	**Action Number**	**Description**
		13.D	Consider adopting a steep slope ordinance, if one is not already in place, to regulate development on these higher risk areas.
		13.E	Develop a vegetation management plan. Proper vegetation can supply slope-stabilizing root strength, and facilitate in intercepting precipitation. Establishing and maintaining appropriate vegetation of areas above the bluff slope may be the single most important and cost-effective mitigation measure available.
14	Reduce the possibility of damage and losses due to wildfires	14.A	In consultation with NYSDEC Forest Protection & Fire Management and local forest rangers, develop detailed mapping of wildland/urban interface areas.
		14.B	Develop inventory of addresses for route alerting during wildfire emergencies that require public warning and information.
		14.C	In consultation with NYSDEC Forest Protection & Fire Management and local forest rangers, review local EOPs for possible wildfire components regarding Fire-Rescue, Alert Warning Communications, and Evacuation.
		14.D	Implement and enforce open space preservation programs.
		14.E	Prescribed burning for hazard reduction.
		14.F	Initiate a public outreach program for homeowners.
		14.G	Retrofit buildings with fire resistant materials, especially roofing.
		14.H	Relocate structures (in particular critical facilities) out of hazard areas.
		14.I	Community brush and debris removal and hazard fuels reduction.
		14.J	Firewise landscaping in higher risk areas.
		14.K	Mitigation for streets, highways, and roads that provide key fire access and fuel breaks.
		14.L	Implement hillside and steep slope development regulations.
15	Reduce the possibility of damages to emergency and critical facilities from flooding, wildfires and extreme wind.	15.A	Conduct a study to determine the year-built and level of protection (flood, wind) for each emergency facility.
		15.B	On completion of 12.A, seek funding for mitigation projects for emergency facilities not currently designed for protection from flooding, high wind, or wildfire damage.

CPG members were asked to consider the following three sources of additional information on types of hazard mitigation actions that participating jurisdictions considered when developing their jurisdiction-specific mitigation strategies:

- Mitigation Action Items Tip Sheet
- Mitigation Job Aid (from FEMA's How-To #3 Appendix D)
- Mitigation Glossary of Terms (from FEMA's How-To #3 Appendix A)

Community Analysis of Possible Mitigation Actions

Core Planning Group members next ***analyzed*** the full range of possible actions identified in Table 6-1. Their analysis involved a three step process for deciding upon particular mitigation actions:

1. First, CPG members evaluated the actions in Table 6-1 against the hazards identified in their community (as presented in Section 3 Table 3-1). FEMA Region 2 requires that actions addressing each identified hazard (regardless of the degree of risk) shall be included in each local municipal mitigation strategy / action plan for each municipality.
2. Next, Core Planning Group Members conducted a **preliminary analysis** of each action item in Table 6-1, considering the action item in relation to the results of the risk assessment and unique local considerations to identify a subset of preferred action items that would be analyzed in more detail. The results of this preliminary analysis are presented in Table 6-2. (Note: FEMA requires that the plan identify and analyze a range of actions considered to reduce the effects of each hazard. Some actions initially identified in Table 6-1 were ultimately eliminated in local community action plans. FEMA's Guidance document is clear that the plan text can, though is not required, to explain the rationale behind why some of the actions considered were ultimately eliminated in the community's action plan after the analysis.
3. For the subset of preferred action items, Core Planning Group Members conducted a **detailed analysis** and prioritization using FEMA's STAPLEE approach as described in further detail in Section 7 of this plan. Implementation strategies ("action plans", addressing how the actions will be implemented and administered) for the subset of preferred action items are discussed in greater detail in Section 8 of this plan.

In the first draft of this plan (2009) municipal implementation strategies typically included action items to reduce the risks posed by the jurisdictions highest hazards. Based on FEMA review comments, implementation strategies were expanded to include action items for every identified hazard for every community through the addition of several County-led initiatives involving direct participation by each jurisdiction. Municipalities were advised via email in July 2010 regarding the County's interests in this regard, and were given a period of ten days to provide comments. An Addendum to Appendix D of this plan includes Prioritization Worksheets for the added action items for every participating jurisdiction. An Addendum to Appendix E of this plan includes Implementation Strategy Worksheets for the added action items for every participating jurisdiction.

In addition to the range of initial actions listed in Table 6.1, each participating jurisdiction was required to identify, evaluate, and prioritize actions related to continued/enhanced compliance with the National Flood Insurance Program. These actions and the individual municipalities' analyses of them are included in Appendix F, which also includes recent supplementary guidance ("Hazard Mitigation – NFIP Requirements") which should be consulted by the individual municipalities for future plan updates. The participating jurisdictions were urged to consider mitigation actions for Repetitive Loss Properties within their boundaries, and were advised as to how municipal governments may coordinate with owners of private property to work towards mitigation measures for RLPs (or any other hazard-vulnerable assets) which are not publicly-owned.

During the planning process, the question arose as to how individual municipalities were to proceed with their development of mitigation strategies and actions in situations if/where other agencies such as the U.S. Army Corps of Engineers are known to be considering the implementation of (possibly large-scale) mitigation measures in the same area.

The Planning Group was advised that the full implementation of such proposed projects is not guaranteed, and that even if such projects are approved and funded, it can be many years before they are initiated. With that in mind, the communities were advised to decide whether they would be willing to risk the chance of damage over that interim period between the completion of the current planning process and the assumed completion of studies and subsequent projects that are not guaranteed to be implemented.

However, if the community decides to defer mitigation actions pending studies by other agencies, it is recommended that the study be visited at the five year update to ensure that sufficient progress is being made towards completion of a project, or to determine if another strategy is needed. It is also recommended that each community include at least one mitigation project regardless of hazard or any other plans or proposals, in order to receive credit from FEMA for having a mitigation plan which may be used to aid applications for grants to reduce risks from hazards not affected by the proposed plans.

Table 6-2
Each Jurisdiction's Preliminary Analysis of Comprehensive Range of Actions for Each Identified Hazard

Goals		Actions		Results of Jurisdictional Preliminary Analysis							
Goal Number	Description	Action Number	Description	Jefferson County	Clayton, Town of	Clayton, Village of	Defereit, Village of	Glen Park, Village of	Henderson, Town of	Lorraine, Town of	Watertown, City of
1	Promote disaster-resistant development.	1.A	Join the National Flood Insurance Program (for non-participating or suspended communities).	N/A	P	P	P	P	P	Y	P
		1.B	Ensure that local comprehensive plans incorporate natural disaster mitigation techniques by requiring a courtesy- review of draft plans by the County Emergency Management Agency.	Y*	Y*	Y*	Y*	Y*	Y*	Y*	Y*
		1.C	Explore the need for hazard zoning, high-risk hazard land use ordinances, subdivision regulations, and development density controls.	Y*	Y*	Y*	Y*	Y*	Y*	Y*	Y*
		1.D	Organize an annual event / fair for homeowners, builders and county and local jurisdictions that includes sale of NOAA weather radios, dissemination of information brochures about disasters and building retrofits, demonstration of "defensible-space" concept and fire resistant construction materials (for roofs/exterior finishes and inflammable coverings for openings like chimneys and attics) etc.	N	N	N	N	N	N	N	N
		1.E	Develop a stormwater management plan that includes subdivision regulations to control run-off; both for flood reduction and to minimize saturated soils on steep slopes that can cause landslides.	N	N	Y	N	N	N	N	N
		Other		Y*	Y*	Y*	Y*	Y*	Y*	Y*	Y*
2	Build and support local capacity to enable the public to prepare for, respond to, and recover from disasters.	2.A	Expand and disseminate GIS and other hazard information on the internet.	Y*	Y*	Y*	Y*	Y*	Y*	Y*	Y*
		2.B	Develop a plan and seek funding for backup electric and telecommunications systems in local government-owned critical facilities.	Y	N	N	N	N	N	N	N
		2.C	Support and fund Community Emergency Response Team (CERT) programs that also include a mitigation component.	N	N	N	N	N	N	N	N
		2.D	Create a Hazard Information Center – a virtual and physical library that contains all technical studies, particularly natural resources.	N	N	N	N	N	N	N	N
		2.E	Implement public awareness, education, and outreach programs for all or targeted hazards.	Y*	Y*	Y*	Y*	Y*	Y*	Y*	Y*
		2.F	Expanding upon the parcel data in the County's GIS to include such information as building square footage, year built, type, foundation type, and condition, would allow for a more accurate assessment of vulnerability. Use information to update plan. Ensure information will be available to the public and to relevant communities and agencies.	N	N	N	N	N	N	N	N
		2.G	Implement public notification of imminent/ongoing disaster/hazard events via web-based reverse 911 technology and portable programmable message boards.	Y	N	N	N	Y	Y	N	N

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		2.H	Procure and implement web-based emergency management software to facilitate efficient and timely disaster response and management.	Y	N	N	N	N	N	N	N
		2.I	Construct specific protected facility for storage and maintenance of hazard management assets.	Y	N	N	N	N	N	N	N
		2.J	Provide training for inspection and enforcement of adopted codes and ordinances.	Y*	Y*	Y*	Y*	Y*	Y*	Y*	Y*
			Other	Y	N	N	N	N	N	N	N
3	Reduce the possibility of damage and losses due to extreme temperatures.	3.A	Develop and distribute outreach tools for homeowners and building permit applicants on protection of structures against cold weather damage and proper maintenance of heating/cooling systems.	N	N	N	N	N	N	N	N
		3.B	Review existing emergency response plans for enhancement opportunities: work with social support agencies, homeowners associations and general public to develop and implement monitoring and warning systems focused on vulnerable populations and provision of adequate shelter facilities.	N	N	N	N	N	N	N	N
4	Reduce the possibility of damage and losses due to tornadoes and high winds.	4.A	Adopt an ordinance to require safe rooms in mobile home parks.	N	N	N	N	N	N	N	N
		4.B	Provide low interest loans (or other form of financial assistance) for building safe rooms.	N	N	N	N	N	N	N	N
		4.C	Provide technical assistance for building safe rooms.	N	N	N	N	N	N	N	N
		4.D	Adopt an ordinance to require hurricane clips on new construction.	N	N	N	N	N	N	N	N
		4.E	Install hurricane clips and wind shutters on existing development-particularly emergency facilities and shelters built before existing codes were adopted to offer some degree of wind protection.	N	N	N	N	N	N	N	N
			Other	Y	N	Y	Y	N	Y	Y	Y
5	Reduce the possibility of damage and losses due to lightning strikes	5.A	Carry out inventory of compliance with existing local codes/standards, especially for critical facilities.	N	N	N	N	N	N	N	N
		5.B	Encourage adoption of building safety codes such as National Fire Protection Association (NFPA) -780 Standard for the Installation of Lightning Protection Systems (1997).	N	N	N	N	N	N	N	N
		5.C	Public awareness/outreach regarding use of ground outlets and surge protectors in homes and businesses.	N	N	N	N	N	N	N	N
		5.D	Specific retrofit techniques to protect electrical power and communications equipment	Y	N	N	N	N	N	N	N
			Other	Y	N	Y	Y	N	Y	Y	Y
6	Reduce the possibility of damage and losses due to winter storms	6.A	Promote (or purchase, for critical facilities) NOAA weather radios.	N	N	N	N	N	N	N	N
		6.B	Educate residents about driving in winter storms and handling winter-related health effects.	N	N	N	N	N	N	N	N
		6.C	Ice and windstorm-resistant trees and landscaping practices to reduce tree-related hazards.	Y	N	Y	Y	N	Y	Y	Y
		6.D	Bury or otherwise protect utility lines to avoid power outage due to winter storms (if risk is very high then only this action might be cost-effective).	N	N	N	N	N	N	N	N
	Reduce the possibility of damage and	7.A	Establish erosion setback lines which located landward of the first stable natural vegetation at a specified distance based on the long-term rate of erosion.	N	N/A	N/A	N/A	N/A	N/A	N/A	N/A

Table 6-2
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7	damage and losses due to coastal erosion	7.B	Protect erosion-prone shorelines and banks using structural measures such as beach renourishment, bulkhead construction, groins, revetments, and rock placement.	Y	N/A	N/A	N/A	N/A	N/A	N/A	N/A
8	Reduce the possibility of damage and losses due to ice jams	8.A	Implement monitoring and early warning measures at key locations	N	N/A	N/A	N/A	N	N	N	N
		8.B	Investment in ice-clearing/breaking equipment and appropriate training for county personnel.	N	N/A	N/A	N/A	N	N	N	N
		8.C	Construction of ice control structures such as booms, tension weirs and sloped-block barriers.	N	N/A	N/A	N/A	N	N	N	N
		Other		Y	N/A	N/A	N/A	N	N	N	N
9	Reduce the possibility of damage and losses due to dam failures	9.A	Enforce participation in/compliance with National and NYSDEC / NYSEMO Dam Safety Programs.	N	N/A	N/A	N	N/A	N/A	N/A	N
		9.B	Investigate sources of funding to assist private dam owners to complete required repairs/maintenance. Investigate low interest loans to owners and/or jurisdiction acting as guarantor of private owners' loans.	N	N/A	N/A	N	N/A	N/A	N/A	N
		9.C	Notify owners of property in dam break inundation areas of risks, implement restrictions for new development in these areas.	N	N/A	N/A	N	N/A	N/A	N/A	N
10	Reduce the possibility of damage and losses due to drought.	10.A	Encourage citizens to implement water conservation measures by distributing water saving kits which include replacement shower heads, flow restrictors, and educational pamphlets which describe water saving techniques. Also encourage conservation by offering rebates for ultra-low-flow toilets.	N	N	N	N	N	N	N	N
		10.B	Modify rate structure to influence consumer water use including: increasing rates during summer months and imposing excess use charges during times of water shortage.	N	N	N	N	N	N	N	N
		10.C	Reduce water use for landscaping by imposing mandatory water-use restrictions during times of water shortage. Also, develop a demonstration garden to exhibit water conservation techniques.	N	N	N	N	N	N	N	N
		10.D	Publish and distribute pamphlets on water conservation techniques and drought management strategies.	N	N	N	N	N	N	N	N
		10.E	Develop and adopt an emergency water allocation strategy to be implemented during severe drought.	N	N	N	N	N	N	N	N
		10.F	Implement water metering and leak detection programs followed by water main repair/replacement to reduce losses.	N	N	N	N	N	N	N	N
		10.G	Encourage beneficial re-use of treated wastewater effluent through cooperative projects with dischargers, agriculture and other major water users to distribute or provide this alternative source of water.	N	N	N	N	N	N	N	N
		Other		Y	N	Y	Y	N	Y	Y	Y

Table 6-2
Each Jurisdiction's Preliminary Analysis of Comprehensive Range of Actions for Each Identified Hazard

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11	Reduce the possibility of damage and losses due to flooding.	11.A	Join the National Flood Insurance Program (NFIP). As a participant, floodplains within the participating community will be identified and mapped. In return, the participating community will become eligible for flood insurance as long as the local governing body adopts and enforces a floodplain ordinance.	N/A	P	P	P	P	P	Y	P
		11.B	Join the NFIP Community Rating System (CRS), under which communities implementing actions that go beyond the specified NFIP minimum are eligible for discounted flood insurance premiums.	N/A	N	N	N	N	N	N	N
		11.C	Obtain specialist training and certification (e.g. Certified Floodplain Manager) for local staff tasked with enforcement of relevant codes and flood-related ordinances.	N	N	N	N	N	N	N	N
		11.D	Limit uses in floodways to those tolerant of occasional flooding, including but not limited to agriculture, outdoor recreation, and natural resource areas.	N	N	N	N	N	N	N	N
		11.E	Develop a Countywide gauging and warning system for flash and riverine flooding.	N	N	N	N	N	N	N	N
		11.F	Continue to implement best management practices for floodplain areas.	N	N	N	N	N	N	N	N
		11.G	Identify and document repetitively flooded properties. Explore mitigation opportunities for repetitively flooded properties, and if necessary, carry out acquisition, relocation, elevation, and flood-proofing measures to protect these properties.	N	N	N	N	N	N	N	N
		11.H	Identify locations/structures suitable for construction of floodwalls and other barriers such as raised roads.	N	N	Y	N	N	N	N	N
		11.I	Conduct a routine stream maintenance program (for currently non-participating communities) and seek financial assistance to clean out stream segments with heavy sediment deposits.	N	N	N	N	N	N	N	N
		11.J	Develop specific mitigation solutions for flood-prone roadways and intersections. This can include, but is not limited to, actions such as culvert upgrades, drainage improvements, road raisings, etc.) Develop a work plan for when sites will be surveyed and what role can the local government play in selection and implementation of mitigation activities (e.g. any monetary or contextual support through the local capital improvement plan).	Y	Y	N	Y	Y	Y	Y	Y
		11.K	Implement wetlands development regulations and restoration programs.	N	N	N	N	N	N	N	N
		11.L	Implement identified stormwater recharge, rate or volume projects identified in Regional Stormwater Management Plans to decrease "flash" in streams during/after storm events.	N	N	N	N	N	N	N	N
		11.M	Implement and enforce open space preservation programs.	N	N	N	N	N	N	N	N
		11.N	Implement specific actions to enhance/improve participation in/compliance with National Flood Insurance Program (NFIP).	N	N	N	Y	Y	N	N	N
		Other		N	N	N	N	N	N	Y	N

Table 6-2
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12	Reduce the possibility of damage and losses due to earthquakes.	12.A	Retrofit/Reconstruct old critical facilities.	N	N	N	Y	N	N	N	N
		12.B	Acquire dilapidated vulnerable structures.	N	N	N	N	N	N	N	N
		12.C	Public awareness through video/brochures about simple steps homeowners can take to mitigate damage.	N	N	N	N	N	N	N	N
		12.D	Examine provisions for earthquake resistant retrofits for existing structures and infrastructure, paying particular attention to unreinforced masonry structures built prior to the adoption of building codes requiring earthquake resistant design for new construction.	N	N	N	N	Y	N	N	N
		12.E	Implement hillside and steep slope development regulations.	N	N	N	N	N	N	N	N
13	Reduce the possibility of damage and losses due to landslides	13.A	Create comprehensive geological mapping to areas prone to landslides and rockslides.	N	N	N	N/A	N/A	N	N/A	N/A
		13.B	Locally identify and map specific areas of potential slope failure and limit future development in these areas.	N	N	N	N/A	N/A	N	N/A	N/A
		13.C	Develop a public outreach program that addresses the economic impacts of landslides on personal property.	N	N	N	N/A	N/A	N	N/A	N/A
		13.D	Consider adopting a steep slope ordinance, if one is not already in place, to regulate development on these higher risk areas.	N	N	N	N/A	N/A	N	N/A	N/A
		13.E	Develop a vegetation management plan. Proper vegetation can supply slope-stabilizing root strength, and facilitate in intercepting precipitation. Establishing and maintaining appropriate vegetation of areas above the bluff slope may be the single most important and cost-effective mitigation measure available.	Y	N	N	N/A	N/A	N	N/A	N/A
14	Reduce the possibility of damage and losses due to wildfires	14.A	In consultation with NYSDEC Forest Protection & Fire Management and local forest rangers, develop detailed mapping of wildland/urban interface areas.	N							
		14.B	Develop inventory of addresses for route alerting during wildfire emergencies that require public warning and information.	N	N	N	N	N	N	N	N
		14.C	In consultation with NYSDEC Forest Protection & Fire Management and local forest rangers, review local EOPs for possible wildfire components regarding Fire-Rescue, Alert Warning Communications, and Evacuation.	N	N	N	N	N	N	N	N
		14.D	Implement and enforce open space preservation programs.	N	N	N	N	N	N	N	N
		14.E	Prescribed burning for hazard reduction.	N	N	N	N	N	N	N	N
		14.F	Initiate a public outreach program for homeowners.	N	N	N	N	N	N	N	N
		14.G	Retrofit buildings with fire resistant materials, especially roofing.	N	N	N	N	N	N	N	N
		14.H	Relocate structures (in particular critical facilities) out of hazard areas.	N	N	N	N	N	N	N	N
		14.I	Community brush and debris removal and hazard fuels reduction.	Y	N	Y	Y	N	Y	Y	Y
		14.J	Firewise landscaping in higher risk areas.	N	N	N	N	N	N	N	N
		14.K	Mitigation for streets, highways, and roads that provide key fire access and fuel breaks.	N	N	N	N	N	N	N	N

Table 6-2
Each Jurisdiction's Preliminary Analysis of Comprehensive Range of Actions for Each Identified Hazard

Goals		Actions		Results of Jurisdictional Preliminary Analysis							
Goal Number	Description	Action Number	Description	Jefferson County	Clayton, Town of	Clayton, Village of	Defereit, Village of	Glen Park, Village of	Henderson, Town of	Lorraine, Town of	Watertown, City of
		14.L	Implement hillside and steep slope development regulations.	N	N	N	N	N	N	N	N
15	Reduce the possibility of damages to emergency and critical facilities from flooding, wildfires and extreme wind.	15.A	Conduct a study to determine the year-built and level of protection (flood, wind) for each emergency facility.	N	N	N	N	N	N	N	N
		15.B	On completion of 12.A, seek funding for mitigation projects for emergency facilities not currently designed for protection from flooding, high wind, or wildfire damage.	N	N	Y	N	N	N	N	N
Other Action Item(s) Addressing All Hazards				Y*	Y*	Y*	Y*	Y*	Y*	Y*	Y*

Y	=	The jurisdiction conducted a preliminary analysis of this action item in relation to the results of the risk assessment and unique local considerations and selected it as a preferred action item that would be analyzed in more detail.
N	=	The jurisdiction conducted a preliminary analysis of this action item in relation to the results of the risk assessment and unique local considerations and did not select it as a preferred action item for this 5-year planning cycle.
N/A	=	The jurisdiction conducted a preliminary analysis of this action item and did not select it for further analysis or inclusion in their action plan for this 5-year planning cycle because the hazard it is intended to mitigate is not present
Y*	=	At a minimum, jurisdictions will participate directly in various county-led action items involving all hazards.
P	=	The jurisdiction is already participating in the NFIP and hence this action was not applicable

SECTION 7 - ACTION ITEM EVALUATION AND PRIORITIZATION

This section includes information regarding the methodology and process followed by participating jurisdictions to evaluate and prioritize unique hazard mitigation actions for their particular communities. The guidance states that after considering a wide range of actions and projects for reducing the effects of each hazard (Part 201.6(c)(3)(ii), the plan must describe the subset of mitigation actions to be included in the mitigation strategy/action plan including how they will be prioritized, implemented and administered by the local jurisdictions (Part 201.6(c)(3)(iii). And for multi-jurisdictional plans such as this plan for Jefferson County, that there must be identifiable action items specific to each jurisdiction requesting FEMA approval or credit of the plan (Part 201.6(c)(3)(iv). *It states that the "STAPLEE" method (considering each project's social, technical, administrative, political, legal, economic and environmental aspects) can be used to evaluate potential actions for the mitigation strategy/action plan,* ***and*** *to prioritize those actions that the community selects as its mitigation actions.*

As stated in Section 6, Core Planning Group members ***analyzed*** the full range of possible actions identified in Table 6-1 according to this three-step process:

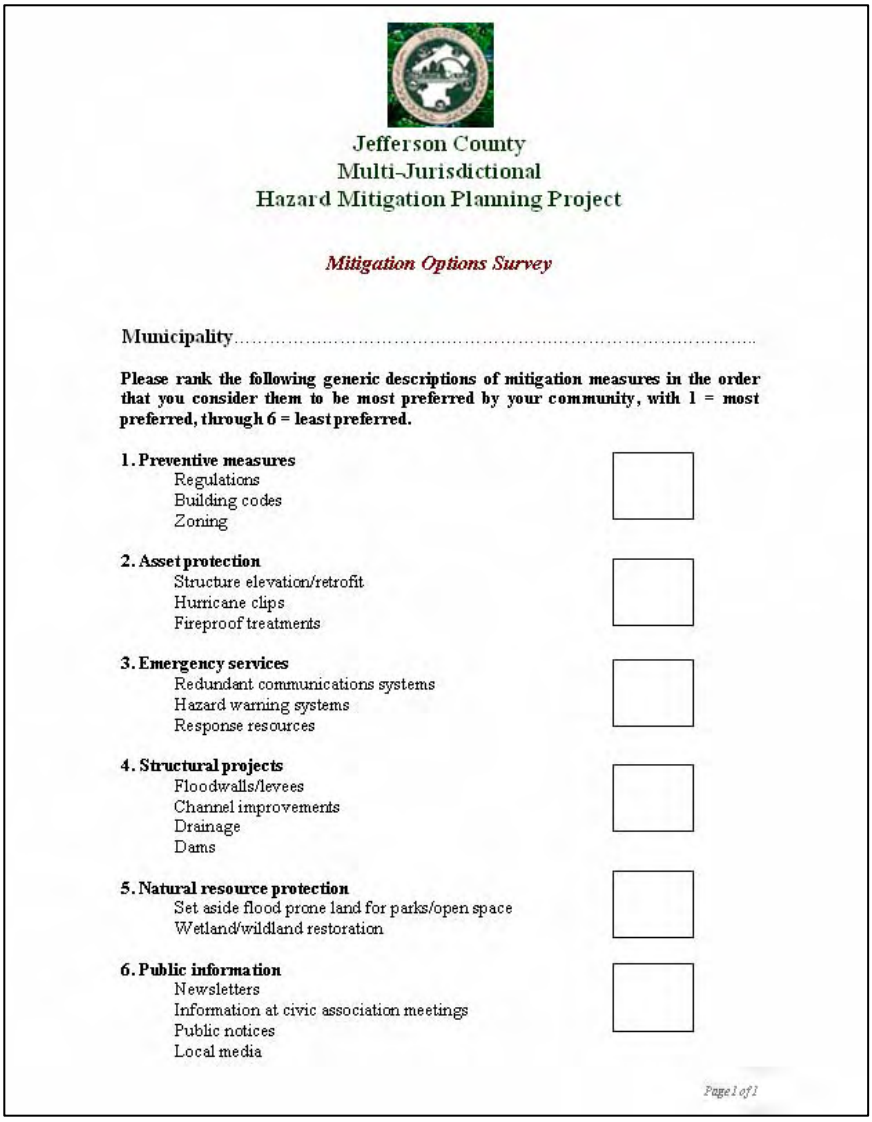
1. First, CPG members evaluated the actions in Table 6-1 against the hazards identified in their community (as presented in Section 3 Table 3-1). FEMA Region 2 requires that actions addressing each identified hazard (regardless of the degree of risk) shall be included in each local municipal mitigation strategy / action plan for each municipality.
2. Next, Core Planning Group Members conducted a **preliminary analysis** of each action item in Table 6-1, considering the action item in relation to the results of the risk assessment and unique local considerations to identify a subset of preferred action items that would be analyzed in more detail. The results of this preliminary analysis are presented in Table 6-2.
3. Finally, for the subset of preferred action items, Core Planning Group Members conducted a **detailed analysis and prioritization** using FEMA's STAPLEE approach.

This plan section speaks to Step 3 of the process outlined above, documenting the detailed analysis of preferred potential actions and their prioritization as undertaken during a working session of the Core Planning Group on November 10th, 2009 and by individual JATs.

Working Session Warm-Up Activity

To initiate the evaluation and prioritization of potential mitigation actions, jurisdictional representatives who attended the working session were asked to complete a brief survey ranking six generic types of mitigation actions according to how they perceived each type of action would be preferred or appropriate to their community. The six categories of action types were taken from FEMA 386-3 "Developing the Mitigation Plan – Identifying Mitigation Actions and Implementation Strategies." At the working session, the consultant reminded CPG members that FEMA's mitigation planning guidance specifically states that any emergency services actions that are response, preparedness, or recovery (instead of true mitigation) can be included in the plan; however, they do not substitute for the mitigation action requirements of a Local Mitigation Plan and may not meet eligibility requirements for FEMA's mitigation grant programs. Surveys were completed at the working session or returned shortly after, in which jurisdiction representatives ranked the measures in the order that they were considered to be most preferred by the community, with a score of "1" being most preferred, and a score of "6" being the least preferred. The Mitigation Options Survey form is reproduced on the next page.

**Note: This group warm-up activity was not intended to address any FEMA plan review criterion. It merely served to initiate the day's discussion, and paint a broad-brush picture of where local preferences may tend to lie on a county-wide basis in the area of hazard mitigation.*



Jefferson County
Multi-Jurisdictional
Hazard Mitigation Planning Project

Mitigation Options Survey

Municipality.....

Please rank the following generic descriptions of mitigation measures in the order that you consider them to be most preferred by your community, with 1 = most preferred, through 6 = least preferred.

1. Preventive measures
Regulations
Building codes
Zoning

2. Asset protection
Structure elevation/retrofit
Hurricane clips
Fireproof treatments

3. Emergency services
Redundant communications systems
Hazard warning systems
Response resources

4. Structural projects
Floodwalls/levees
Channel improvements
Drainage
Dams

5. Natural resource protection
Set aside flood prone land for parks/open space
Wetland/wildland restoration

6. Public information
Newsletters
Information at civic association meetings
Public notices
Local media

Page 1 of 1

The overall results of the eight completed surveys which were returned indicated that the most favored type of action across the planning area was likely to be structural projects, closely followed by public information activities, while the least favored types of actions across the planning area were likely to be those related to natural resource protection

Mitigation Activity	Rank	Total Score
Most preferred / appropriate:		
Structural Projects (e.g. Floodwalls/Levees, drainage, dams)	1	20
Public Information (e.g. education and outreach)	2	21
Emergency Services (e.g. Communication systems, response resources)	3	25
Preventive Measures (e.g. Regulations, building codes, and zoning)	4	29
Least preferred / appropriate:		
Asset Protection (e.g. Structure retrofits for flood, wind and fireproofing)	5	30
Natural Resource Protection (e.g. Open space, wetlands preservation)	6	43

Detailed Analysis of Preferred Potential Actions and their Prioritization

The working session continued **detailed analysis** and prioritization of the subset of preferred action items. In order to further evaluate and ultimately prioritize the subset of preferred mitigation actions that were identified in the last step (that is, identified after the preliminary analysis discussed in Section 6), participants identified the ***benefits*** and ***costs*** of each preferred action using a planning concept called "STAPLEE". FEMA Guidance recommends that their "STAPLEE" method (considering each project's social, technical, administrative, political, legal, economic and environmental aspects) can be used to evaluate potential actions for the mitigation strategy/action plan, and also to prioritize those actions that the community selects as its mitigation actions. STAPLEE criteria are presented below in Table 7-1. FEMA breaks these criteria down into a series of 23 detailed considerations. These considerations were discussed at the working session as part of the explanation of how to complete the prioritization exercise.

Table 7-1
STAPLEE Criteria

Criteria	Detailed Considerations	Sample Benefit and Cost Scenarios
S Social	• Community acceptance • Affect on segment of population	Is the action unfair to one section of the community over others? If yes, it is a social cost associated with the action. If the implementation of the action helps achieve a social goal of the community, it is a social ***benefit*** associated with the action.
T Technical	• Technical feasibility • Long-term solution • Secondary impacts	Is the action a good technical solution to the problem? If yes, it is a ***benefit*** associated with the action. The better the solution, the higher the ***benefits***.
A Administrative	• Staffing • Funding allocation • Maintenance/operations	Is the action difficult to implement because of the administrative problems associated? If yes, it is an administrative ***cost***.
P Political	• Political support • Local champion • Public support	Is the action politically favored? If yes, it is a ***benefit.*** If the action is likely to be politically unacceptable, it is a ***cost*** associated with the action.
L Legal	• State authority • Existing local authority • Potential legal challenge	Are there perceived legal problems in implementing the action? If yes, it is a ***cost*** associated with the action.
E Economic	• Benefit of action • Cost of action • Contributes to economic goals • Outside funding required	Does implementing the action make economic sense? Are the ***costs*** too prohibitive? If yes, it is a cost associated with the action.
E Environmental	• Effect on land/water • Effect on endangered species • Effect on HAZMAT/waste sites • Consistent with community environmental goals • Consistent with federal laws	Does the action have adverse environmental effects? If yes, it is a ***cost*** associated with the action.

Jurisdictions conducted a ***detailed analysis of their preferred action items*** by rating the overall benefits and costs of each action against the STAPLEE criteria identified above according to FEMA How-To # 386-5 STAPLEE Method B. Using this methodology, to determine overall "*benefits*" for a certain action, each jurisdiction considered qualitatively the individual social, technical, administrative, political, legal,

economic, and environmental benefits for the action and then indicated whether the net benefits, overall, could be characterized as high, medium, or low. To determine overall "*costs*" for a certain action, each jurisdiction considered qualitatively individual social, technical, administrative, political, legal, economic, and environmental costs for that action and then indicated whether the net costs, overall, could be characterized as high, medium, or low. These overall '*benefits'* and '*costs'* were noted on the worksheet, and the jurisdictions concluded by prioritizing each preferred action based on its overall benefits and costs.

It is important to note that a modified version of FEMA How-To #386-5 STAPLEE Method B was used. Because FEMA 386-5 included sample methodologies for applying a weighted score for only the two most complex STAPLEE methodologies (Methods C and D) but not for the more straightforward Method B, the consultant guided the CPG through a slightly modified Method B which used the methodology as presented in FEMA 386-5, but with a special weight placed on three factors: ease of implementation, achievement of multiple mitigation objectives, and how quickly the action can be implemented. During future plan updates, the CPG will reevaluate FEMA How-To #5 to determine if the currently selected modified Method B continues to be deemed most appropriate for this planning project, or if a collective desire exists amongst CPG members to switch to one of the more complex Methods C or D.

Since a qualitative approach was taken for the evaluation and prioritization of mitigation actions, jurisdictions were permitted to apply their own internal weightings to the costs and benefits of actions under each category, hence on the completed worksheets the overall priority of an action may not reflect a straightforward arithmetic comparison of its total "benefits" and total "costs".

All action items not selected for prioritization by a given community after considering the STAPLEE factors received a low priority. In the future, communities may still seek to pursue other actions which they evaluated but did not select for prioritization at this time, including but not limited to those discussed in Section 6 (and associated studies, funding, etc. for these actions).

In addition to hazard mitigation projects, FEMA requires that each jurisdiction evaluate a set of actions specifically aimed at continuing participation in and compliance with FEMA's National Flood Insurance Program (per FEMA guidance released in July 2008, Part 201.6(c)(3)(ii)). These actions include updating floodplain management ordinances to comply with the latest FEMA regulations and adopted flood maps, additional employment/training of staff to enforce the ordinances, and participation in FEMA's Community Rating System (CRS).

Appendix D contains a detailed analysis and prioritization worksheets (STAPLEE) completed by each participant for their selected actions. Each participant identified at least two action items for implementation. The action items ultimately selected address every profiled hazard, for every participating jurisdiction.

Appendix F contains prioritization and implementation strategy worksheets for those actions specifically related to continued and/or enhanced compliance with FEMA's National Flood Insurance Program. During subsequent plan updates, jurisdictions should consider FEMA's new Toolkit file, A Guide to NFIP Requirements ("4-strat-3-nfip-requirements"), provided herein at the end of Appendix F. Jurisdictions with questions about the NFIP, or who are seeking information about the procedure to join or rejoin the NFIP, should contact NYSDEC State NFIP Coordinator, Bill Nechamen at 518-402-8146 and/or FEMA Region 2, Chief of Floodplain Management & Flood Insurance Branch, Mary Colvin at 212-680-3622.

Note to the reviewer: The next section in this plan, entitled "Implementation Strategy," will expand upon the prioritization step by identifying the hazard addressed, if the action applies to new and/or existing assets, the primary agency responsible for action item completion, any existing local planning mechanisms through which the action item will be implemented, target date for completion, estimated cost, and funding source.

SECTION 8 - IMPLEMENTATION STRATEGY("ACTION PLAN")_

This section includes information regarding the process followed by participating jurisdictions to implement and administer their selected mitigation actions. FEMA's guidance states that after considering a wide range of actions and projects for reducing the effects of each hazard (Part 201.6(c)(3)(ii), the plan must describe the subset of mitigation actions to be included in the mitigation strategy/action plan including how they will be prioritized, implemented and administered by the local jurisdictions (Part 201.6(c)(3)(iii). And for multi-jurisdictional plans such as this plan for Jefferson County, that there must be identifiable action items specific to each jurisdiction requesting FEMA approval or credit of the plan (Part 201.6(c)(3)(iv).

The implementation strategy ("action plan") developed by participants at the November 10, 2009 Working Session for selected and prioritized action items is community-specific for each jurisdiction. Participants were asked to develop an implementation strategy for preferred action items they selected and prioritized (in Sections 6 and 7) for their respective communities using worksheets developed specifically for this task.

The implementation strategy developed by each participant was based on each participant's qualitative analysis of social, technical, administrative, political, legal, economic, and environmental benefits and costs associated with each selected action.

Each community addressed how their preferred actions will be implemented and administered. For each selected and prioritized action item, participants identified the hazard addressed, if the action applies to new and/or existing assets, the primary agency responsible for action item completion, any existing local planning mechanisms through which the action item will be implemented, target date for completion, estimated cost, and funding source. For jurisdictions which provided qualitative project costs ("high/medium/low"), a range of dollar values for these designations will be provided at the first plan update (or more detailed, quantitative cost estimates if possible).

All action items not selected for prioritization by a given community after considering the STAPLEE factors received a low priority. In the future, communities may still seek to pursue other actions which they evaluated but did not select for prioritization at this time, including but not limited to those discussed in Section 6 (and associated studies, funding, etc. for these actions).

All participating jurisdictions who will be adopting this plan will undertake the following high priority public outreach actions at a minimum, as part of their plan maintenance obligation:

- Each participating jurisdiction will add a link on their jurisdiction's web page to the County mitigation planning website, if they have not already done so as part of the plan development process.
- Participating jurisdictions will conduct annual interviews and/or smaller meetings with civic groups, the public and other stakeholders. This will be accomplished through incorporating discussion of the mitigation plan into other regularly attended meetings.
- Participating jurisdictions will consider annual flyers, newsletters, newspaper advertisements, and Radio/TV announcements, and will implement some or all of the above at the discretion of the jurisdiction.

Appendix E contains completed worksheets for community-specific implementation strategies. The action items ultimately selected address every profiled hazard, for every participating jurisdiction.

Appendix F contains prioritization and implementation strategy worksheets for those actions specifically related to continued and/or enhanced compliance with FEMA's National Flood Insurance Program.

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SECTION 9 - PLAN MAINTENANCE

It is required by FEMA (as per 44 CFR Part 201.6(c)(4)(i) that, "[The plan maintenance process shall include a section describing the] method and schedule of monitoring, evaluating, and updating the mitigation plan within a five-year cycle." A formal plan maintenance process must take place to ensure that the Hazard Mitigation Plan remains an active and pertinent document. Regularly scheduled evaluations during the five-year cycle are important to assess the effectiveness of the program and to reflect changes that may affect mitigation priorities.

URS Corporation (URS), as the consulting company, was able to provide the Core Planning Group with guidance on potential means to satisfy the requirement for plan maintenance procedures. However, it was the members of the Core Planning Group who were in the best position to define the process. URS submitted a Guidance Memorandum (Guidance Memorandum #2 – Plan Maintenance Procedures) to JCOFEM on July 14, 2009, to summarize FEMA requirements for plan monitoring, evaluation, and updates. It was also posted to the mitigation planning web site for review by Core Planning Group members, the public, and other stakeholders; and distributed to Core Planning Group members via weekly email correspondence.

Team members were asked to provide feedback regarding their desires for plan maintenance to JCOFEM. JCOFEM, in turn, worked with the Consultant to develop this mitigation strategy to best reflect expressed preferences. The information presented below represents these decisions, as provided to URS through JCOFEM. These methods will ensure that regular review and updating of the Hazard Mitigation Plan will occur.

Mr. Joseph Plummer of the JCOFEM, who was identified as Coordinator for this mitigation planning project, will oversee the overall plan maintenance process. JCOFEM will take the lead on plan monitoring and evaluation steps (with help from the rest of the County Mitigation Planning Jurisdictional Assessment Team), and the County's Department of Planning will take the lead on any required plan updates (with help from Mr. Plummer and the rest of the County Mitigation Planning Jurisdictional Assessment Team).

Monitoring the Plan

An important step in any mitigation planning process is to document the method by which the Core Planning Group will monitor the Hazard Mitigation Plan throughout the five-year period of record.

First, to accomplish this objective, the Core Planning Group has elected to prepare Annual Work Progress Monitoring Reports, prepared by entities responsible for implementing mitigation actions (as identified in the Mitigation Strategy). Progress Monitoring Reports shall be submitted by Core Planning Group members on an annual basis to JCOFEM, beginning one year from the date of FEMA's approval of the Final plan. Work progress reports shall be the FEMA How-To #4 (FEMA 386-4), Worksheet #1, Progress Report and will contain the key performance indicators identified in that document. Using the FEMA Progress Reports will answer the following questions:

- the hazard mitigation action(s) that the agency is responsible for
- the supporting agencies/entities responsible for implementation;
- a delineation of the various stages of work along with timelines (milestones should be included);
- whether the resources needed for implementation, funding, staff time and technical assistance are available, or if other arrangements must be made to obtain them;
- the types of permits or approvals necessary to implement the action;

- details on the ways the actions will be accomplished within the organization;
- whether the duties will be assigned to agency staff or contracted out;
- the current status of the project; and
- identifying any issues that may hinder implementation.

On a case-by-case basis, JCOFEM will determine if site visits, phone calls, and/or meetings would be beneficial to supplement Annual Work Progress Monitoring Reports. If so, JCOFEM will initiate the site visits/calls/meetings as applicable.

Evaluating the Plan

Post adoption, a mitigation plan should be evaluated on a regular basis in order to assess the effectiveness of the plan's implementation and to reflect changes that may affect the mitigation priorities.

To accomplish this objective, the Core Planning Group will convene once per year for an Annual Plan Evaluation Meeting. Plan Evaluation Meetings will be conducted within three months after each annual batch of Progress Reports are due (see "Monitoring", above). At each Plan Evaluation Meeting, the Core Planning Group will review Progress Reports, and use the following criteria to evaluate the plan:

- do the goals and objectives address current and expected conditions?
- has the nature and magnitude of risks changed?
- are the current resources appropriate for implementing the plan?
- are there any implementation problems (such as technical, political and/or legal), or coordination issues with the other agencies and/or Committee members?
- have the outcomes occurred as expected?
- have the agencies and other Committee partners participated as proposed?; and
- where shortcomings are identified, what can be done to bring things back on track?

Following each Annual Plan Evaluation Meeting, the JCOFEM will prepare meeting minutes summarizing the outcome of the evaluation meeting. JCOFEM will distribute meeting minutes to Core Planning Group members via email, and will post meeting minutes on the web site.

Updating the Plan

As part of the process to maintain FEMA mitigation funding eligibility, a plan update must always be submitted to NYSEMO/FEMA for their review. This must occur within five years of the plan's approval by FEMA (and during subsequent five-year cycles thereafter).

To accomplish this objective, JCOFEM will take the lead on Plan updates, with support from the Core Planning Group members and the County Planning Department. JCOFEM will conduct Update Appraisals. During the Update Appraisal, JCOFEM will evaluate the current Plan, Annual Progress Reports, and Annual Plan Evaluation Meeting Minutes. JCOFEM will conduct the Update Appraisals at 3.5 years from the date of FEMA's approval of the Final plan, and at the same point in time during subsequent five-year windows (i.e., from the date of FEMA's approval of the final plan, Update Appraisals will occur at Year 3.5, Year 8.5, Year 13.5, etc.). The Planning Group has selected Year 3.5 as the point for the Update Appraisals to ensure that sufficient time (18 months) will be available to update the document within the five year cycle, receive FEMA's re-approval, and for local jurisdictions to formally adopt the updated plan.

The plan update will not only involve a comprehensive review and evaluation of each section of the plan, but also a discussion of the results of evaluation and monitoring activities detailed in the Plan Maintenance section of the previously approved plan. Plan updates may validate the information in the previously approved plan, or may involve a major plan rewrite. A plan update cannot be an annex referring to the previously approved plan; it must stand on its own as a complete and current plan.

Other criteria that will be considered during the update include:

- if changing situations have modified goals/objectives/actions and/or hazards;
- if additional information is available to perform more accurate vulnerability assessments;
- if it is determined that participating jurisdictions wish to be added to and/or removed from the Plan; or
- if it is determined that the Plan no longer addresses current and expected future conditions.

At the time of the update, JCOFEM shall consult with FEMA for the latest Guidance in place regarding plan updates to ensure that the latest criteria are addressed in the update process.

JCOFEM will prepare an updated plan, and circulate it to Core Planning Group members via email for their review and comment. Comments will be due back to JCOFEM within 14 days; lack of response will be assumed to indicate concurrence with the JCOFEM appraisal. Comments received which cannot be resolved remotely will trigger an Update Resolution Meeting of the Core Planning Group to resolve differences and develop a joint determination on how to modify the document.

Any plan updates will be released for public review and comment. The updated plan will be posted on the County web site, and made available in hard copy at the JCOFEM offices. Notification to the public will also be issued to this same effect, and interested parties will be given 30 days to provide comments to JCOFEM.

Public Participation in Plan Maintenance

As per 44 CFR Part 201.6 (c)(4)(iii) states, "[The plan maintenance process shall include a] discussion on how the community will continue public participation in the plan maintenance process." To meet this requirement, the new Hazard Mitigation Plan should describe what opportunities the public will have during the plan's periodic review to comment on the progress made to date and on any proposed plan revisions.

The following array of activities was selected by JCOFEM based on feedback received from Core Planning Group members. It has been developed in consideration of not only the regulations but also with an aim to invoke additional public participation, since limited public response was received during the plan development process despite opportunities that were presented. It has also been developed with an aim to build upon outreach activities to other stakeholders that was undertaken as part of the plan development process.

- JCOFEM will continue to maintain the mitigation planning website and document repositories.
- Each participating jurisdiction will add a link on their jurisdiction's web page to the County mitigation planning website, if they have not already done so as part of the plan development process.
- JCOFEM will lead efforts to prepare an annual fact sheet on the plan. This fact sheet will be submitted via email to Core Planning Group members for posting on community notice boards, at a minimum, and preferable supplemented with distribution at meetings as applicable. JCOFEM will post the fact sheet on the county mitigation plan web site.

- JCOFEM will lead efforts to prepare a survey for the public and other stake holders which will be posted on the County mitigation planning web site and in document repositories. Survey forms will be shared with participating jurisdictions for their use, as well. All feedback will be directed to JCOFEM as a central location. Survey feedback will be a topic of discussion at Annual Plan Evaluation Meetings.
- Participating jurisdictions will conduct annual interviews and/or smaller meetings with civic groups, the public and other stakeholders. This will be accomplished through incorporating discussion of the mitigation plan into other regularly attended meetings.
- Participating jurisdictions will consider annual flyers, newsletters, newspaper advertisements, and Radio/TV announcements, and will implement some or all of the above at the discretion of the jurisdiction.
- JCOFEM will establish a telephone hotline service (preferably a toll-free number) where interested parties can ask questions or submit feedback regarding the plan.
- Participating jurisdictions will consider offering working groups by topic area (such as land use, hazard, mitigation action, etc.) if deemed necessary based upon feedback obtained during the plan maintenance cycles.
- Participating jurisdictions will each conduct an annual town hall meeting on the progress of the mitigation plan. This could be its own, separate meeting, or incorporated into another regularly scheduled meeting.
- Since there was limited response to the initial outreach efforts, CPG members will consider more targeted outreach to other stakeholders during the plan update, and will document these efforts in Section 1 of any plan updates. This will include consideration of direct outreach to inform and involve additional stakeholders in the plan development process, including (a) academia (such as local school districts, colleges and universities); (b) non-profit interests (such as the American Red Cross, hospitals, nursing homes, or other community associations); and (c) neighboring jurisdictions that do not have mitigation plans.

Plan Integration

As per 44 CFR Part 201.6(c)(4)(ii), "[The plan shall include a] process by which local governments incorporate the requirements of the mitigation plan into other planning mechanisms such as comprehensive or capital improvement plans, when appropriate."

URS Corporation (URS), as the consulting company, was able to provide the Planning Group with guidance on potential means to satisfy the requirement for plan integration procedures. However, it was the members of the Core Planning Group who were in the best position to define the process. URS submitted a Guidance Memorandum (Guidance Memorandum #3 – Plan Integration) to JCOFEM on July 14, 2009, to summarize FEMA requirements for integrating the plan into other local planning mechanisms. It was also posted to the mitigation planning web site for review by Core Planning Group members, the public, and other stakeholders; and distributed to Core Planning Group members via weekly email correspondence.

Team members were asked to provide feedback regarding their desires for plan integration to JCOFEM. JCOFEM, in turn, worked with the Consultant to develop this mitigation strategy to best reflect expressed preferences. The information presented below represents these decisions, as provided to URS through JCOFEM. These methods will ensure that regular integration of the Hazard Mitigation Plan will occur.

JCOFEM, with input from URS and the Core Planning Group member feedback, noted the following capabilities in relation to mitigation planning and opportunities to integrate the mitigation plan into daily

activities. Progress with regard to Plan Integration will be on the agenda for each Annual Plan Evaluation Meetings.

Participating jurisdictions currently use comprehensive land use planning, capital improvements planning and building codes to guide and control development. After the Hazard Mitigation Plan is formally adopted, these existing mechanisms will have hazard mitigation strategies integrated into them, as follows:

- Within six months after adoption of the Hazard Mitigation Plan, Core Planning Group members for each participating jurisdiction will issue a letter to each of its community's department heads to solicit their support and explore opportunities for integrating hazard mitigation planning objectives into their daily activities. Specifically, letters can include:
  - Many participating jurisdictions have Master Plans, General or Comprehensive Plans. In participating jurisdictions where Master Plans, General or Comprehensive Plans exist, Core Planning Group members will work with their respective planning departments to educate them on the Hazard Mitigation Plan and encourage that on the next updates of such plans, hazard mitigation for natural hazards is addressed.
  - Many participating jurisdictions have local building departments responsible for building code enforcement and review of site plans. Local jurisdictions enforce the state-adopted IBC. In these communities, Core Planning Group Members can coordinate with their respective building departments to ensure that they have adopted and are enforcing the minimum standards established in the State-adopted IBC.
  - Many participating jurisdictions participate in FEMA's National Flood Insurance Program and as such have local floodplain management ordinances. In these communities, Core Planning Group Members can coordinate with their respective Floodplain Administrator to determine if enforcement beyond FEMA minimum requirements would be prudent for the community.
  - In participating jurisdictions with local zoning ordinances, Core Planning Group members can work with their zoning boards to educate them on the Hazard Mitigation Plan and encourage consideration of low occupancy, low-density zoning in hazard areas, when practicable.

- Participating jurisdictions will consider working with their department or agency heads to revise job descriptions of government staff to include mitigation-related duties could further institutionalize hazard mitigation. This change would not necessarily result in great financial expenditures or programmatic changes. For example, the How-To presents the following language which could be considered for adding into job descriptions for a community planner, floodplain manager, emergency manager, building code official, or water resources engineer in the Public Works Department:

Knowledge, Skills and Abilities

Knowledge. Knowledge of the principles of emergency management, specifically hazard mitigation. Knowledge of the principles and practices of sustainable development and how it is incorporated into hazard mitigation planning. Knowledge of FEMA's pre- and post-disaster mitigation programs, as well as other federal agency programs (HUD, EPA, SBA) that provide technical and/or financial assistance for implementing pre- or post-disaster mitigation planning. Knowledge of private/non-governmental programs that can support reconstruction and mitigation strategies.

Skills. Consensus building and team building, communication (verbal and written), and interpersonal skills.

Abilities. Ability to apply planning principles and tools to the goals of hazard loss reduction.

- Instead of solely relying on funding from hazard mitigation programs or other external sources of grant monies, participating jurisdictions will consider a line item for mitigation project funding in their capital or operational budgets. Having a line item in these budgets may not guarantee funding every year, but it is certainly easier to get the money allocated if it is already there. Examples include:
  - A revolving fund to finance a buyout program.
  - A low-interest loan program to fund retrofits.

- Participating jurisdictions with comprehensive plans will add a hazard element to the comprehensive plan as one of the most effective mechanisms to institutionalize hazard mitigation for new construction. A primary benefit of combining these processes is that they both influence the location, type, and characteristics of physical growth, specifically buildings and infrastructure. While planning in and of itself may not be regulatory, it uses regulatory mechanisms (zoning, development ordinances, etc.) for implementing goals and objectives. Additionally, in many parts of the country, the comprehensive planning process is an established activity that is already familiar to the public, and it usually generates a great deal of interest and public participation.

Examples of using existing resources to accomplish mitigation, as excerpted from FEMA's How-To #4, include:

- Core Planning Group members will work with their local Department of Public Works to adopt more rigorous procedures for inspecting and cleaning debris from streams, ditches, and storm drain systems. For example, instead of cleaning only after storms or complaints from citizens, or on an annual basis, the Department could require inspections of streams and ditches at least twice per year and after a significant rain event.
- Participating jurisdictions will seek to add hazard vulnerability to subdivision and site plan review criteria and incorporate any necessary actions at the planning stage.
- JCOFEM will seek to identify a community conservation society or other interested voluntary organization could perform inventories of historic sites in hazard areas that might require special treatment to protect them from specific hazards.
- Partners and nonprofit organizations and businesses can assist the planning team in a number of ways, by including lending expertise, discounted materials, staff or volunteer time, or meeting space. The planning team can in response offer these entities opportunities for greater public exposure and thus, greater recognition. The planning team can inform partners about the hazards they potentially face the ways they can mitigate these hazards and how their staff can mitigate hazards at home. Participating jurisdictions will reach out to partner groups in their communities to identify those who may be willing to donate goods or services and create a database of contact information and indicated goods/services.
- Citizens have an ongoing role to play in project implementation. The planning team should actively seek volunteers to help implement programs and activities. Knowledgeable citizens can also be recruited to provide expertise in specific subject areas. The more the team involves people in implementing the plan, the greater the support it will receive.
- State agencies can lend their time, expertise and funds to the implementation of hazard mitigation projects. JCOFEM will make sure the planning team's list of state contacts is very broad, as the

resources of one state agency may be unknown to another. JCOFEM will assist participating jurisdictions in reaching out to state agencies for support.

- Colleges and universities can provide technical expertise to projects that may require Geographic Information System (GIS), engineering, planning or other technical assistance. They can also provide meeting space, laboratories and other logistical support. JCOFEM will assist participating jurisdictions in reaching out to educational institutions for support.
- Community libraries are an excellent source of information and services, including volunteers. Participating jurisdictions will meet once each five years with their local library staff members to discuss the mitigation plan so they are well-versed in its purpose and understand where to direct interested parties for more information, to provide feedback, or to become involved.

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SECTION 10 - FOR MORE INFORMATION

If you have any questions or comments on the Jefferson County Multi-Jurisdictional Hazard Mitigation Plan, additional information can be obtained by contacting your local municipality or:

Joseph Plummer
Coordinator
Jefferson County Office of Fire and Emergency Management
Metro-Jeff Public Safety Building
753 Waterman Drive
Watertown, New York 13601
Phone: (315) 786-2654
E-Mail: josephp@co.jefferson.ny.us

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APPENDIX A –

DETAILED TABLES: ASSET VALUES IN IDENTIFIED HAZARD AREAS

Appendix A contains detailed tables presenting the numbers of parcels wholly or partially within delineated hazard areas (i.e. for those identified hazards for which the occurrence or impact is not considered to apply uniformly across the whole county) and associated improved property values broken down by land use and development type.

Affected improvement values have been calculated on a pro-rata basis: the value of improvements exposed to a hazard on any parcel is assumed to be proportional to the percentage of the parcel area covered by the hazard zone. It should be noted that this method will result in inflated parcel counts where a parcel is covered by more than one unique hazard zone.

Delineated hazards presented in this Appendix:

Flooding
Earthquake (Seismic Hazard)
Earthquake (Soil Type)
Landslide
Wildfire

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Flood Hazard

See Section 3a for description of Flood Hazard Zones

Municipality	Flood Hazard Zone	Agriculture		Community Services/Institutional		Industrial		Office/General Business/Commercial		Parks/Open Space	
		Assessed Improvements	Improved Parcels by Category	Assessed Improvements	Improved Parcels by Category	Assessed Improvements	Improved Parcels by Category	Assessed Improvements	Improved Parcels by Category	Assessed Improvements	Improved Parcels by Category
Adams	A	$232,078	27	$87,103	2	$341,486	3	$16,308	1		
	AE	$200	1								
	ANI	$277	1								
	X	$4,832,764	53	$41,677,373	16	$2,735,302	15	$19,467,936	59	$2,187,120	4
Adams (V)	A			$145,446	2	$23,073	1	$177,978	5		
	X	$42,432	3	$6,352,406	16	$7,484,739	8	$6,624,870	49	$89,388	1
Alexandria	A	$137,961	37			$97,846	4	$1,586,470	14	$907,181	15
	AE							$13,786	2	$94,901	1
	ANI							$989	1		
	X	$5,465,048	75	$2,145,885	11	$1,479,989	11	$17,189,896	78	$3,950,479	17
Alexandria Bay (V)	A			$16,797	1			$111,846	1		
	AE			$2,806,121	4	$380,835	1	$5,382,137	21	$2,427,522	9
	X			$10,699,612	15	$784,665	2	$25,302,936	85	$4,010,133	10
Antwerp	A	$242,282	24	$99,947	2	$30,521	1	$30,040	1		
	X	$7,282,144	86	$1,439,955	7	$134,371	2	$240,412	7	$34,580	2
Antwerp (V)	A										
	X	$55,328	1	$6,528,158	10	$683,046	2	$709,072	16	$114,114	2
Black River (V) - LeRay	A										
	X			$11,056,100	6			$680,100	7	$343,000	1
Black River (V) - Rutland	A			$2,452	1						
	AE										
	X	$230,310	1	$727,898	7	$193,725	2	$1,714,786	9		
Brownville	A	$61,826	11	$582,534	2	$5,129	1	$58,546	3	$14,684	2
	AE										
	X	$4,087,640	53	$16,173,884	8	$413,745	5	$1,221,582	12	$340,826	6
Brownville (V)	A					$90,931	1				
	X	$277,108	1	$4,227,284	8	$1,526,311	5	$2,088,238	15		
Cape Vincent	A	$222,842	22	$74,525	4			$147,515	2	$696,808	8
	AE	$978	1								
	ANI	$12,525	2							$1,075,093	2
	X	$7,647,583	69	$111,552,678	16	$1,178,424	8	$1,785,637	11	$966,367	8
Cape Vincent (V)	A			$360,455	2			$549,734	3	$943,465	8
	X			$4,551,985	10	$314,028	5	$4,060,846	32	$909,347	8
Carthage (V)	A										
	AE			$47,355	2	$1,634,076	9	$804,617	13	$28,195	2
	X			$31,184,445	22	$3,832,624	11	$12,938,383	80	$1,398,305	4
	X500										
Champion	A	$60,616	9	$389	1						
	AE	$22,855	2								
	X	$6,057,230	48	$51,416,311	16	$1,074,900	7	$3,080,100	16	$55,900	1
Chaumont (V)	A			$2,300	1			$91,024	2	$108,859	3
	AE										
	X			$6,872,770	9	$24,240	1	$4,767,278	25	$633,794	5
Clayton	A	$83,241	13	$6,277	4	$32,200	1	$197,590	12	$248,014	5
	AE	$18	1								
	ANI	$116	1								
	X	$7,869,126	77	$2,062,423	17	$1,532,300	14	$6,984,710	36	$1,907,586	8
Clayton (V)	A										
	AE			$515,788	1	$13,009	1	$1,831,376	20	$1,007,678	14
	ANI							$6,595	1		
	X			$15,170,612	17	$3,082,691	10	$20,222,029	90	$3,439,222	15
	X500										

Flood Hazard See Section 3a for description of Flood Hazard Zones

Municipality	Flood Hazard Zone	Agriculture		Community Services/Institutional		Industrial		Office/General Business/Commercial		Parks/Open Space	
		Assessed Improvements	Improved Parcels by Category	Assessed Improvements	Improved Parcels by Category	Assessed Improvements	Improved Parcels by Category	Assessed Improvements	Improved Parcels by Category	Assessed Improvements	Improved Parcels by Category
Deferiet (V)	A										
	AE										
	X			$1,932,100	6	$474,000	1	$40,300	1	$320,100	1
Dexter (V)	A										
	AE			$241,731	1	$95,099	1	$217,460	6	$22,162	2
	X			$2,577,237	10	$1,921,015	3	$1,942,318	18	$226,476	5
Ellisburg	A	$323,354	15			$21	1	$74,081	1	$11,378	1
	AE	$54,491	12	$142,741	3	$2,351	1	$254,642	8	$165,951	4
	ANI	$400	3							$221,792	2
	X	$19,937,156	113	$14,086,559	16	$158,728	6	$3,639,877	30	$669,179	10
	X500										
Ellisburg (V)	A	$856	2	$457,459	3	$5,217	1	$34,013	2	$2,329	1
	X	$357,844	5	$1,256,241	8	$3,083	1	$306,687	5	$14,471	1
Evans Mills (V)	A			$31,574	1	$20,003	2	$7,304	1		
	AE					$80,235	2	$179,419	2		
	X	$98,813	1	$6,434,273	9	$120,282	4	$1,889,738	10	$59,300	1
	X500	$87	1	$7,853	1	$17,481	2	$58,539	2		
Glen Park (V) - Brownville	A			$70,930	1						
	ANI										
	X	$78,402	1	$6,246,198	4			$221,482	6	$66,284	1
Glen Park (V) - Pamelia	A										
	ANI					$347,360	3	$281,830	2	$379,925	1
	X							$4,241	1		
Henderson	A	$169,849	11	$316	1	$76	1	$1,900	1	$2,087	1
	AE	$155,219	7	$35,991	3	$948	1	$1,272,555	13	$1,103,153	17
	D	$1,447	2							$2,374,033	1
	X	$8,302,346	49	$2,072,475	15	$373,987	8	$7,493,822	27	$2,120,080	22
	X500	$24,614	4					$311,332	2	$40,008	4
Herrings (V)	A										
	AE										
	X			$219,600	1			$283,000	2	$6,700	1
	X500										
Hounsfield	A	$180,592	13	$5,049	1	$708,198	1	$2,009	1	$39,486	1
	AE	$352,046	18	$92,907	3					$267,177	7
	D										
	X	$6,728,812	51	$2,187,631	12	$6,104,902	12	$4,763,416	26	$904,862	9
LeRay	A	$63,845	8	$2,047,720	2	$0	0				
	AE	$21,084	2	$29,536	1	$74,900	1	$497,295	3		
	X	$4,136,004	52	$944,181,444	13	$2,518,300	9	$34,969,505	60	$550,100	3
	X500	$67	1								
Lorraine	ANI	$2,673,777	22	$688,592	8	$172,422	1	$351,788	3	$30,076	2
	X			$31,481	1			$60,418	1		
Lyme	A	$351,276	23	$1,336	1	$871	1	$9,874	1	$6,571	1
	AE	$37,462	12	$78,975	2	$26	1	$95,206	4	$379,888	8
	ANI										
	X	$6,727,824	57	$1,445,597	6	$90,912	2	$1,669,591	15	$3,806,455	13
Mannsville (V)	X			$9,280,675	8	$61,000	2	$405,600	6	$2,500	1
Orleans	A	$142,217	14			$196,951	1	$12,293	1	$4,878	4
	AE	$24,840	4	$307,073	3	$241	4	$26,594,702	9	$282,835	7
	ANI	$25,385	4	$443,638	2			$2,173,614	4	$2,440,089	5
	X	$5,910,104	58	$12,377,535	24	$4,851,308	19	$53,723,686	60	$2,010,898	20
	X500	$1,754	2	$165,154	2			$373	1		

Flood Hazard See Section 3a for description of Flood Hazard Zones

Municipality	Flood Hazard Zone	Agriculture		Community Services/Institutional		Industrial		Office/General Business/Commercial		Parks/Open Space	
		Assessed Improvements	Improved Parcels by Category	Assessed Improvements	Improved Parcels by Category	Assessed Improvements	Improved Parcels by Category	Assessed Improvements	Improved Parcels by Category	Assessed Improvements	Improved Parcels by Category
Pamelia	A	$15,722	5	$644,145	2	$37,393	3	$73,060	4	$110,670	5
	AE	$12,595	1			$3,519	3	$443,637	3	$136,890	1
	ANI									$2,406	1
	X	$3,905,535	38	$16,081,406	13	$23,602,447	49	$24,904,039	92	$8,224,950	11
	X500							$112,061	1		
Philadelphia	A	$50,691	15								
	AE	$27	1								
	X	$4,459,383	37	$45,468,600	2	$98,600	1	$2,218,100	12	$40,000	1
Philadelphia (V)	A										
	AE			$407,395	5			$262,519	1	$2,537	1
	X			$3,809,805	10	$634,600	4	$2,667,281	15	$126,563	2
Rodman	A	$132,917	19			$4,298	1				
	ANI	$1,368	2								
	X	$6,352,861	47	$1,485,466	7	$72,952	1	$29,149	1	$34,299	3
Rutland	A	$18,031	6								
	AE	$155,754	28	$90	1			$75,801	2	$57	1
	X	$5,872,866	65	$1,706,445	8	$731,295	5	$1,741,299	19	$618	1
Sackets Harbor (V)	AE	$16,202	2					$89,259	3	$423,059	4
	X	$344,866	5	$12,508,825	14	$175,525	2	$8,057,604	31	$1,653,666	9
Theresa	A	$75,610	11							$139,206	8
	X	$3,181,315	44	$12,250	2	$916,213	4	$3,782,975	17	$867,919	16
Theresa (V)	A			$79,319	1			$29,852	1	$668	1
	X	$255,850	1	$5,390,131	13	$20,650	2	$1,691,973	20	$5,282	2
Watertown	A	$21,775	1			$31,415	1	$29,909	2		
	AE					$4,025	1	$230,773	5		
	ANI										
	X	$2,932,680	27	$165,800,230	19	$33,306,212	38	$103,983,948	144	$363,475	4
	X500					$708	1	$91,449	5		
Watertown City	A			$648,848	3	$1,224,967	24	$3,566,157	24	$37,704	1
	AE			$9,386	1	$1,676,642	5	$723,137	8		
	X			$220,530,424	89	$27,672,458	92	$213,261,246	503	$7,478,515	9
	X500			$40,996	2	$647,705	8	$1,319,526	13		
West Carthage (V)	A										
	AE			$33,345	2	$535,685	3				
	X	$29,700	1	$2,624,455	9	$1,190,015	5	$11,228,000	32	$63,700	1
Wilna	A							$832	1	$8,231	1
	AE	$896	2	$614	1			$660	1		
	X	$727,304	8	$1,638,886	11	$146,000	2	$1,400,208	17	$46,469	2
	X500										
Worth	ANI	$10,903	2							$7,078	2
	X	$831,092	12	$107,030	2					$258,572	11
Total		$131,212,436	1,566	$1,816,792,981	629	$140,257,445	478	$665,943,728	2,041	$66,496,318	416

Flood Hazard

Municipality	Flood Hazard Zone	Residential		Transportation		Utilities		Vacant		Totals	
		Assessed Improvements	Improved Parcels by Category	Assessed Improvements	Improved Parcels by Category	Assessed Improvements	Improved Parcels by Category	Assessed Improvements	Improved Parcels by Category	Assessed Improvements	Improved Parcels by Category
Adams	A	$1,878,439	77			$71,066	1	$4,638	5	$2,631,117	116
	AE									$200	1
	ANI	$302	1							$580	2
	X	$99,530,463	1,015			$2,307,928	11	$359,310	31	$173,098,196	1,204
Adams (V)	A	$922,017	41			$436,910	2			$1,705,425	51
	X	$51,883,047	543			$1,728,214	6	$67,080	6	$74,272,176	632
Alexandria	A	$55,350,102	755			$2,404	1	$569,209	61	$58,651,173	887
	AE	$760,557	20							$869,244	23
	ANI									$989	1
	X	$167,459,252	1,800			$231,116	3	$1,867,526	125	$199,789,192	2,120
Alexandria Bay (V)	A	$1,786,416	21					$813	1	$1,915,872	24
	AE	$2,697,520	51			$30,364	1	$203,724	20	$13,928,223	107
	X	$44,597,886	448			$776,142	2	$343,773	20	$86,515,148	582
Antwerp	A	$949,896	53					$22,303	7	$1,374,989	88
	X	$24,580,427	344			$200,382	2	$393,567	21	$34,305,838	471
Antwerp (V)	A	$9,257	1							$9,257	1
	X	$14,239,705	221			$418,929	5	$24,934	4	$22,773,286	261
Black River (V) - LeRay	A	$93,854	7			$309,594	1			$403,448	8
	X	$32,036,046	259			$461,306	3	$11,500	1	$44,588,052	277
Black River (V) - Rutland	A	$52,287	7			$1,688,425	2	$651	1	$1,743,815	11
	AE										
	X	$15,088,395	152			$4,322,450	2	$4,614	3	$22,282,178	176
Brownville	A	$10,019,453	340					$50,259	19	$10,792,431	378
	AE	$6,135	2							$6,135	2
	X	$158,487,028	1,696			$2,768,378	9	$995,247	137	$184,488,330	1,926
Brownville (V)	A	$51,920	9			$70,504	1			$213,356	11
	X	$35,613,982	337			$712,786	3	$79,862	10	$44,525,570	379
Cape Vincent	A	$34,686,128	711			$3,837	1	$324,105	73	$36,155,759	821
	AE									$978	1
	ANI	$1,014,998	17					$4,212	1	$2,106,828	22
	X	$91,065,411	1,141			$8,471,019	9	$1,431,987	156	$224,099,106	1,418
Cape Vincent (V)	A	$2,239,627	34			$45,074	1	$25,192	2	$4,163,549	50
	X	$38,250,329	387			$1,990,726	4	$146,408	17	$50,223,667	463
Carthage (V)	A	$2,115	1							$2,115	1
	AE	$9,561,602	151	$3,705	1	$1,502,925	4	$26,521	10	$13,608,995	192
	X	$82,770,633	804	$51,095	2	$2,257,095	5	$55,704	20	$134,488,285	948
	X500	$13,050	6					$75	1	$13,124	7
Champion	A	$2,570,335	124			$137,160	1	$10,342	7	$2,778,842	142
	AE	$316,921	19			$173,491	2	$157	1	$513,423	24
	X	$90,114,644	889			$2,987,349	8	$344,301	30	$155,130,735	1,015
Chaumont (V)	A	$675,004	35					$1,119	1	$878,306	42
	AE										
	X	$26,757,404	228			$540,552	2	$101,901	5	$39,697,939	275
Clayton	A	$32,057,293	535					$163,098	50	$32,787,713	620
	AE	$56,408	2					$121	1	$56,547	4
	ANI									$116	1
	X	$211,385,835	1,763			$1,958,484	8	$3,449,282	129	$237,149,745	2,052
Clayton (V)	A	$59,653	1					$0	0	$59,653	1
	AE	$5,476,902	110			$33,752	1	$208,097	22	$9,086,604	169
	ANI	$51,655	1							$58,250	2
	X	$84,074,512	699			$1,810,448	5	$1,062,158	39	$128,861,671	875
	X500	$5,578	2					$6,745	2	$12,322	4

Flood Hazard

Municipality	Flood Hazard Zone	Residential		Transportation		Utilities		Vacant		Totals	
		Assessed Improvements	Improved Parcels by Category	Assessed Improvements	Improved Parcels by Category	Assessed Improvements	Improved Parcels by Category	Assessed Improvements	Improved Parcels by Category	Assessed Improvements	Improved Parcels by Category
Deferiet (V)	A					$845,741	1			$845,741	1
	AE					$344,867	1			$344,867	1
	X	$10,130,200	114			$12,763,492	1			$25,660,192	124
Dexter (V)	A	$2,513	1			$96,003	1			$98,516	2
	AE	$186,700	18			$4,400,295	2			$5,163,446	30
	X	$28,362,693	301			$5,986,794	5	$46,428	8	$41,062,962	350
Ellisburg	A	$1,443,971	63			$59,386	1	$3,100	3	$1,915,290	85
	AE	$8,778,718	307			$1,330,710	1	$63,479	17	$10,793,083	353
	ANI	$232,588	14					$1,422	2	$456,203	21
	X	$83,190,121	1,269			$2,901,272	11	$784,598	73	$125,367,490	1,528
	X500	$23,451	4							$23,451	4
Ellisburg (V)	A	$385,131	28					$10,700	1	$895,705	38
	X	$4,573,769	82					$3,900	1	$6,515,995	103
Evans Mills (V)	A	$13,739	3			$3,793	1			$76,413	8
	AE	$650,518	27			$279,690	1	$554	1	$1,190,416	33
	X	$17,020,591	182			$303,605	4	$8,437	4	$25,935,040	215
	X500	$423,651	19			$12,812	1	$2,708	1	$523,131	27
Glen Park (V) - Brownville	A					$1,825,917	1			$1,896,847	2
	ANI					$2,159,139	1			$2,159,139	1
	X	$12,428,834	154			$35,218,719	2	$69,934	6	$54,329,853	174
Glen Park (V) - Pamelia	A					$1,585	1			$1,585	1
	ANI	$416,975	8			$67,219	1			$1,493,310	15
	X	$8,040	1							$12,281	2
Henderson	A	$1,648,860	55					$23,647	6	$1,846,735	76
	AE	$15,907,212	622					$287,901	51	$18,762,980	714
	D	$40,999	2							$2,416,479	5
	X	$144,401,508	1,282			$939,613	4	$1,651,447	126	$167,355,278	1,533
	X500	$254,611	24					$786	3	$631,351	37
Herrings (V)	A										
	AE	$251,388	5			$4,390,103	2	$37,594	3	$4,679,084	10
	X	$2,645,812	39			$4,097	1	$103,396	4	$3,262,606	48
	X500							$12,410	2	$12,410	2
Hounsfield	A	$754,503	41	$58,300	1	$268,347	1	$37,915	2	$2,054,398	62
	AE	$5,650,200	212			$88,516	1	$33,325	11	$6,484,171	252
	D	$3,192	1							$3,192	1
	X	$91,497,691	862	$3,445,200	1	$460,414	6	$852,935	49	$116,945,863	1,028
LeRay	A	$844,605	44			$365,144	1	$1,285	2	$3,322,598	57
	AE	$2,746,260	100			$3,173,286	6	$4,053	3	$6,546,415	116
	X	$167,177,043	1,095			$17,009,942	18	$371,162	37	$1,170,913,500	1,287
	X500	$301	1							$368	2
Lorraine	ANI	$23,038,336	402			$290,872	2	$170,766	26	$27,416,629	466
	X	$272,314	6					$8	1	$364,222	9
Lyme	A	$2,012,238	78			$60,910	2	$27,066	10	$2,470,140	117
	AE	$26,374,745	1,008					$152,394	43	$27,118,697	1,078
	ANI										
	X	$149,129,204	1,769			$1,515,214	7	$2,372,709	180	$166,757,506	2,049
Mannsville (V)	X	$9,325,000	141			$64,109	2	$23,000	1	$19,161,884	161
Orleans	A	$294,050	32			$119,438	1	$1,713	1	$771,541	54
	AE	$11,222,537	412	$1,484,961	2	$54,780	2	$245,836	32	$40,217,805	475
	ANI	$1,173,163	41	$1,256,368	1			$124	1	$7,512,380	58
	X	$106,726,273	1,324	$68,181,373	2	$3,582,482	8	$1,210,222	93	$258,573,881	1,608
	X500	$134,430	13					$5	1	$301,716	19

Flood Hazard

Municipality	Flood Hazard Zone	Residential		Transportation		Utilities		Vacant		Totals	
		Assessed Improvements	Improved Parcels by Category	Assessed Improvements	Improved Parcels by Category	Assessed Improvements	Improved Parcels by Category	Assessed Improvements	Improved Parcels by Category	Assessed Improvements	Improved Parcels by Category
Pamelia	A	$756,004	33			$669,621	6			$2,306,614	58
	AE	$715,673	24			$3,880,799	3	$15,966	2	$5,209,079	37
	ANI							$0	0	$2,406	1
	X	$107,900,618	950			$3,993,372	11	$1,854,601	24	$190,466,969	1,188
	X500	$53,702	10			$1,322,813	1			$1,488,576	12
Philadelphia	A	$587,399	32			$189,161	1	$90	1	$827,341	49
	AE	$13,099	2							$13,126	3
	X	$20,654,002	225			$836,109	6	$55,210	6	$73,830,004	290
Philadelphia (V)	A	$13,166	1							$13,166	1
	AE	$1,870,387	48			$1,514,221	3	$42,494	5	$4,099,553	63
	X	$35,844,948	246			$6,063,339	5	$37,706	11	$49,184,242	293
Rodman	A	$843,400	51			$8,494	1	$18	1	$989,127	73
	ANI	$4,600	2							$5,968	4
	X	$28,046,899	401			$920,257	4	$266,958	24	$37,208,841	488
Rutland	A	$721,553	32					$250	1	$739,834	39
	AE	$2,102,422	76							$2,334,124	108
	X	$70,992,594	787			$3,341,462	12	$189,695	16	$84,576,274	913
Sackets Harbor (V)	AE	$1,643,910	70			$27,515	1	$980	1	$2,200,926	81
	X	$72,405,835	523			$2,966,910	5	$87,570	12	$98,200,800	601
Theresa	A	$8,752,416	378			$90,179	1	$40,907	23	$9,098,318	421
	X	$70,546,848	962			$339,446	3	$428,268	55	$80,075,233	1,103
Theresa (V)	A	$434,986	38			$1,283,101	2	$3,752	4	$1,831,677	47
	X	$21,478,689	283	$525	1	$2,256,054	6	$236,873	17	$31,336,028	345
Watertown	A	$1,202,393	48			$240,738	1	$10	1	$1,526,241	54
	AE	$351,816	12							$586,614	18
	ANI					$547	1			$547	1
	X	$158,293,066	1,184			$8,020,513	13	$524,355	43	$473,224,478	1,472
	X500	$114,353	16							$206,510	22
Watertown City	A	$1,414,252	46	$1,270	1	$13,950,331	14	$12,007	5	$20,855,537	118
	AE	$4,830,210	95	$14,962	1	$1,408,497	3	$47,643	8	$8,710,478	121
	X	$685,498,132	6,425	$1,160,916	4	$37,486,287	19	$716,476	98	$1,193,804,454	7,239
	X500	$9,032,686	149	$18,517	1	$197	1	$15,790	8	$11,075,416	182
West Carthage (V)	A	$49,778	3							$49,778	3
	AE	$93,755	4			$2,638,450	4	$98	1	$3,301,332	14
	X	$55,044,167	503			$4,051,950	3	$75,802	8	$74,307,789	562
Wilna	A	$1,282,676	53					$11,643	5	$1,303,382	60
	AE	$1,378,695	41					$6,483	3	$1,387,349	48
	X	$60,793,429	751			$2,991,376	3	$249,174	32	$67,992,844	826
	X500										
Worth	ANI	$99,218	14							$117,199	18
	X	$8,024,128	224					$38,115	8	$9,258,937	257
Total		$3,796,985,004	42,808	$75,677,191	18	$239,928,854	340	$25,936,428	2,267	$6,959,230,385	50,563

Earthquake - Seismic

*Minimum Peak Horizontal Ground Acceleration as % of Grav ity

Municipality	Earthquake Hazard*	Agricultural		Community Services/Institutional		Industrial		Office/General Business/Commercial		Parks/Open Space	
		Assessed Improvements	Improved Parcels by Category	Assessed Improvements	Improved Parcels by Category	Assessed Improvements	Improved Parcels by Category	Assessed Improvements	Improved Parcels by Category	Assessed Improvements	Improved Parcels by Category
Adams	3-4	$5,065,320	53	$41,764,476	16	$3,076,788	15	$19,484,244	59	$2,187,120	4
Adams (V)	3-4	$42,432	3	$6,497,852	16	$7,507,812	8	$6,802,848	49	$89,388	1
Alexandria	3-4	$1,242,293	14			$11,340	1	$3,659,305	10	$278,381	1
	4-5	$4,360,716	65	$2,145,885	11	$1,566,495	10	$15,131,836	69	$4,674,181	19
Alexandria Bay (V)	4-5			$13,518,960	15	$1,165,500	2	$30,796,920	86	$6,437,655	11
Antwerp	4-5	$7,524,426	86	$1,539,902	7	$164,892	2	$270,452	7	$34,580	2
Antwerp (V)	4-5	$55,328	1	$6,528,158	10	$683,046	2	$709,072	16	$114,114	2
Black River (V) - LeRay	3-4			$11,056,100	6			$680,100	7	$343,000	1
Black River (V) - Rutland	3-4	$230,310	1	$730,350	7	$193,725	2	$1,714,786	9		
Brownville	3-4	$4,149,466	53	$16,756,418	8	$418,874	5	$1,280,128	12	$355,510	6
Brownville (V)	3-4	$277,108	1	$4,227,284	8	$1,617,242	5	$2,088,238	15		
Cape Vincent	3-4	$7,883,928	69	$111,627,203	16	$1,178,424	8	$1,933,152	11	$2,738,268	8
Cape Vincent (V)	3-4			$4,912,440	10	$314,028	5	$4,610,580	32	$1,852,812	9
Carthage (V)	3-4			$18,255,100	22	$5,466,700	15	$13,625,197	84	$1,426,500	4
	4-5			$12,976,700	1			$117,803	2		
Champion	3-4	$6,140,700	48	$51,416,700	16	$1,074,900	7	$3,080,100	16	$55,900	1
Chaumont (V)	3-4			$6,875,070	9	$24,240	1	$4,858,302	25	$742,653	5
Clayton	3-4	$7,952,500	77	$2,068,700	17	$1,564,500	15	$7,182,300	36	$2,155,600	8
Clayton (V)	3-4			$15,686,400	17	$3,095,700	10	$22,060,000	90	$4,446,900	15
Deferiet (V)	3-4			$1,932,100	6	$474,000	1	$40,300	1	$320,100	1
Dexter (V)	3-4			$2,818,968	10	$2,016,114	3	$2,159,778	19	$248,638	5
Ellisburg	2-3	$7,485,997	36	$368,500	1			$219,500	4	$764,300	5
	3-4	$12,829,403	84	$13,860,800	15	$161,100	6	$3,749,100	26	$304,000	5
Ellisburg (V)	2-3	$273,719	3	$800,157	3						
	3-4	$84,981	3	$913,543	6	$8,300	1	$340,700	5	$16,800	1
Evans Mills (V)	3-4	$98,900	1	$6,473,700	9	$238,000	4	$2,135,000	11	$59,300	1
Glen Park (V) - Brownville	3-4	$78,402	1	$6,317,128	4			$221,482	6	$66,284	1
Glen Park (V) - Pamelia	3-4					$347,360	3	$286,071	2	$379,925	1
Henderson	2-3	$22,545	1	$10,140	1					$377,730	3
	3-4	$8,630,931	49	$2,098,642	14	$375,011	8	$9,079,609	27	$5,261,631	20
Herrings (V)	3-4			$219,600	1			$283,000	2	$6,700	1
Hounsfield	2-3			$137,025	3						
	3-4	$7,261,450	51	$2,148,563	9	$6,813,100	12	$4,765,425	26	$1,211,525	9
LeRay	3-4	$4,221,000	52	$830,765,690	13	$2,593,200	10	$35,466,800	61	$550,100	3
	4-5			$115,493,009	1						
Lorraine	3-4	$2,673,777	22	$720,073	8	$172,422	1	$412,206	3	$30,076	2
Lyme	3-4	$7,116,561	57	$1,525,908	7	$91,809	2	$1,774,671	16	$4,192,914	13
Mannsville (V)	3-4			$9,280,675	8	$61,000	2	$405,600	6	$2,500	1
Orleans	3-4	$6,104,300	58	$10,277,100	23	$4,794,900	19	$81,793,103	57	$4,735,420	21
	4-5			$3,016,300	1	$253,600	2	$711,597	4	$3,280	1
Pamelia	3-4	$3,933,852	38	$16,725,551	13	$23,643,359	49	$25,532,797	92	$8,474,916	12
Philadelphia	3-4	$255,736	2			$1,239	1				
	4-5	$4,254,364	37	$45,468,600	2	$97,361	1	$2,218,100	12	$40,000	1
Philadelphia (V)	4-5			$4,217,200	10	$634,600	4	$2,929,800	15	$129,100	2
Rodman	3-4	$6,487,146	47	$1,485,466	7	$77,250	1	$29,149	1	$34,299	3
Rutland	3-4	$6,046,650	65	$1,706,535	8	$731,295	5	$1,817,100	20	$675	1
Sackets Harbor (V)	3-4	$361,069	5	$12,508,825	14	$175,525	2	$8,146,862	31	$2,076,725	9
Theresa	3-4	$576,280	13			$133,985	1	$274,246	3		
	4-5	$2,680,645	36	$12,250	2	$782,228	4	$3,508,729	15	$1,007,125	16
Theresa (V)	4-5	$255,850	1	$5,469,450	13	$20,650	2	$1,721,825	20	$5,950	2
Watertown	3-4	$2,954,455	27	$165,800,230	19	$33,342,360	38	$104,336,080	144	$363,475	4
Watertown City	3-4			$221,229,655	89	$31,221,772	97	$218,870,066	511	$7,516,219	9
West Carthage (V)	3-4	$29,700	1	$2,657,800	9	$1,725,700	5	$11,228,000	32	$63,700	1
Wilna	3-4	$66,634	2	$12,400	3	$128,000	1	$189,500	3		
	4-5	$661,566	8	$1,627,100	8	$18,000	1	$1,212,200	14	$54,700	2
Worth	3-4	$841,995	12	$107,030	2					$265,650	11
Totals		$131,212,436	1,183	$1,816,789,411	554	$140,257,445	399	$665,943,761	1,824	$66,496,318	264

Earthquake - Seismic

Municipality	Earthquake Hazard*	Residential		Transportation		Utilities		Vacant		Total	
		Assessed Improvements	Improved Parcels by Category	Assessed Improvements	Improved Parcels by Category	Assessed Improvements	Improved Parcels by Category	Assessed Improvements	Improved Parcels by Category	Assessed Improvements	Improved Parcels
Adams	3-4	$101,409,204	1,016			$2,378,994	11	$363,948	31	$175,730,094	1,205
Adams (V)	3-4	$52,805,064	543			$2,165,124	6	$67,080	6	$75,977,600	632
Alexandria	3-4	$17,500,712	126					$265,846	17	$22,957,876	169
	4-5	$206,069,199	1,842			$233,520	3	$2,170,889	133	$236,352,721	2,152
Alexandria Bay (V)	4-5	$49,081,822	450			$806,505	2	$548,310	29	$102,355,672	595
Antwerp	4-5	$25,530,323	346			$200,382	2	$415,870	21	$35,680,827	473
Antwerp (V)	4-5	$14,248,962	221			$418,929	5	$24,934	4	$22,782,543	261
Black River (V) - LeRay	3-4	$32,129,900	259			$770,900	3	$11,500	1	$44,991,500	277
Black River (V) - Rutland	3-4	$15,140,682	152			$6,010,875	2	$5,265	3	$24,025,993	176
Brownville	3-4	$168,512,616	1,738			$2,768,378	9	$1,045,506	141	$195,286,896	1,972
Brownville (V)	3-4	$35,665,902	337			$783,290	3	$79,862	10	$44,738,926	379
Cape Vincent	3-4	$126,766,536	1,301			$8,474,856	9	$1,760,304	177	$262,362,671	1,599
Cape Vincent (V)	3-4	$40,489,956	387			$2,035,800	4	$171,600	17	$54,387,216	464
Carthage (V)	3-4	$87,943,449	849	$7,242	2	$2,174,020	6	$71,056	20	$128,969,264	1,002
	4-5	$4,403,951	15	$47,558	1	$1,586,000	1	$11,244	3	$19,143,256	23
Champion	3-4	$93,001,900	889			$3,298,000	8	$354,800	30	$158,423,000	1,015
Chaumont (V)	3-4	$27,432,408	228			$540,552	2	$103,020	5	$40,576,245	275
Clayton	3-4	$243,499,536	1,794			$1,958,484	8	$3,612,500	133	$269,994,120	2,088
Clayton (V)	3-4	$89,668,300	700			$1,844,200	5	$1,277,000	39	$138,078,499	876
Deferiet (V)	3-4	$10,130,200	114			$13,954,100	1			$26,850,800	124
Dexter (V)	3-4	$28,551,906	301			$10,483,092	5	$46,428	8	$46,324,924	351
Ellisburg	2-3	$40,765,733	559			$13,300	1	$413,600	39	$50,030,930	645
	3-4	$52,903,116	759			$4,278,067	10	$439,000	36	$88,524,587	941
Ellisburg (V)	2-3	$647,161	13							$1,721,036	19
	3-4	$4,311,739	75					$14,600	2	$5,690,664	93
Evans Mills (V)	3-4	$18,108,500	184			$599,900	4	$11,700	4	$27,725,000	218
Glen Park (V) - Brownville	3-4	$12,428,834	154			$39,203,775	2	$69,934	6	$58,385,839	174
Glen Park (V) - Pamelia	3-4	$425,015	8			$68,804	1			$1,507,175	15
Henderson	2-3	$29,160,509	288					$243,191	33	$29,814,115	326
	3-4	$133,092,682	1,016			$939,613	4	$1,720,589	104	$161,198,708	1,242
Herrings (V)	3-4	$2,897,200	42			$4,394,200	2	$153,400	4	$7,954,100	52
Hounsfield	2-3	$1,203,703	7					$875	1	$1,341,603	11
	3-4	$96,701,883	865	$3,503,500	1	$817,276	6	$923,300	48	$124,146,022	1,027
LeRay	3-4	$168,306,008	1,066			$20,527,372	18	$374,083	37	$1,062,804,254	1,260
	4-5	$2,462,200	31			$21,000	1	$2,417	1	$117,978,626	34
Lorraine	3-4	$23,310,651	402			$290,872	2	$170,774	26	$27,780,851	466
Lyme	3-4	$177,516,186	1,831			$1,576,124	7	$2,552,169	189	$196,346,342	2,122
Mannsville (V)	3-4	$9,325,000	141			$64,109	2	$23,000	1	$19,161,884	161
Orleans	3-4	$116,197,872	1,298	$70,922,701	2	$3,756,700	8	$1,406,284	93	$299,988,381	1,579
	4-5	$3,355,428	53					$51,616	4	$7,391,820	65
Pamelia	3-4	$109,425,997	953			$9,866,605	12	$1,870,567	24	$199,473,644	1,193
Philadelphia	3-4	$408,369	4							$665,344	7
	4-5	$20,846,131	223			$1,025,270	6	$55,300	6	$74,005,126	288
Philadelphia (V)	4-5	$37,728,500	251			$7,577,560	5	$80,200	11	$53,296,960	298
Rodman	3-4	$28,894,899	403			$928,751	4	$266,976	24	$38,203,936	490
Rutland	3-4	$73,816,569	789			$3,341,462	12	$189,945	16	$87,650,231	916
Sackets Harbor (V)	3-4	$74,049,745	523			$2,994,425	5	$88,550	12	$100,401,726	601
Theresa	3-4	$8,170,456	127			$44,625	1	$34,461	4	$9,234,054	149
	4-5	$71,128,808	902			$385,000	2	$434,714	52	$79,939,498	1,029
Theresa (V)	4-5	$21,913,675	283	$525	1	$3,539,154	6	$240,625	17	$33,167,705	345
Watertown	3-4	$159,961,627	1,184			$8,261,799	13	$524,365	43	$475,544,391	1,472
Watertown City	3-4	$700,775,281	6,619	$1,195,665	4	$52,845,312	24	$791,915	109	$1,234,445,885	7,462
West Carthage (V)	3-4	$55,187,700	504			$6,690,400	4	$75,900	8	$77,658,900	564
Wilna	3-4	$20,550,431	259					$125,100	14	$21,072,065	282
	4-5	$42,904,369	510			$2,991,376	3	$142,200	18	$49,611,511	564
Worth	3-4	$8,123,346	224					$38,115	8	$9,376,136	257
Totals		$3,796,987,850	36,158	$75,677,191	11	$239,928,853	260	$25,936,428	1,822	$6,959,229,692	42,475

Earthquake

For description of soil Types see Section 3a

Soil Types

Municipality	Soil Type	Agriculture		Community Services/Institutional		Industrial		Office/General Business/Commercial		Parks/Open Space	
		Assessed Improvements	Improved Parcels by Category	Assessed Improvements	Improved Parcels by Category	Assessed Improvements	Improved Parcels by Category	Assessed Improvements	Improved Parcels by Category	Assessed Improvements	Improved Parcels by Category
Adams	A	$217,331	11								
	B	$520,776	15	$179,005	2						
	C	$1,032,671	22	$7,766,994	6	$1,095,926	7	$13,550,355	31	$94,234	2
	D	$3,162,031	46	$30,568,585	12	$1,980,862	11	$4,866,713	31	$1,374,329	3
	E	$132,511	8	$3,249,891	3			$1,067,176	7	$718,557	1
Adams (V)	C										
	D	$42,432	3	$6,497,852	16	$7,507,812	8	$6,802,848	49	$89,388	1
Alexandria	A	$192,874	19	$227,882	1	$315,945	3	$7,629,994	17	$1,603,774	8
	B	$16,647	3					$700,299	3		
	C	$24,757	8	$110,985	2	$27,833	2	$249,706	8	$4,788	1
	D	$5,182,416	73	$1,807,018	9	$1,230,670	7	$10,056,469	58	$3,064,565	15
	E	$186,293	15			$3,388	1	$992	1		
Alexandria Bay (V)	A			$8,696,520	14	$1,165,500	2	$24,746,647	86	$6,211,291	11
	D			$81	1						
Antwerp	A	$265,634	10	$3,224	1						
	B	$5,483	2	$25,047	1						
	C	$197,200	14	$217,940	3						
	D	$7,027,252	85	$1,288,996	5	$164,892	2	$270,452	7	$7,280	1
	E	$28,857	4	$4,696	1					$27,300	1
Antwerp (V)	C										
	D	$55,328	1	$6,528,158	10	$683,046	2	$709,072	16	$114,114	2
Black River (V) - LeRay	C									$36,395	1
	E			$11,056,100	6			$680,100	7	$306,605	1
Black River (V) - Rutland	B	$214,501	1					$697	1		
	C	$15,809	1	$588,254	6	$184,440	2	$1,672,551	7		
	E			$142,096	2	$9,285	2	$41,538	4		
Brownville	A	$122,257	6							$159,629	3
	B	$73,896	1								
	C	$765,226	18			$54,049	1	$101,470	2		
	D	$3,147,600	51	$16,756,418	8	$364,825	5	$1,178,658	10	$178,683	4
	E	$40,488	4								
Brownville (V)	A			$333,625	1	$1,349,770	1	$608,589	10		
	D	$277,108	1	$3,893,659	8	$267,472	4	$1,479,649	9		
Cape Vincent	A	$229,809	5	$886,143	3	$7,238	1			$202,411	1
	B	$426,854	3	$25,902,076	3	$223,236	2	$309,348	1		
	C	$3,202	1			$0	0				
	D	$6,948,877	67	$72,634,902	14	$947,950	6	$1,618,033	10	$2,462,188	8
	E	$275,162	9	$12,200,171	1						
Cape Vincent (V)	A			$1,257,472	5	$71,916	2	$3,445,021	23	$385,901	5
	D			$3,612,129	6	$242,112	3	$956,687	12	$948,157	4
Carthage (V)	C					$24,819	2	$58,561	3		
	D			$23,202,939	12	$1,433,801	4	$1,674,939	16	$1,380,200	2
	E			$8,028,861	15	$4,008,080	13	$12,009,500	75	$46,300	2

Earthquake

For description of soil Types see Section 3a

Soil Types

Municipality	Soil Type	Agriculture		Community Services/Institutional		Industrial		Office/General Business/Commercial		Parks/Open Space	
		Assessed Improvements	Improved Parcels by Category	Assessed Improvements	Improved Parcels by Category	Assessed Improvements	Improved Parcels by Category	Assessed Improvements	Improved Parcels by Category	Assessed Improvements	Improved Parcels by Category
Champion	A	$151,114	7								
	B	$3,907,421	38	$38,042,870	7	$458,798	3	$1,181,318	6	$55,900	1
	C	$1,991,274	26	$11,640,794	5	$533,031	4	$849,393	7		
	D	$65,614	4	$1,733,036	7	$83,071	2	$1,049,389	8		
	E	$25,278	2								
Chaumont (V)	A			$3,875,180	2			$382,338	4	$668,611	4
	D			$1,973,754	6			$2,361,667	13	$32,821	1
	E			$1,026,137	5	$24,240	1	$2,114,297	14	$41,221	2
Clayton	A	$132,432	9	$137,341	3						
	B	$190,917	8			$241,666	3	$2,105,895	4	$209,622	2
	C	$153,089	4			$39,056	2	$254,634	1		
	D	$7,452,221	75	$1,874,600	13	$1,283,778	14	$4,508,227	30	$1,918,971	6
	E	$23,808	4					$182,166	1		
Clayton (V)	A										
	B									$161,697	1
	D			$15,495,497	17	$3,089,660	10	$21,270,654	88	$3,628,465	13
	E							$371,753	4	$447,551	2
Deferiet (V)	C			$744,219	3	$413,850	1	$689	1	$309,279	1
	E			$1,187,881	4	$60,150	1	$39,611	1	$10,821	1
Dexter (V)	C										
	D			$1,691,743	6	$53,696	2	$643,965	4	$173,156	1
	E			$1,127,225	6	$1,962,418	2	$1,515,813	16	$75,482	4
Ellisburg	A	$370,892	12					$81,709	2		
	B	$1,173,574	35			$300	1	$142,472	2	$288,739	2
	C	$2,934,558	47	$9,211,543	9	$26,656	2	$2,092,641	16	$399,122	4
	D	$15,044,963	108	$5,017,757	9	$80,184	4	$1,651,778	18	$271,729	6
	E	$791,414	12			$53,960	1			$101,554	3
Ellisburg (V)	A	$20,035	2	$125,902	2	$4,428	1	$130,135	2	$211	1
	C	$41,750	2								
	D	$296,915	4	$117,814	2	$3,872	1	$72,735	1	$13,741	1
	E			$1,469,984	6			$137,831	4	$2,848	1
Evans Mills (V)	B			$5,133,500	7	$214,078	4	$1,374,371	11	$59,300	1
	C			$787,100	1	$11,184	2	$720,462	2		
	D	$98,900	1	$553,100	1	$12,739	2	$40,167	1		
Glen Park (V) - Brownville	A	$24,402	1	$5,566,627	4			$215,400	6	$66,284	1
	D	$54,000	1	$750,501	1			$6,082	1		
Glen Park (V) - Pamelia	A					$347,360	3	$286,071	2	$379,925	1
	D										
Henderson	A	$1,306,544	28	$1,102,837	4	$98,997	2	$487,843	3	$1,997,085	9
	B	$418,975	4	$145,340	1						
	C	$588,533	17			$116,309	3			$759,968	4
	D	$6,213,285	45	$860,605	12	$159,677	4	$8,179,527	26	$2,808,725	16
	E	$125,681	5								

Earthquake

For description of soil Types see Section 3a

Soil Types

Municipality	Soil Type	Agriculture		Community Services/Institutional		Industrial		Office/General Business/Commercial		Parks/Open Space	
		Assessed Improvements	Improved Parcels by Category	Assessed Improvements	Improved Parcels by Category	Assessed Improvements	Improved Parcels by Category	Assessed Improvements	Improved Parcels by Category	Assessed Improvements	Improved Parcels by Category
Herrings (V)	C										
	E			$219,600	1			$283,000	2	$6,700	1
Hounsfield	A	$1,780,286	19	$663,713	4	$1,258,265	3	$1,214,274	13	$63,314	5
	C	$382,922	8			$82,303	2				
	D	$4,545,013	49	$1,574,539	11	$5,472,533	10	$3,546,396	18	$1,069,689	8
	E	$553,228	11					$4,755	1	$66,127	2
LeRay	A	$96,245	5	$5,371,447	1						
	B	$160,664	8	$107,915,906	1					$147,764	1
	C	$422,215	17	$607,669,686	3	$233,622	3	$4,008,900	3		
	D	$3,345,464	51	$174,947,194	10	$2,257,478	7	$29,410,306	47	$402,336	3
	E	$196,411	8	$50,354,465	4	$102,100	2	$2,047,594	16		
Lorraine	A	$356,089	11	$620,781	5			$92,906	2	$127	1
	B	$457,635	14	$20,703	1					$22,513	2
	C	$547,895	11	$103	1					$7,428	1
	D	$1,312,157	7	$78,486	1	$172,422	1	$319,300	1	$8	1
Lyme	A	$392,738	11					$37,806	1	$1,458,572	5
	C	$55,427	2	$90,900	1			$14,507	1	$177,596	2
	D	$5,833,475	56	$511,374	2	$91,324	2	$1,193,726	9	$2,175,489	8
	E	$832,068	21	$922,029	4	$485	1	$523,375	6	$237,249	3
Mannsville (V)	B										
	C			$8,586,546	6	$33,000	1	$405,600	6	$2,500	1
	D			$694,129	4	$28,000	1				
Orleans	A			$3,016,300	1	$487,621	4	$6,792,980	13	$1,527,454	2
	B	$181,340	8			$227,170	6	$42,333,201	3	$335,168	4
	C	$170,667	4	$150,500	1	$57,207	1	$207,998	3		
	D	$5,573,181	57	$9,863,900	20	$4,276,372	12	$10,344,617	53	$2,557,893	17
	E	$178,044	7	$105,300	1			$4,529	1	$6,298	2
Pamelia	A	$130,203	3	$1,646,193	2	$668,832	2	$149,896	1	$340,680	2
	D	$3,597,546	38	$14,370,101	10	$19,802,090	43	$23,135,715	86	$8,076,531	9
	E	$206,104	4	$709,257	3	$3,172,436	15	$2,247,186	13	$57,705	3
Philadelphia	B	$299,170	6								
	C	$80,710	3								
	D	$3,949,287	37	$45,468,600	2	$98,600	1	$2,218,100	12	$40,000	1
	E	$180,933	8								
Philadelphia (V)	D			$1,648,435	2	$377,166	3	$1,239,700	6	$128,060	2
	E			$2,568,765	9	$257,434	3	$1,690,100	9	$1,040	1
Rodman	A	$325,078	10	$885,735	4			$29,149	1		
	B	$2,120,641	33	$565,890	4					$34,299	3
	C	$3,337,248	25			$52,552	1				
	D	$437,284	6	$33,841	1						
	E	$266,895	8			$24,698	1				

Earthquake

For description of soil Types see Section 3a

Soil Types

Municipality	Soil Type	Agriculture		Community Services/Institutional		Industrial		Office/General Business/Commercial		Parks/Open Space	
		Assessed Improvements	Improved Parcels by Category	Assessed Improvements	Improved Parcels by Category	Assessed Improvements	Improved Parcels by Category	Assessed Improvements	Improved Parcels by Category	Assessed Improvements	Improved Parcels by Category
Rutland	A	$248,407	16							$0	0
	B	$3,689,468	58	$1,076,895	5	$95,310	2	$130,545	2	$0	0
	C	$1,648,599	29	$629,640	3	$635,985	3	$1,686,555	18	$675	1
	D	$454,343	6			$0	0				
	E	$5,832	2								
Sackets Harbor (V)	A	$97,566	2								
	D	$262,488	5	$12,508,825	14	$175,525	2	$8,070,828	31	$1,394,109	9
Theresa	A	$665,068	20					$128,698	1	$31,565	3
	C	$246,203	9			$0	0	$94,208	2		
	D	$2,266,611	42	$11,375	1	$916,213	4	$3,560,069	16	$968,085	13
	E	$79,043	6	$875	1					$7,475	2
Theresa (V)	A	$255,153	1	$5,469,450	13	$20,650	2	$1,721,825	20	$5,950	2
	D	$697	1								
Watertown	A	$82,593	6	$1,990,943	5	$1,608,126	3	$4,485,577	9		
	B	$312,977	11	$1,036,442	4	$703,571	9	$1,817,154	9	$48,338	2
	C	$1,863,764	22	$155,238,907	8	$17,705,556	23	$25,826,722	65	$244,686	2
	D	$666,422	8	$7,533,937	9	$13,325,108	17	$72,206,518	86	$70,452	3
	E	$28,700	1					$108	1		
Watertown City	A			$2,644,950	2	$160,707	1				
	B			$4,612,360	2					$553,376	3
	C			$14,152,901	7	$19,261	1	$10,954,705	9	$1,265,497	2
	D			$190,149,237	73	$19,446,188	51	$178,346,960	422	$4,995,393	8
	E			$9,670,207	16	$11,595,616	58	$29,568,401	115	$701,953	2
West Carthage (V)	B	$29,227	1	$2,631,806	8	$715,126	4	$7,045,765	16	$63,700	1
	C	$473	1	$12,263	2			$45,542	1		
	D			$9,732	1			$1,647,624	15		
	E			$3,999	2	$1,010,574	3	$2,489,069	6		
Wilna	A										
	B	$230,686	6	$68,472	1			$42,286	1	$10,548	1
	C	$17,024	3	$623,600	2			$754,300	7	$10,922	1
	D	$447,985	5	$943,428	7	$18,000	1	$418,614	8	$33,230	2
	E	$32,505	2	$4,000	2	$128,000	1	$186,500	2		
Worth	A	$33,111	3								
	B	$238,776	7	$107,030	2					$45,371	5
	C	$567,199	11							$203,349	11
	D	$2,909	2							$16,930	2
Grand Total		$131,206,965	1860	$1,811,466,299	630	$140,251,248	478	$635,661,287	1992	$63,913,060	331

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Soil Types

Municipality	Soil Type	Residential		Transportation		Utilities		Vacant		Total	
		Assessed Improvements	Improved Parcels by Category	Assessed Improvements	Improved Parcels by Category	Assessed Improvements	Improved Parcels by Category	Assessed Improvements	Improved Parcels by Category	Assessed Improvements	Improved Parcels by Category
Adams	A	$1,267,957	14			$45,444	1			$1,530,732	26
	B	$3,959,807	78			$110,916	2	$3,120	1	$4,773,624	98
	C	$28,899,989	342			$590,034	3	$51,855	10	$53,082,057	423
	D	$61,041,657	710			$1,632,600	7	$272,513	23	$104,899,290	843
	E	$6,239,794	86					$36,460	4	$11,444,391	109
Adams (V)	C					$154,042	1			$154,042	1
	D	$52,805,064	543			$2,011,082	6	$67,080	6	$75,823,559	632
Alexandria	A	$25,040,475	222					$122,620	11	$35,133,563	281
	B	$3,515,725	25							$4,232,671	31
	C	$7,176,987	146					$36,494	5	$7,631,550	172
	D	$151,773,540	1508			$210,280	3	$2,003,413	126	$175,328,370	1799
	E	$3,941,163	86			$23,240	1	$28,562	6	$4,183,638	110
Alexandria Bay (V)	A	$42,827,713	432			$806,505	2	$331,822	26	$84,785,998	573
	D	$116,420	4							$116,502	5
Antwerp	A	$1,121,339	24							$1,390,196	35
	B	$761,467	6							$791,997	9
	C	$1,768,152	37					$24,206	2	$2,207,498	56
	D	$21,865,706	324			$200,382	2	$391,664	19	$31,216,623	445
	E	$13,659	2							$74,512	8
Antwerp (V)	C										
	D	$14,248,962	221			$418,929	5	$24,934	4	$22,782,543	261
Black River (V) - LeRay	C	$533,002	8			$156,608	1	$0	0	$726,005	10
	E	$31,596,898	257			$614,292	3	$11,500	1	$44,265,495	275
Black River (V) - Rutland	B	$1,459,219	21							$1,674,417	23
	C	$6,262,036	84			$3,247,930	1			$11,971,021	101
	E	$7,419,426	83			$2,762,945	2	$5,265	3	$10,380,555	96
Brownville	A	$57,893,670	676			$45,114	1	$513,029	81	$58,733,699	767
	B	$227,712	6					$20,705	2	$322,313	9
	C	$15,191,064	189					$204,249	27	$16,316,059	237
	D	$89,571,281	908			$2,525,030	8	$278,763	39	$114,001,258	1033
	E	$3,987,672	69			$198,234	1	$28,144	9	$4,254,538	83
Brownville (V)	A	$5,618,666	87			$744,600	1	$1,606	2	$8,656,856	102
	D	$30,047,236	284			$38,690	2	$78,256	8	$36,082,070	316
Cape Vincent	A	$18,304,964	193			$39,404	1	$101,098	20	$19,771,066	224
	B	$5,786,654	68			$23,400	1	$59,733	10	$32,731,301	88
	C	$3,408,499	51					$134,472	9	$3,546,173	61
	D	$93,817,222	1023			$8,406,996	7	$1,361,483	142	$188,197,651	1277
	E	$893,821	16					$4,476	1	$13,373,630	27
Cape Vincent (V)	A	$11,683,176	98			$164,699	2	$80,525	7	$17,088,710	142
	D	$28,055,668	300			$1,866,852	2	$83,616	10	$35,765,221	337
Carthage (V)	C	$6,589,249	105					$6,000	3	$6,678,628	113
	D	$57,983,930	496	$54,800	2	$1,586,000	1	$49,719	13	$87,366,328	546
	E	$27,774,221	323			$2,174,020	6	$26,581	8	$54,067,563	442

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Soil Types

Municipality	Soil Type	Residential		Transportation		Utilities		Vacant		Total	
		Assessed Improvements	Improved Parcels by Category	Assessed Improvements	Improved Parcels by Category	Assessed Improvements	Improved Parcels by Category	Assessed Improvements	Improved Parcels by Category	Assessed Improvements	Improved Parcels by Category
Champion	A	$2,119,290	26							$2,270,403	33
	B	$43,326,085	441			$1,488,900	3	$241,392	21	$88,702,684	520
	C	$37,476,516	399			$1,151,345	3	$99,373	10	$53,741,726	454
	D	$9,582,437	118			$452,000	2	$13,945	2	$12,979,491	143
	E	$497,573	15			$205,755	1	$90	1	$728,696	19
Chaumont (V)	A	$8,820,557	63					$53,954	2	$13,800,639	75
	D	$15,264,536	149			$264,416	2	$25,735	2	$19,922,929	173
	E	$3,347,315	43			$276,136	1	$23,331	2	$6,852,678	68
Clayton	A	$29,567,158	220					$189,552	14	$30,026,482	246
	B	$18,111,353	155			$141,581	2	$60,317	6	$21,061,352	180
	C	$1,960,627	27			$43,246	2	$30,016	2	$2,480,668	38
	D	$149,183,195	1318			$1,773,657	7	$3,033,113	106	$171,027,763	1569
	E	$5,213,825	56					$35,342	2	$5,455,142	63
Clayton (V)	A	$4,224,504	17					$98,600	5	$4,323,104	22
	B	$2,130,017	12			$69,852	1	$107,600	1	$2,469,166	15
	D	$75,375,831	648			$1,738,000	4	$968,259	28	$121,566,365	808
	E	$4,054,281	35					$46,837	8	$4,920,421	49
Deferiet (V)	C	$3,385,638	52			$9,405,122	1			$14,258,797	59
	E	$6,744,562	82			$4,548,978	1			$12,592,003	90
Dexter (V)	C										
	D	$17,563,086	200			$668,972	2	$33,913	6	$20,828,532	221
	E	$10,988,820	132			$9,814,120	3	$12,515	3	$25,496,392	166
Ellisburg	A	$3,371,254	80			$161,600	1	$44,295	7	$4,029,749	102
	B	$9,841,014	197			$205,390	4	$96,625	18	$11,748,114	259
	C	$41,564,830	592					$441,733	38	$56,671,084	708
	D	$36,698,283	659			$3,840,182	8	$226,178	30	$62,831,054	842
	E	$1,771,142	58			$84,195	2	$36,187	3	$2,838,453	79
Ellisburg (V)	A	$1,386,702	31					$1,644	1	$1,669,057	40
	C									$41,750	2
	D	$2,723,604	52					$2,612	1	$3,231,293	62
	E	$848,594	28					$10,344	2	$2,469,600	41
Evans Mills (V)	B	$7,898,534	94			$300,323	4	$800	1	$14,980,906	122
	C	$5,573,581	54			$127,164	1	$6,700	1	$7,226,191	61
	D	$4,636,385	49			$172,413	2	$4,200	2	$5,517,904	58
Glen Park (V) - Brownville	A	$12,139,396	153			$36,862,993	2	$67,782	6	$54,942,885	173
	D	$289,438	9			$2,340,782	1	$2,152	1	$3,442,955	14
Glen Park (V) - Pamelia	A	$268,361	8			$68,804	1			$1,350,521	15
	D	$156,654	2							$156,654	2
Henderson	A	$37,106,919	377			$844,642	3	$510,447	47	$43,455,313	473
	B	$993,902	17							$1,558,217	22
	C	$3,029,166	39							$4,493,977	63
	D	$115,729,289	937			$94,971	2	$1,299,403	95	$135,345,480	1137
	E	$1,611,737	29					$16,742	2	$1,754,161	36

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Soil Types

Municipality	Soil Type	Residential		Transportation		Utilities		Vacant		Total	
		Assessed Improvements	Improved Parcels by Category	Assessed Improvements	Improved Parcels by Category	Assessed Improvements	Improved Parcels by Category	Assessed Improvements	Improved Parcels by Category	Assessed Improvements	Improved Parcels by Category
Herrings (V)	C	$938,706	20			$3,664,093	1	$151,680	3	$4,754,479	24
	E	$1,958,494	30			$730,107	2	$1,720	2	$3,199,621	38
Hounsfield	A	$18,760,208	226			$76,791	3	$84,859	14	$23,901,709	287
	C	$14,232,254	116					$49,109	5	$14,746,588	131
	D	$59,268,610	637	$3,503,500	1	$305,785	4	$678,032	39	$79,964,096	777
	E	$2,678,619	59			$434,700	1	$10,098	3	$3,747,526	77
LeRay	A	$77,760	2							$5,545,453	8
	B	$371,580	6							$108,595,915	16
	C	$3,377,858	52			$23,029	2	$72,745	4	$615,808,055	84
	D	$134,275,000	810			$5,064,329	12	$264,751	33	$349,966,858	973
	E	$32,666,011	293			$15,461,014	9	$39,005	5	$100,866,600	337
Lorraine	A	$4,565,242	108			$128,399	1	$40,114	9	$5,803,657	137
	B	$6,629,714	157					$45,590	9	$7,176,156	183
	C	$6,931,912	170			$763	1	$34,291	14	$7,522,393	198
	D	$5,183,783	94			$161,710	1	$50,779	3	$7,278,646	109
Lyme	A	$70,294,702	756			$228,765	1	$1,152,031	79	$73,564,613	853
	C	$5,345,270	70					$8,896	3	$5,692,597	79
	D	$88,908,685	948			$1,265,318	6	$1,250,761	101	$101,230,151	1132
	E	$11,064,723	146			$82,041	1	$126,349	16	$13,788,320	198
Mannsville (V)	B	$583,313	15							$583,313	15
	C	$6,530,385	108			$61,409	1	$1,739	1	$15,621,180	124
	D	$2,211,303	46			$2,700	1	$21,261	1	$2,957,392	53
Orleans	A	$9,117,697	115					$66,199	8	$21,008,251	143
	B	$10,641,297	144	$15,457,422	1	$152,577	2	$94,300	9	$69,422,475	177
	C	$4,204,961	69			$622	1	$32,169	2	$4,824,124	81
	D	$87,830,685	1035	$55,401,404	2	$3,563,265	7	$931,083	74	$180,342,401	1277
	E	$819,309	29					$400	1	$1,113,880	41
Pamelia	A	$564,876	8			$240,587	1			$3,741,266	19
	D	$93,967,818	830			$2,328,719	8	$1,788,077	20	$167,066,598	1044
	E	$14,893,303	158			$7,297,300	4	$82,490	7	$28,665,780	207
Philadelphia	B	$444,754	12							$743,924	18
	C									$80,710	3
	D	$16,499,397	191			$1,025,270	6	$52,771	6	$69,352,025	256
	E	$4,310,349	53					$2,529	1	$4,493,811	62
Philadelphia (V)	D	$28,755,653	156			$5,941,777	4	$14,937	6	$38,105,729	179
	E	$8,972,847	125			$1,635,783	3	$65,263	6	$15,191,231	156
Rodman	A	$4,759,504	86			$5,150	1	$73,193	5	$6,077,810	107
	B	$14,529,047	237			$879,929	2	$163,019	18	$18,292,825	297
	C	$8,389,119	115			$7,889	1	$30,763	3	$11,817,571	145
	D	$1,206,364	21							$1,677,488	28
	E	$10,865	1			$35,783	1			$338,242	11

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Soil Types

Municipality	Soil Type	Residential		Transportation		Utilities		Vacant		Total	
		Assessed Improvements	Improved Parcels by Category	Assessed Improvements	Improved Parcels by Category	Assessed Improvements	Improved Parcels by Category	Assessed Improvements	Improved Parcels by Category	Assessed Improvements	Improved Parcels by Category
Rutland	A	$4,369,107	57			$133,931	2	$20,730	4	$4,772,176	79
	B	$29,261,930	322			$265,523	2	$67,629	11	$34,587,300	402
	C	$39,405,330	475			$2,942,008	10	$101,566	7	$47,050,357	546
	D	$773,129	17							$1,227,473	23
	E	$7,073	2					$21	1	$12,926	5
Sackets Harbor (V)	A	$7,885,811	108			$91,692	1	$6,125	3	$8,081,194	114
	D	$64,365,041	415			$2,849,175	4	$82,425	9	$89,708,417	489
Theresa	A	$11,912,223	118			$385,000	2	$4,550	3	$13,127,104	147
	C	$1,979,001	37			$44,625	1	$5,737	2	$2,369,773	51
	D	$61,088,960	891					$449,474	49	$69,260,787	1016
	E	$4,319,079	102					$9,415	8	$4,415,887	119
Theresa (V)	A	$21,884,197	283	$525	1	$3,539,154	6	$240,625	17	$33,137,530	345
	D	$29,478	2							$30,175	3
Watertown	A	$11,355,241	151			$597,096	1	$5,580	2	$20,125,156	177
	B	$15,792,390	165			$533,204	1	$49,793	6	$20,293,868	207
	C	$75,608,168	555			$4,659,006	8	$211,888	19	$281,358,697	702
	D	$54,734,357	458			$2,472,493	8	$226,173	23	$151,235,459	612
	E	$2,471,470	45					$30,932	4	$2,531,211	51
Watertown City	A	$841,417	12	$6,829	1	$922,595	3	$12,213	3	$4,588,711	22
	B	$18,518,525	94							$23,684,261	99
	C	$11,306,486	94			$2,887,166	4	$9,167	1	$40,595,183	118
	D	$592,358,962	5594	$1,033,679	4	$9,627,293	8	$519,938	72	$996,477,649	6232
	E	$77,749,891	1036	$155,157	1	$39,408,258	18	$250,597	37	$169,100,082	1283
West Carthage (V)	B	$37,463,274	364			$2,122,834	2	$49,656	5	$50,121,388	401
	C	$3,493,940	20					$435	1	$3,552,653	25
	D	$11,276,477	137					$3,798	2	$12,937,630	155
	E	$2,954,009	37			$4,567,566	4	$22,012	3	$11,047,229	55
Wilna	A									$0	0
	B	$8,492,218	109					$24,518	7	$8,868,729	125
	C	$25,210,858	358			$50,000	1	$159,299	17	$26,826,002	389
	D	$19,426,881	270			$2,941,376	2	$41,234	10	$24,270,748	305
	E	$10,324,843	146					$42,249	7	$10,718,097	160
Worth	A	$25,577	2							$58,689	5
	B	$2,306,817	68					$13,475	2	$2,711,469	84
	C	$5,761,446	191					$24,640	7	$6,556,634	220
	D	$29,506	5							$49,344	9
Grand Total		$3,690,621,940	38822	$75,613,316	13	$239,789,406	315	$24,452,584	1966	$6,812,976,104	46407

Landslide

low = Low Incidence
sus-mod = Moderate Susceptibility, Low Incidence

Municipality	Landslide Hazard Zone	Agriculture		Community Services/Institutional		Industrial		Office/General Business/Commercial		Parks/Open Space	
		Assessed Improvements	Improved Parcels by Category	Assessed Improvements	Improved Parcels by Category	Assessed Improvements	Improved Parcels by Category	Assessed Improvements	Improved Parcels by Category	Assessed Improvements	Improved Parcels by Category
Adams	low	$2,959,288	34	$41,495,844	14	$3,076,788	15	$19,341,192	58	$2,187,120	4
	sus-mod	$2,106,032	23	$268,632	2			$143,052	1		
Adams (V)	low	$42,432	3	$6,497,852	16	$7,507,812	8	$6,802,848	49	$89,388	1
Alexandria	low			$84,630	1			$1,323,055	3	$840,050	4
	no-data			$64,680	1			$813,185	3	$1,519,099	9
	sus-mod	$5,603,009	75	$1,996,575	9	$1,577,835	11	$16,654,902	75	$2,593,412	11
Alexandria Bay (V)	no-data			$3,868,935	1						
	sus-mod			$9,653,595	15	$1,165,500	2	$30,796,920	86	$6,437,655	11
Antwerp	low	$7,524,426	86	$1,539,902	7	$164,892	2	$270,452	7	$34,580	2
	sus-mod										
Antwerp (V)	low	$55,328	1	$6,528,158	10	$683,046	2	$709,072	16	$114,114	2
Black River (V) - LeRay	low			$11,056,100	6			$680,100	7	$343,000	1
Black River (V) - Rutland	low	$230,310	1	$730,350	7	$193,725	2	$1,714,786	9		
Brownville	low	$1,639,324	21	$371,445	3	$68,620	1	$124,830	2	$24,674	1
	no-data	$2,067	2							$1	1
	sus-mod	$2,508,075	33	$16,384,973	7	$350,254	4	$1,155,298	10	$330,835	5
Brownville (V)	low	$277,108	1	$4,227,284	8	$1,617,242	5	$2,088,238	15		
Cape Vincent	low										
	no-data	$11,905	4	$207,344	1			$3,832	1	$184,305	3
	sus-mod	$7,872,023	69	$111,419,859	16	$1,178,424	8	$1,929,320	11	$2,553,963	8
Cape Vincent (V)	no-data									$293	1
	sus-mod			$4,912,440	10	$314,028	5	$4,610,580	32	$1,852,519	9
Carthage (V)	low			$31,231,800	22	$5,466,700	15	$13,743,000	85	$1,426,500	4
Champion	low	$6,140,700	48	$51,416,700	16	$1,074,900	7	$3,080,100	16	$55,900	1
Chaumont (V)	no-data										
	sus-mod			$6,875,070	9	$24,240	1	$4,858,302	25	$742,653	5
Clayton	low	$2,210,167	27	$53,900	2			$219,000	2		
	no-data	$112,705	5	$183,200	4			$185,029	2	$51,900	1
	sus-mod	$5,629,628	60	$1,831,600	11	$1,564,500	15	$6,778,271	33	$2,103,700	7
Clayton (V)	no-data			$42,136	1			$575,000	1	$329,483	2
	sus-mod			$15,644,264	17	$3,095,700	10	$21,485,000	89	$4,117,417	14
Deferiet (V)	low			$1,932,100	6	$474,000	1	$40,300	1	$320,100	1
Dexter (V)	no-data			$1,283,320	6	$1,904,496	2	$1,528,036	16	$75,482	4
	sus-mod			$1,535,648	6	$111,618	2	$631,742	3	$173,156	1

Landslide

low = Low Incidence
sus-mod = Moderate Susceptibility, Low Incidence

Municipality	Landslide Hazard Zone	Agriculture		Community Services/Institutional		Industrial		Office/General Business/Commercial		Parks/Open Space	
		Assessed Improvements	Improved Parcels by Category	Assessed Improvements	Improved Parcels by Category	Assessed Improvements	Improved Parcels by Category	Assessed Improvements	Improved Parcels by Category	Assessed Improvements	Improved Parcels by Category
Ellisburg	low	$1,322,568	21	$1,260,300	6	$71,028	3	$2,720,100	15	$1,000	1
	no-data									$1,002	1
	sus-mod	$18,992,833	100	$12,969,000	10	$90,072	4	$1,248,500	15	$1,066,298	9
Ellisburg (V)	sus-mod	$358,700	5	$1,713,700	8	$8,300	1	$340,700	5	$16,800	1
Evans Mills (V)	low	$98,900	1	$6,473,700	9	$238,000	4	$2,135,000	11	$59,300	1
Glen Park (V) - Brownville	low	$78,402	1	$6,317,128	4			$221,482	6	$66,284	1
Glen Park (V) - Pamelia	low					$347,360	3	$286,071	2	$379,925	1
Henderson	no-data	$11	1	$10,140	1			$3,541,404	1	$213,559	2
	sus-mod	$8,653,465	49	$2,098,642	14	$375,011	8	$5,538,205	27	$5,425,802	21
Herrings (V)	low			$219,600	1			$283,000	2	$6,700	1
Hounsfield	low	$2,611,502	23	$1,188,992	4	$6,389,775	9	$1,214,150	4	$83,300	1
	no-data	$1,519	1	$136,195	3					$28,753	2
	sus-mod	$4,648,428	33	$960,400	6	$423,325	3	$3,551,275	22	$1,099,472	8
LeRay	low	$4,221,000	52	$946,258,699	13	$2,593,200	10	$35,466,800	61	$550,100	3
Lorraine	low	$2,673,777	22	$720,073	8	$172,422	1	$412,206	3	$30,076	2
Lyme	no-data	$219,447	16	$93,930	2	$33,194	1	$63,859	2	$1,000,822	6
	sus-mod	$6,897,114	56	$1,431,978	5	$58,615	2	$1,710,812	15	$3,192,092	13
Mannsville (V)	low			$7,809,745	8	$61,000	2	$405,600	6	$2,500	1
	sus-mod			$1,470,930	1						
Orleans	low	$4,208,580	39	$861,900	7	$1,295,611	6	$55,407,864	15	$1,905,446	7
	no-data			$3,305,800	3	$254,000	6	$22,145,136	7	$528,854	2
	sus-mod	$1,895,720	24	$9,125,700	14	$3,498,889	10	$4,951,700	42	$2,304,400	14
Pamelia	low	$3,933,852	38	$16,725,551	13	$23,643,359	49	$25,532,797	92	$8,474,916	12
Philadelphia	low	$4,510,100	37	$45,468,600	2	$98,600	1	$2,218,100	12	$40,000	1
Philadelphia (V)	low			$4,217,200	10	$634,600	4	$2,929,800	15	$129,100	2
Rodman	low	$6,487,146	47	$1,485,466	7	$77,250	1	$29,149	1	$34,299	3
Rutland	low	$6,046,650	65	$1,706,535	8	$731,295	5	$1,817,100	20	$675	1
Sackets Harbor (V)	no-data			$12,331	2			$91,759	2	$1,693,650	5
	sus-mod	$361,069	5	$12,496,494	13	$175,525	2	$8,055,104	31	$383,075	4
Theresa	low	$2,034,929	30	$875	1	$222,461	2	$1,379,152	7	$120,050	5
	sus-mod	$1,221,996	19	$11,375	1	$693,752	3	$2,403,823	11	$887,075	12
Theresa (V)	low	$255,850	1	$5,469,450	13	$20,650	2	$1,721,825	20	$5,950	2
Watertown	low	$2,954,455	27	$165,800,230	19	$33,342,360	38	$104,336,080	144	$363,475	4
Watertown City	low			$221,229,655	89	$31,221,772	97	$218,870,066	511	$7,516,219	9
West Carthage (V)	low	$29,700	1	$2,657,800	9	$1,725,700	5	$11,228,000	32	$63,700	1
Wilna	low	$728,200	8	$1,639,500	11	$146,000	2	$1,401,700	17	$54,700	2
Worth	low	$841,995	12	$107,030	2					$265,650	11
Grand Total		$131,212,435	1,227	$1,816,792,981	561	$140,257,445	402	$665,943,761	1,834	$66,496,318	285

Landslide

Municipality	Landslide Hazard Zone	Residential		Transportation		Utilities		Vacant		Total	
		Assessed Improvements	Improved Parcels by Category	Assessed Improvements	Improved Parcels by Category	Assessed Improvements	Improved Parcels by Category	Assessed Improvements	Improved Parcels by Category	Assessed Improvements	Improved Parcels by Category
Adams	low	$87,804,101	831			$944,229	8	$338,137	28	$158,146,699	992
	sus-mod	$13,605,103	192			$1,434,765	3	$25,811	4	$17,583,395	225
Adams (V)	low	$52,805,064	543			$2,165,124	6	$67,080	6	$75,977,600	632
Alexandria	low	$24,703,248	174					$366,886	30	$27,317,869	212
	no-data	$58,939,783	328			$105	1	$396,044	20	$61,732,895	362
	sus-mod	$139,926,881	1,517			$233,415	2	$1,673,805	104	$170,259,834	1,804
Alexandria Bay (V)	no-data	$5,845,421	17					$99,540	2	$9,813,896	20
	sus-mod	$43,236,401	434			$806,505	2	$448,770	27	$92,545,346	577
Antwerp	low	$24,893,438	339			$200,382	2	$386,966	20	$35,015,038	465
	sus-mod	$636,885	9					$28,904	2	$665,789	11
Antwerp (V)	low	$14,248,962	221			$418,929	5	$24,934	4	$22,782,543	261
Black River (V) - LeRay	low	$32,129,900	259			$770,900	3	$11,500	1	$44,991,500	277
Black River (V) - Rutland	low	$15,140,682	152			$6,010,875	2	$5,265	3	$24,025,993	176
Brownville	low	$52,709,574	494			$2,038,954	7	$106,856	13	$57,084,277	542
	no-data	$5,924,307	127					$44,857	15	$5,971,232	145
	sus-mod	$109,878,736	1,203			$729,423	3	$893,793	119	$132,231,386	1,384
Brownville (V)	low	$35,665,902	337			$783,290	3	$79,862	10	$44,738,926	379
Cape Vincent	low	$3,638,663	36					$210,082	24	$3,848,745	60
	no-data	$16,639,605	251					$386,106	42	$17,433,097	302
	sus-mod	$106,488,268	1,121			$8,474,856	9	$1,164,116	133	$241,080,829	1,375
Cape Vincent (V)	no-data	$2,917	1							$3,210	2
	sus-mod	$40,487,039	387			$2,035,800	4	$171,600	17	$54,384,006	464
Carthage (V)	low	$92,347,400	860	$54,800	2	$3,760,020	7	$82,300	22	$148,112,520	1,017
Champion	low	$93,001,900	889			$3,298,000	8	$354,800	30	$158,423,000	1,015
Chaumont (V)	no-data	$6,538	2							$6,538	2
	sus-mod	$27,425,870	228			$540,552	2	$103,020	5	$40,569,707	275
Clayton	low	$17,292,410	181					$148,136	10	$19,923,613	222
	no-data	$74,416,805	427					$508,134	27	$75,457,773	466
	sus-mod	$151,790,321	1,251			$1,958,484	8	$2,956,230	98	$174,612,734	1,483
Clayton (V)	no-data	$10,633,983	44			$106,200	1	$120,130	8	$11,806,932	57
	sus-mod	$79,034,317	669			$1,738,000	4	$1,156,870	33	$126,271,568	836
Deferiet (V)	low	$10,130,200	114			$13,954,100	1			$26,850,800	124
Dexter (V)	no-data	$8,881,828	126			$9,141,741	3	$12,410	2	$22,827,314	159
	sus-mod	$19,670,078	218			$1,341,351	3	$34,018	6	$23,497,610	239

Landslide

Municipality	Landslide Hazard Zone	Residential		Transportation		Utilities		Vacant		Total	
		Assessed Improvements	Improved Parcels by Category	Assessed Improvements	Improved Parcels by Category	Assessed Improvements	Improved Parcels by Category	Assessed Improvements	Improved Parcels by Category	Assessed Improvements	Improved Parcels by Category
Ellisburg	low	$21,966,151	309			$3,920,100	4	$241,600	20	$31,502,847	379
	no-data	$1,845,993	30					$1,376	1	$1,848,370	32
	sus-mod	$69,856,705	973			$371,267	7	$609,624	54	$105,204,300	1,172
Ellisburg (V)	sus-mod	$4,958,900	82					$14,600	2	$7,411,700	104
Evans Mills (V)	low	$18,108,500	184			$599,900	4	$11,700	4	$27,725,000	218
Glen Park (V) - Brownville	low	$12,428,834	154			$39,203,775	2	$69,934	6	$58,385,839	174
Glen Park (V) - Pamelia	low	$425,015	8			$68,804	1			$1,507,175	15
Henderson	no-data	$23,375,881	262					$125,591	17	$27,266,586	284
	sus-mod	$138,877,310	1,184			$939,613	4	$1,838,189	130	$163,746,237	1,437
Herrings (V)	low	$2,897,200	42			$4,394,200	2	$153,400	4	$7,954,100	52
Hounsfield	low	$18,740,965	171	$1,549,055	1	$218,750	1	$74,620	5	$32,071,110	219
	no-data	$5,754,847	77			$12,976	1	$150,502	6	$6,084,792	90
	sus-mod	$73,409,774	657	$1,954,445	1	$585,550	5	$699,053	43	$87,331,723	778
LeRay	low	$170,768,209	1,096			$20,548,372	19	$376,500	37	$1,180,782,880	1,291
Lorraine	low	$23,310,651	402			$290,872	2	$170,774	26	$27,780,851	466
Lyme	no-data	$62,298,480	835			$228,765	1	$694,280	78	$64,632,778	941
	sus-mod	$115,217,706	1,282			$1,347,359	6	$1,857,889	138	$131,713,564	1,517
Mannsville (V)	low	$7,792,356	121			$64,109	2	$23,000	1	$16,158,310	141
	sus-mod	$1,532,644	29							$3,003,574	30
Orleans	low	$32,823,104	435	$4,909,232	1	$147,000	1	$226,160	26	$101,784,897	537
	no-data	$25,360,286	232	$44,090,768	1	$100	1	$519,007	29	$96,203,950	281
	sus-mod	$61,369,911	714	$21,922,701	1	$3,609,600	6	$712,733	45	$109,391,354	870
Pamelia	low	$109,425,997	953			$9,866,605	12	$1,870,567	24	$199,473,644	1,193
Philadelphia	low	$21,254,500	225			$1,025,270	6	$55,300	6	$74,670,470	290
Philadelphia (V)	low	$37,728,500	251			$7,577,560	5	$80,200	11	$53,296,960	298
Rodman	low	$28,894,899	403			$928,751	4	$266,976	24	$38,203,936	490
Rutland	low	$73,816,569	789			$3,341,462	12	$189,945	16	$87,650,231	916
Sackets Harbor (V)	no-data	$3,754,920	28			$108,240	1	$16,625	1	$5,677,526	39
	sus-mod	$70,294,825	513			$2,886,185	5	$71,925	11	$94,724,201	584
Theresa	low	$34,063,433	412			$429,625	3	$77,716	17	$38,328,241	477
	sus-mod	$45,235,831	636					$391,459	40	$50,845,310	722
Theresa (V)	low	$21,913,675	283	$525	1	$3,539,154	6	$240,625	17	$33,167,705	345
Watertown	low	$159,961,627	1,184			$8,261,799	13	$524,365	43	$475,544,391	1,472
Watertown City	low	$700,775,281	6,619	$1,195,665	4	$52,845,312	24	$791,915	109	$1,234,445,885	7,462
West Carthage (V)	low	$55,187,700	504			$6,690,400	4	$75,900	8	$77,658,900	564
Wilna	low	$63,454,800	754			$2,991,376	3	$267,300	32	$70,683,576	829
Worth	low	$8,123,346	224					$38,115	8	$9,376,136	257
Grand Total		$3,796,987,850	37,039	$75,677,191	12	$239,928,853	264	$25,936,428	1,904	$6,959,233,262	43,528

Wildfire

Municipality	Wildfire Hazard Area	Agriculture		Community Services/Institutional		Industrial		Office/General Business/Commercial		Parks/Open Space	
		Assessed Improvements	Improved Parcels By Category	Assessed Improvements	Improved Parcels By Category	Assessed Improvements	Improved Parcels By Category	Assessed Improvements	Improved Parcels By Category	Assessed Improvements	Improved Parcels By Category
Adams	Forest	$517,290	42	$1,564,605	6	$379,350	10	$753,847	13	$40,633	2
	Grassland	$193,524	26	$2,445,510	5	$61,648	4	$775,164	15	$716,225	2
	Shrub	$351,465	42	$1,481,822	6	$262,753	11	$810,151	15	$8,728	1
Adams (V)	Forest	$594	1	$695,117	4	$1,467,255	2	$243,413	5		
	Grassland			$396	1	$622,066	1				
	Shrub	$150	2	$89,721	3	$1,233,239	1	$235,782	5		
Alexandria	Forest	$998,366	67	$253,102	5	$69,340	3	$2,337,619	30	$1,305,941	15
	Grassland	$154,200	49	$86,534	4	$32,639	3	$952,913	19	$202,454	9
	Shrub	$132,806	56	$6,607	1	$17,244	3	$729,568	14	$310,879	8
Alexandria Bay (V)	Forest			$28,030	4			$514,373	3		
	Grassland			$2,906	1						
	Shrub							$22,897	1		
Antwerp	Forest	$1,870,378	86	$361,870	3	$66,463	2	$80,320	4	$11,361	1
	Grassland	$412,196	59	$329,110	3	$3,458	1			$1,775	1
	Shrub	$108,009	48	$87,558	4	$5,420	2	$12,044	1		
Antwerp (V)	Forest	$17,838	1	$364,313	3	$217,119	2			$17,137	2
	Grassland	$17,909	1	$67,045	1					$3,576	1
	Shrub			$763,534	2			$6,286	1	$10,383	1
Black River (V) - LeRay	Forest			$1,177,672	3			$3,405	1	$119,350	1
	Grassland									$16,138	1
	Shrub										
Black River (V) - Rutland	Forest	$6,373	1	$1,921	1						
	Grassland			$111,459	2	$153	1	$12,639	1		
	Shrub	$48,751	1	$1,986	1			$332,501	2		
Brownville	Forest	$469,885	46	$1,032,596	2	$59,316	1	$87,497	3	$14,193	3
	Grassland	$82,740	23	$647	1			$61	1	$0	0
	Shrub	$512,019	48	$655,892	5	$56,161	2	$67,277	3	$15,795	3
Brownville (V)	Forest	$957	1								
	Grassland										
	Shrub	$12,508	1					$1,834	1		
Cape Vincent	Forest	$557,675	58	$2,583,734	6			$49,831	3	$100,812	4
	Grassland	$188,501	24	$14,883	2	$90,084	2	$54,402	1	$173,629	2
	Shrub	$606,853	58	$288,562	4	$16,548	2	$79,190	2	$26,363	2
Cape Vincent (V)	Forest										
	Grassland			$9,230	1					$620	1
	Shrub										
Carthage (V)	Forest			$1,065,697	7	$35,210	4	$276,572	6	$437,990	3
	Grassland										
	Shrub			$167,570	3	$826	1	$215,158	4	$125,978	2
Champion	Forest	$889,146	42	$5,710,637	5	$42,338	4	$428,410	4	$8,239	1
	Grassland	$94,327	23	$548,445	1	$49,411	3	$191,756	2		
	Shrub	$449,929	46	$3,983,321	6	$62,504	4	$98,051	5	$7,568	1
Chaumont (V)	Forest			$174,570	2			$76,661	1		
	Grassland										
	Shrub			$767,887	3			$589,811	6		
Clayton	Forest	$1,525,717	73	$174,741	10	$92,665	7	$1,584,469	19	$257,990	5
	Grassland	$468,745	49	$122,496	4	$134,395	5	$517,231	14	$39,703	2
	Shrub	$493,194	63	$23,563	4	$9,686	2	$191,440	8	$47,325	2

Wildfire

Municipality	Wildfire Hazard Area	Agriculture		Community Services/Institutional		Industrial		Office/General Business/Commercial		Parks/Open Space	
		Assessed Improvements	Improved Parcels By Category	Assessed Improvements	Improved Parcels By Category	Assessed Improvements	Improved Parcels By Category	Assessed Improvements	Improved Parcels By Category	Assessed Improvements	Improved Parcels By Category
Clayton (V)	Forest			$744	2			$12,780	1	$37,537	2
	Grassland			$1,112,365	3	$13,392	1	$745,222	1		
	Shrub			$286,493	1			$105,472	1	$36,070	2
Deferiet (V)	Forest			$242,188	2	$29,193	1			$124,810	1
	Grassland			$1,585	1	$20,745	1			$85,804	1
	Shrub					$29,910	1				
Dexter (V)	Forest					$132,879	1			$3,641	1
	Shrub					$448,162	2	$54,456	1		
Ellisburg	Forest	$2,078,822	95	$298,562	4	$45,355	4	$548,869	12	$49,633	7
	Grassland	$276,125	52	$0	0			$97,641	3	$38,555	6
	Shrub	$1,154,473	102	$256,839	3	$18,161	5	$291,244	11	$108,813	8
Ellisburg (V)	Forest	$1,428	2								
	Grassland										
	Shrub			$242,945	5					$4,775	1
Evans Mills (V)	Forest	$15,748	1	$31,311	1	$39,702	2	$145,688	1	$3,741	1
	Grassland	$15,155	1	$200,324	1	$3,572	2	$27,927	2	$4,334	1
	Shrub					$1,743	1			$1,609	1
Glen Park (V) - Brownville	Forest			$199,203	2					$1,092	1
	Grassland										
	Shrub	$2,729	1	$217,644	3			$8,158	3	$7,005	1
Glen Park (V) - Pamelia	Forest										
	Grassland										
	Shrub					$2,468	1			$123,496	1
Henderson	Forest	$1,159,156	44	$200,332	2	$59,443	5	$378,923	7	$936,433	7
	Grassland	$69,239	23	$140,637	1	$83	1	$246,776	3	$78,823	3
	Shrub	$1,330,029	43	$97,640	7	$30,586	5	$1,168,179	11	$1,124,370	10
Herrings (V)	Forest			$132,280	1			$1,580	1	$2,908	1
	Grassland										
	Shrub									$2,118	1
Hounsfield	Forest	$392,024	45	$98,358	2	$272,404	4	$344,620	7	$123,185	7
	Grassland	$161,667	23	$143,617	4	$1,934	1	$176,643	5	$40,301	6
	Shrub	$389,865	46	$493,172	6	$149,115	3	$474,857	14	$302,722	8
LeRay	Forest	$571,142	45	$380,222,791	9	$366,956	5	$2,390,845	20	$128,905	3
	Grassland	$114,520	23	$99,557,633	4	$85,101	2	$138,246	2	$89,695	1
	Shrub	$23,074	23	$48,420,282	3	$102,574	3	$1,229,558	19	$9,475	2
Lorraine	Forest	$753,792	21	$100,498	3					$17,193	2
	Grassland	$49,292	12					$32,568	1	$8,687	1
	Shrub	$175,897	22	$62,885	4			$21,140	1	$387	1
Lyme	Forest	$734,360	51			$71,612	1	$28,903	2	$387,717	7
	Grassland	$109,738	12							$86,398	2
	Shrub	$359,272	52			$263	1	$63,468	3	$245,100	5
Mannsville (V)	Forest			$2,271,465	4	$16,179	1	$2,108	1		
	Grassland										
	Shrub			$882,873	1						
Orleans	Forest	$717,256	52	$727,649	9	$868,325	4	$11,395,170	15	$1,770,946	11
	Grassland	$191,261	26	$90,116	4	$721,911	6	$1,871,877	23	$236,691	8
	Shrub	$95,808	31	$3,757	1	$74,018	3	$1,527,570	9	$183,706	6

Wildfire

Municipality	Wildfire Hazard Area	Agriculture		Community Services/Institutional		Industrial		Office/General Business/Commercial		Parks/Open Space	
		Assessed Improvements	Improved Parcels By Category	Assessed Improvements	Improved Parcels By Category	Assessed Improvements	Improved Parcels By Category	Assessed Improvements	Improved Parcels By Category	Assessed Improvements	Improved Parcels By Category
Pamelia	Forest	$467,542	33	$957,114	6	$1,138,244	17	$1,132,537	24	$1,004,139	6
	Grassland	$21,519	9	$744,532	2	$45,139	6	$383,742	13	$707	1
	Shrub	$129,193	27	$322,255	2	$219,464	10	$381,249	15	$25,272	3
Philadelphia	Forest	$678,771	30	$3,467,843	2	$642	1	$19,813	2	$17,252	1
	Grassland	$49,874	19					$7,378	1		
	Shrub	$56,937	18							$729	1
Philadelphia (V)	Forest			$378,638	2	$6,597	1	$986	3	$9,070	1
	Grassland			$245,938	2	$83	1	$31,027	1		
	Shrub							$14,653	1		
Rodman	Forest	$1,307,943	43	$4,023	1	$3,938	1			$18,639	2
	Grassland	$102,688	24	$21,577	1						
	Shrub	$544,359	44	$71,310	2	$6,477	1			$3,865	2
Rutland	Forest	$775,232	62	$93,441	2	$119,869	2	$189,595	9	$398	1
	Grassland	$161,926	23	$105,626	1			$754	1		
	Shrub	$600,428	62	$159,302	3	$25,707	3	$242,901	8	$55	1
Sackets Harbor (V)	Forest	$1,012	3	$55,747	2	$22,720	1				
	Grassland	$14,167	2			$99	1				
	Shrub	$34,369	5	$92,067	2	$22,367	1	$32,901	2	$44,637	1
Theresa	Forest	$927,420	43	$6,692	1	$35,719	3	$620,844	8	$539,735	15
	Grassland	$126,228	32	$2,946	2	$12,599	1	$268,608	4	$26,793	7
	Shrub	$65,894	35	$89	1	$53,300	2	$56,872	2	$14,852	7
Theresa (V)	Forest	$109,447	1	$1,729,963	5			$63,376	3	$1,801	1
	Grassland			$97,603	6			$14,685	2	$448	1
	Shrub	$11,509	1	$1,298	1			$1,220	1		
Watertown	Forest	$264,729	25	$16,815,129	8	$1,989,171	14	$1,510,882	38	$59,649	2
	Grassland	$136,989	12	$240,583	2	$768,409	8	$3,701,033	18	$34,271	2
	Shrub	$257,083	25	$9,195,872	10	$1,419,106	15	$2,717,421	43	$85,037	4
Watertown City	Forest			$2,160,135	6	$335,826	5	$1,600,993	14	$194,111	2
	Grassland			$4,620,630	8	$110,065	1	$106,866	1	$239,020	3
	Shrub			$2,309,663	9	$652,393	9	$2,203,060	13	$345,268	2
West Carthage (V)	Forest	$3,931	1	$6,690	3			$112,365	3	$8,052	1
	Grassland	$12,080	1	$1,841	2	$1,506	1			$27,132	1
	Shrub	$2,721	1	$145,143	2	$47,348	3	$7,398	1		
Wilna	Forest	$170,639	7	$288,878	6			$323,331	8	$37,326	2
	Grassland	$62,330	6	$12,868	2			$65,775	4	$5,545	1
	Shrub	$35,958	5	$103,962	3			$5,176	2	$6,204	2
Worth	Forest	$364,575	12	$50,668	2					$195,267	11
	Grassland	$13,856	6							$217	2
	Shrub	$22,110	12	$1,623	1					$9,894	6
Totals		$29,657,373	2,514	$608,493,165	332	$15,729,866	258	$51,680,501	638	$13,382,845	295

Wildfire

Municipality	Wildfire Hazard Area	Residential		Transportation		Utilities		Vacant		Total	
		Assessed Improvements	Improved Parcels By Category	Assessed Improvements	Improved Parcels By Category	Assessed Improvements	Improved Parcels By Category	Assessed Improvements	Improved Parcels By Category	Assessed Improvements	Improved Parcels By Category
Adams	Forest	$10,508,592	387			$991,220	5	$47,233	13	$14,802,770	478
	Grassland	$7,952,033	270			$142	2	$39,572	7	$12,183,817	331
	Shrub	$9,997,960	403			$275,353	3	$40,450	14	$13,228,682	495
Adams (V)	Forest	$1,754,098	65					$860	2	$4,161,338	79
	Grassland	$2,130,029	51			$99,962	1	$10,001	2	$2,862,454	57
	Shrub	$2,325,796	84					$495	1	$3,885,183	96
Alexandria	Forest	$49,009,103	1,034			$27,823	2	$859,856	90	$54,861,151	1,246
	Grassland	$13,682,987	428			$10,804	1	$191,418	25	$15,313,949	538
	Shrub	$6,734,309	304			$1,477	1	$24,017	12	$7,956,906	399
Alexandria Bay (V)	Forest	$1,056,556	23							$1,598,959	30
	Grassland	$157,371	8							$160,277	9
	Shrub	$232,881	7							$255,779	8
Antwerp	Forest	$6,034,699	197			$34,594	2	$126,220	17	$8,585,905	312
	Grassland	$1,947,350	107					$21,322	9	$2,715,210	180
	Shrub	$417,014	79					$29,313	6	$659,358	140
Antwerp (V)	Forest	$2,129,265	68			$147,458	3	$2,994	2	$2,896,124	81
	Grassland	$825,164	45			$57,814	1	$5,675	1	$977,182	50
	Shrub	$379,569	27			$27,461	2			$1,187,234	33
Black River (V) - LeRay	Forest	$2,518,460	67			$117,168	1	$566	1	$3,936,621	74
	Grassland	$1,633,852	38							$1,649,990	39
	Shrub	$305,802	23			$79,052	2	$9,051	1	$393,906	26
Black River (V) - Rutland	Forest	$1,830,644	41			$15,733	2	$72	1	$1,854,743	46
	Grassland	$750,357	26							$874,609	30
	Shrub	$2,268,591	54			$1,955,537	2	$561	1	$4,607,927	61
Brownville	Forest	$18,026,966	573			$534,235	5	$143,498	41	$20,368,185	674
	Grassland	$1,607,594	89			$6,939	1	$1,156	4	$1,699,137	119
	Shrub	$9,803,488	492			$288,654	7	$71,631	43	$11,470,917	603
Brownville (V)	Forest	$18,201	2							$19,158	3
	Grassland	$178,912	5							$178,912	5
	Shrub	$608,837	28							$623,179	30
Cape Vincent	Forest	$9,060,451	296			$15,165	1	$193,646	53	$12,561,314	421
	Grassland	$7,871,653	169			$15,611	2	$277,659	46	$8,686,421	248
	Shrub	$4,558,817	207			$1,048,108	4	$91,528	41	$6,715,968	320
Cape Vincent (V)	Forest	$618,858	22							$618,858	22
	Grassland	$886,718	29							$896,568	31
	Shrub	$225,759	8			$351,113	1			$576,872	9
Carthage (V)	Forest	$9,706,201	242	$8,209	1	$434,349	2	$19,934	6	$11,984,162	271
	Grassland	$278,935	14							$278,935	14
	Shrub	$3,730,699	82	$9,140	1	$2,125	2	$5,201	3	$4,256,695	98
Champion	Forest	$13,678,722	441			$1,091,673	5	$103,676	21	$21,952,842	523
	Grassland	$4,961,809	166					$10,396	7	$5,856,143	202
	Shrub	$11,204,886	412			$344,638	3	$10,614	16	$16,161,511	493
Chaumont (V)	Forest	$591,806	17					$9,740	1	$852,776	21
	Grassland	$309,054	8							$309,054	8
	Shrub	$824,703	29			$36,095	2			$2,218,495	40
Clayton	Forest	$58,915,762	992			$360,718	5	$1,421,138	66	$64,333,201	1,177
	Grassland	$17,669,120	434			$32,984	2	$154,522	39	$19,139,196	549
	Shrub	$12,134,229	423			$36,186	4	$87,832	30	$13,023,456	536

Wildfire

Municipality	Wildfire Hazard Area	Residential		Transportation		Utilities		Vacant		Total	
		Assessed Improvements	Improved Parcels By Category	Assessed Improvements	Improved Parcels By Category	Assessed Improvements	Improved Parcels By Category	Assessed Improvements	Improved Parcels By Category	Assessed Improvements	Improved Parcels By Category
Clayton (V)	Forest	$2,753,673	34			$67,099	1	$213,253	3	$3,085,086	43
	Grassland	$1,858,163	32			$22,754	1	$7,367	3	$3,759,264	41
	Shrub	$718,865	9			$22,352	1	$35,990	3	$1,205,241	17
Deferiet (V)	Forest	$1,206,931	16			$2,788,133	1			$4,391,254	21
	Grassland	$45,547	3			$622	1			$154,302	7
	Shrub	$353,286	14			$895,937	1			$1,279,134	16
Dexter (V)	Forest	$927,978	23					$140	1	$1,064,639	26
	Shrub	$462,303	20			$316,076	1	$108	1	$1,281,105	25
Ellisburg	Forest	$11,915,075	468			$869,565	7	$150,770	32	$15,956,651	629
	Grassland	$2,866,343	173			$28,537	2	$116,868	16	$3,424,068	252
	Shrub	$9,456,530	531			$325,193	4	$130,081	37	$11,741,334	701
Ellisburg (V)	Forest	$41,472	8							$42,900	10
	Grassland	$88,648	4							$88,648	4
	Shrub	$191,150	16					$3,108	2	$441,977	24
Evans Mills (V)	Forest	$1,064,274	52			$20,847	1	$1,105	2	$1,322,417	61
	Grassland	$870,908	31			$78,631	1	$2,192	1	$1,203,045	40
	Shrub	$814,654	20							$818,006	22
Glen Park (V) - Brownville	Forest	$116,560	6			$17,200	1			$334,056	10
	Grassland	$3,327	1							$3,327	1
	Shrub	$567,492	19			$3,809,383	1			$4,612,411	28
Glen Park (V) - Pamelia	Forest	$7,360	1							$7,360	1
	Grassland	$83,313	4							$83,313	4
	Shrub	$17,243	2			$14,148	1			$157,355	5
Henderson	Forest	$28,755,002	537			$584,760	1	$160,881	46	$32,234,930	649
	Grassland	$1,333,715	61					$15,084	6	$1,884,356	98
	Shrub	$20,414,037	483			$70,960	1	$154,600	40	$24,390,399	600
Herrings (V)	Forest	$422,693	20			$826,146	2	$109,906	4	$1,495,514	29
	Grassland	$51,428	2							$51,428	2
	Shrub	$316,712	8			$152,710	1	$96	1	$471,637	11
Hounsfield	Forest	$11,361,950	338	$168,638	1	$54	1	$250,631	20	$13,011,865	425
	Grassland	$6,082,330	171	$590,258	1			$4,604	5	$7,201,353	216
	Shrub	$12,766,531	391	$537,608	1	$634	2	$77,963	21	$15,192,467	492
LeRay	Forest	$22,964,883	466			$4,144,420	9	$50,262	23	$410,840,204	580
	Grassland	$4,818,467	136			$836,781	4	$13,093	8	$105,653,536	180
	Shrub	$7,806,713	170			$3,588,150	5	$3,527	7	$61,183,353	232
Lorraine	Forest	$7,262,950	282			$32,440	1	$30,552	18	$8,197,424	327
	Grassland	$832,099	70			$22,560	1	$8,341	5	$953,546	90
	Shrub	$2,463,280	198			$56,863	1	$3,401	12	$2,783,853	239
Lyme	Forest	$14,716,203	418			$109,383	2	$603,897	53	$16,652,075	534
	Grassland	$1,012,039	52			$92,775	1	$725	3	$1,301,675	70
	Shrub	$7,617,214	330			$233,162	2	$55,142	25	$8,573,622	418
Mannsville (V)	Forest	$1,001,588	56			$459	1	$2,298	1	$3,294,097	64
	Grassland										
	Shrub	$856,510	45							$1,739,383	46
Orleans	Forest	$23,964,854	557	$1,567,164	2	$1,537,383	6	$236,495	40	$42,785,243	696
	Grassland	$10,331,764	327	$1,369,551	1	$57,230	1	$103,417	29	$14,973,820	425
	Shrub	$2,835,865	162			$1,345	2	$48,896	15	$4,770,965	229

Wildfire

Municipality	Wildfire Hazard Area	Residential		Transportation		Utilities		Vacant		Total	
		Assessed Improvements	Improved Parcels By Category	Assessed Improvements	Improved Parcels By Category	Assessed Improvements	Improved Parcels By Category	Assessed Improvements	Improved Parcels By Category	Assessed Improvements	Improved Parcels By Category
Pamelia	Forest	$11,797,539	343			$887,565	4	$212,670	15	$17,597,349	448
	Grassland	$2,304,489	99			$7,278	2	$445,277	6	$3,952,683	138
	Shrub	$5,280,010	226			$269,230	4	$68,538	7	$6,695,210	294
Philadelphia	Forest	$3,108,202	90			$224,792	3	$19,246	3	$7,536,561	132
	Grassland	$315,470	21			$946	1	$906	3	$374,575	45
	Shrub	$355,934	24					$411	3	$414,011	46
Philadelphia (V)	Forest	$5,519,905	51			$1,244,244	4	$14,448	3	$7,173,888	65
	Grassland	$809,903	15					$1,577	1	$1,088,529	20
	Shrub	$176,094	11							$190,747	12
Rodman	Forest	$6,693,818	225			$428,939	2	$83,187	17	$8,540,486	291
	Grassland	$992,470	67			$23,946	1	$8,737	3	$1,149,417	96
	Shrub	$2,226,468	174			$58,666	1	$56,424	14	$2,967,570	238
Rutland	Forest	$13,694,956	417			$335,596	7	$75,410	10	$15,284,497	510
	Grassland	$3,738,170	124			$9,551	1	$676	3	$4,016,703	153
	Shrub	$9,922,604	349			$513,386	9	$9,532	7	$11,473,912	442
Sackets Harbor (V)	Forest	$2,031,177	50			$137,203	2			$2,247,859	58
	Grassland	$101,807	5							$116,073	8
	Shrub	$3,739,253	66			$151,531	1			$4,117,125	78
Theresa	Forest	$31,759,316	776			$145,705	3	$199,483	49	$34,234,914	898
	Grassland	$3,955,747	222			$821	1	$10,754	13	$4,404,495	282
	Shrub	$1,828,668	150			$16,873	2	$29,195	15	$2,065,743	214
Theresa (V)	Forest	$2,940,818	96			$61,426	3	$12,890	6	$4,919,720	115
	Grassland	$1,612,226	70			$759,762	1	$18,624	4	$2,503,348	84
	Shrub	$134,528	12			$51,165	1			$199,721	16
Watertown	Forest	$26,727,784	549			$163,428	5	$60,387	23	$47,591,159	664
	Grassland	$6,129,375	229			$104,443	1	$11,248	7	$11,126,351	279
	Shrub	$17,506,639	507			$748,746	6	$43,482	18	$31,973,386	628
Watertown City	Forest	$5,407,160	117	$94,193	1	$4,013,310	10	$37,198	6	$13,842,927	161
	Grassland	$2,479,173	61	$48	1	$1,368,213	1			$8,924,014	76
	Shrub	$1,484,892	64	$65,856	1	$417,397	9	$5,529	5	$7,484,057	112
West Carthage (V)	Forest	$2,262,459	50			$14,345	1	$322	1	$2,408,165	60
	Grassland	$1,289,027	20					$936	1	$1,332,522	26
	Shrub	$2,778,959	96			$295,809	2	$14,295	3	$3,291,674	108
Wilna	Forest	$24,176,624	557			$35,802	2	$109,742	26	$25,142,343	608
	Grassland	$4,229,663	186			$2,161	1	$604	4	$4,378,946	204
	Shrub	$5,915,256	334			$1,694	1	$27,923	17	$6,096,172	364
Worth	Forest	$3,962,550	209					$9,961	6	$4,583,021	240
	Grassland	$313,912	35					$1,156	2	$329,141	45
	Shrub	$528,000	73					$3,164	2	$564,792	94
Totals		$760,705,630	22,553	$4,410,665	11	$42,558,854	237	$8,200,571	1,408	$1,534,819,470	28,247

APPENDIX B:

CRITICAL FACILITIES AND INFRASTRUCTURE IN DELINEATED HAZARD AREAS

Tables include only georeferenced facilities identified as located in at least one of the delineable hazard areas related to flooding, earthquakes, landslides, and wildfires.

ALL assets and critical facilities are located in areas exposed to extreme temperatures, extreme winds (including tornados), lightning, and winter storms. Other hazards either have no delineable hazard areas or do not affect any identified critical facilities.

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Appendix B
Emergency Facilities/Critical Infrastructure in Delineated Hazard Areas
Source: Jefferson County GIS data, HAZUS-MH embedded databases
Note: Facilities identified but not located in any of the listed hazard areas are not shown

Municipality	Facility Type	Name	Address / Location	Flood (A/AE Zones)	Earthquake (PGA 4-5% of gravity)	Earthquake (Soil Types D & E)	Landslide (Moderate Susceptibility)	Wildfire
Adams, Town of	Communications Facility	WOTT Ch 264	Paul Road				■	
Adams, Town of	Fire Station	Smithville Fire District	13727 County Route 63	■			■	■
Adams, Town of	School	Maynard P. Wilson ES	13180 U S Rt 11			■		
Adams, Town of	School	South Jefferson JSHS	11060 U S Rt 11			■		
Adams, Village of	Communications Facility	OEM	27 S Main St			■		
Adams, Village of	EMS	South Jefferson Rescue Squad	N Main St			■		
Adams, Village of	Fire Station	Adams Fire Dept	6 N Main St			■		
Adams, Village of	Highway Garage	Adams, Village Of	80-92 Park St			■		
Adams, Village of	Highway Garage	New York State DOT	16692 Church St			■		
Adams, Village of	Police	Adams Village Police Dept	2 N Main St			■		
Adams, Village of	Waste Water Treatment Facility	Adams (V) WWTF	63 Liberty Street			■		
Alexandria, Town of	Airport	Maxson Airfield	State Route 26 SE of Alexandria Bay		■	■	■	
Alexandria, Town of	Coast Guard	Coast Guard	45764 Landon Rd		■	■	■	
Alexandria, Town of	Fire Station	Plessis Fire District	26046 Route 3		■		■	
Alexandria, Town of	Fire Station	Wellesley Island Fire Department #48	County Road 100A		■	■		■
Alexandria, Town of	Highway Garage	Alexandria Town Garage	25224 NYS Rte 26		■	■	■	
Alexandria, Town of	Highway Garage	Alexandria Town Of	28239 Co Rte 192		■		■	

Appendix B
Emergency Facilities/Critical Infrastructure in Delineated Hazard Areas
Source: Jefferson County GIS data, HAZUS-MH embedded databases
Note: Facilities identified but not located in any of the listed hazard areas are not shown

Municipality	Facility Type	Name	Address / Location	Flood (A/AE Zones)	Earthquake (PGA 4-5% of gravity)	Earthquake (Soil Types D & E)	Landslide (Moderate Susceptibility)	Wildfire
Alexandria Bay, Village of	Fire Station	Alexandria Bay Village Fire	110 Walton St		■		■	
Alexandria Bay, Village of	Fire Station	Redwood Volunteer Fire Dept	Church St		■		■	
Alexandria Bay, Village of	Highway Garage	Alexandria Bay Village Of	Walton St		■		■	
Alexandria Bay, Village of	Hospital	River Hospital	4 Fuller St		■		■	
Alexandria Bay, Village of	Police	Alexandria Bay Village Police	110 Walton St		■		■	
Alexandria Bay, Village of	School	Alexandria Central HS	34 Bolton Ave		■		■	
Alexandria Bay, Village of	Waste Water Treatment Facility	Alexandria Bay WWTP	35 Anthony Street		■		■	
Antwerp, Town of	Fire Station	Oxbow Fire Dept #33	Main St		■	■		
Antwerp, Town of	Highway Garage	Antwerp, Town Of	37904 Old Us Rte 11		■			
Antwerp, Town of	Highway Garage	Antwerp, Town Of	40690 Us Rte 11		■	■		■
Antwerp, Village of	Fire Station	Antwerp Fire Dept #04	2 Vanburen St		■	■		
Antwerp, Village of	Highway Garage	Sands, James R	210 Main St		■	■		
Antwerp, Village of	Police	Antwerp Village Police Dept	58 Main St		■	■		
Antwerp, Village of	School	Antwerp Primary School	10 Academy St		■	■		
Antwerp, Village of	Waste Water Treatment Facility	Antwerp (V) WWTF	Main Street		■	■		■
Black River, Village of	EMS	Black River Ambulance Squad Inc	121 Leray Street			■		
Black River, Village of	Fire Station	Black River Fire Dept	218 Leray St			■		

Appendix B
Emergency Facilities/Critical Infrastructure in Delineated Hazard Areas
Source: Jefferson County GIS data, HAZUS-MH embedded databases
Note: Facilities identified but not located in any of the listed hazard areas are not shown

Municipality	Facility Type	Name	Address / Location	Flood (A/AE Zones)	Earthquake (PGA 4-5% of gravity)	Earthquake (Soil Types D & E)	Landslide (Moderate Susceptibility)	Wildfire
Black River, Village of	School	Black River School	160 Leray St			■		
Brownville, Town of	Communications Facility	WLOT-LP Ch 66	Perch Lake Road			■		
Brownville, Town of	Highway Garage	Brownville Town Of	Star School House Rd			■	■	
Brownville, Town of	Highway Garage	Brownville Town Of	16431 Star School House Rd	■		■	■	
Brownville, Town of	Highway Garage	Brownville Town Of	16517 Star School House Rd			■	■	
Brownville, Town of	Highway Garage	General Brown Central	17704 Cemetery Rd			■	■	
Brownville, Town of	School	Dexter Es	415 East Grove St			■	■	
Brownville, Town of	School	General Brown JSHS	17643 Cemetery Rd			■	■	
Brownville, Village of	Fire Station	Brownville Fire Dept	121 Brown Blvd			■		
Brownville, Village of	Highway Garage	Brownville Village Of	Watertower Dr			■		
Cape Vincent, Town of	Communications Facility	WBDR Ch 274	Stone Quarry Road - County Rt 6 junction			■	■	
Cape Vincent, Town of	Communications Facility	WMHI Ch 234	Fox Creek Road			■	■	
Cape Vincent, Town of	Fire Station	Cape Vincent Fire Dept	241 E Broadway	■		■	■	
Cape Vincent, Town of	Highway Garage	Cape Vincent Town Of	1962 NYS Rte 12E			■	■	
Cape Vincent, Town of	Highway Garage	Cape Vincent Village Of	31317 Co Rte 6				■	
Cape Vincent, Town of	Police	Cape Vincent Police Dept	127 E Joseph St	■		■	■	
Cape Vincent, Town of	School	Thousand Islands HS	Sand Bay Rd				■	
Cape Vincent, Town of	School	Thousand Islands MS	Sand Bay Rd				■	
Cape Vincent, Village of	Highway Garage	New York State DEC	555 Broadway			■	■	
Cape Vincent, Village of	School	Cape Vincent ES	410 S Esselstyne			■	■	

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Emergency Facilities/Critical Infrastructure in Delineated Hazard Areas
Source: Jefferson County GIS data, HAZUS-MH embedded databases
Note: Facilities identified but not located in any of the listed hazard areas are not shown

Municipality	Facility Type	Name	Address / Location	Flood (A/AE Zones)	Earthquake (PGA 4-5% of gravity)	Earthquake (Soil Types D & E)	Landslide (Moderate Susceptibility)	Wildfire
Cape Vincent, Village of	Waste Water Treatment Facility	Cape Vincent (V) STP	Po Box 337 Elm & Lake Street			■	■	
Carthage, Village of	EMS	Carthage Area Rescue Squad	200 Riverside Dr			■		
Carthage, Village of	Fire Station	Carthage Fire Dept #11	685 S James St			■		
Carthage, Village of	Highway Garage	Carthage Village Of	980 State St			■		
Carthage, Village of	Hospital	Carthage Area Hospital	1001 West Street		■	■		
Carthage, Village of	Nursing Home	Country Manor Nursing Center	1045 West Street		■	■		
Carthage, Village of	Police	Carthage Police Dept	120 S Mechanic St			■		
Carthage, Village of	School	Carthage ES	900 Beaver Ln			■		
Champion, Town of	Fire Station	Copenhagen Volunteer Fire Dept	Main St					■
Champion, Town of	Fire Station	Great Bend Fire Dept #12	32768 NYS Rt26			■		
Chaumont, Village of	Highway Garage	Lyme Town Of	12201 NYS Rte 12E			■	■	■
Chaumont, Village of	School	Lyme Central School	11868 Academy St			■	■	
Clayton, Town of	Fire Station	Clayton Fire Dept	855 Graves			■	■	
Clayton, Town of	Fire Station	Depauville Volunteer Fire Dept	15191 School St			■	■	
Clayton, Town of	Fire Station	Depauville Volunteer Fire Dept	15231 School St			■	■	
Clayton, Town of	Highway Garage	Clayton Town Of	32765 Old NYS Rte 12			■	■	
Clayton, Town of	Police	Clayton Police Station	Mary			■	■	
Clayton, Town of	Waste Water Treatment Facility	Clayton (V) STP	Gardener Street			■	■	■

Appendix B
Emergency Facilities/Critical Infrastructure in Delineated Hazard Areas
Source: Jefferson County GIS data, HAZUS-MH embedded databases
Note: Facilities identified but not located in any of the listed hazard areas are not shown

Municipality	Facility Type	Name	Address / Location	Flood (A/AE Zones)	Earthquake (PGA 4-5% of gravity)	Earthquake (Soil Types D & E)	Landslide (Moderate Susceptibility)	Wildfire
Clayton, Town of	Waste Water Treatment Facility	Depauville STP	Caroline Street			■	■	■
Clayton, Village of	EMS	Thousand Island Emergency Rescue Squad	100 Union St			■	■	
Clayton, Village of	Highway Garage	Clayton Town & Village Of	East Line Rd			■	■	
Clayton, Village of	School	Guardino ES	600 High St			■	■	
Deferiet, Village of	Fire Station	Deferiet Fire Dept	101 Riverside Dr			■		
Deferiet, Village of	Waste Water Treatment Facility	Deferiet (V) STP	Po Box 206 Riverside Drive					■
Dexter, Village of	Fire Station	Dexter Fire Department	100 Canal Street	■		■	■	
Dexter, Village of	Fire Station	Pillar Point Fire Hall	11430 Middle River Rd			■	■	
Dexter, Village of	Highway Garage	Dexter Village Of	Lakeview Dr			■	■	
Dexter, Village of	Police	Dexter City Police Dept	100 Locke St			■	■	
Dexter, Village of	Waste Water Treatment Facility	Dexter (V) STP	Water Street			■	■	
Ellisburg, Town of	Fire Station	Belleville Fire Hall	7981 State Route 289			■	■	
Ellisburg, Town of	Highway Garage	New York State DOT	887 Us Rte 11			■	■	
Ellisburg, Town of	School	Belleville Henderson Central S	8372 County Rt 75				■	
Ellisburg, Village of	Fire Station	Ellisburg Fire Hall	11901 State Route 193				■	
Ellisburg, Village of	Highway Garage	Ellisburg Town Of	11580 South Main St			■	■	
Ellisburg, Village of	Highway Garage	Ellisburg Village Of	11832 Main St			■	■	

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Emergency Facilities/Critical Infrastructure in Delineated Hazard Areas
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Note: Facilities identified but not located in any of the listed hazard areas are not shown

Municipality	Facility Type	Name	Address / Location	Flood (A/AE Zones)	Earthquake (PGA 4-5% of gravity)	Earthquake (Soil Types D & E)	Landslide (Moderate Susceptibility)	Wildfire
Evans Mills, Village of	EMS	Evans Mills Volunteer Ambulance Squad	Factory Street			■		
Evans Mills, Village of	Highway Garage	Leray Town Of	Willow St			■		
Henderson, Town of	Fire Station	Henderson Fire District Bldg	8939 State Route 178			■	■	
Henderson, Town of	Highway Garage	Henderson Fire Dist	12541 N Of NYS Rte 178			■	■	
Henderson, Town of	Highway Garage	Henderson Town Of	Town Barn Rd				■	■
Herrings, Village of	Waste Water Treatment Facility	Herrings (V) WWTF	Second Street	■				■
Hounsfield, Town of	Airport	Watertown International	State Route 12F south of Dexter			■	■	
Hounsfield, Town of	Highway Garage	Hounsfield Town Of	18901 Co Rte 66				■	
Le Ray, Town of	Fire Station	Fire District	Sanford Rd			■		
Le Ray, Town of	Hospital	Wilcox Army Community Hospital	Fort Drum			■		
Le Ray, Town of	School	Calcium Primary School	24550 Indian River Dr			■		
Lyme, Town of	Fire Station	Chaumont Fire Dept	11385 State Route 12E			■	■	
Lyme, Town of	Fire Station	Three Mile Bay Fire Hall	8581 State Rt 12 E				■	
Mannsville, Village of	Highway Garage	Mannsville Village Of	205 Lorraine St			■		
Orleans, Town of	Fire Station	Fishers Landing Fire Dept	42038 Route 195			■	■	
Orleans, Town of	Fire Station	La Fargeville Fire Dept	Sunrise Ave			■	■	
Orleans, Town of	Highway Garage	New York State People Of	43098 NYS Rte 12			■	■	

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Emergency Facilities/Critical Infrastructure in Delineated Hazard Areas
Source: Jefferson County GIS data, HAZUS-MH embedded databases
Note: Facilities identified but not located in any of the listed hazard areas are not shown

Municipality	Facility Type	Name	Address / Location	Flood (A/AE Zones)	Earthquake (PGA 4-5% of gravity)	Earthquake (Soil Types D & E)	Landslide (Moderate Susceptibility)	Wildfire
Orleans, Town of	Highway Garage	Orleans Town Of	20500 Sunrise Ave			■	■	
Orleans, Town of	Highway Garage	Orleans Town Of	20513 Sunrise Ave			■	■	
Orleans, Town of	School	La Fargeville Central School	20503 Sunrise Ave			■	■	
Orleans, Town of	Waste Water Treatment Facility	La Fargeville WWTF	Sunrise Avenue			■	■	
Pamelia, Town of	Fire Station	Northpole Fire Department #32	22334 Rte. 11			■		
Pamelia, Town of	Fire Station	Pamelia Fire Dept #34	25082 Co Rte 16			■		
Pamelia, Town of	Highway Garage	New York State DOT	23196 NYS Rte 12			■		
Pamelia, Town of	Highway Garage	New York State DOT	23196 State Rte 342			■		
Pamelia, Town of	Highway Garage	New York State People Of	NYS Rte 342			■		
Pamelia, Town of	Highway Garage	Pamelia Town Of	24958 Co Rte 16			■		
Philadelphia, Town of	Communications Facility	OEM	33209 Elm Ridge Road		■	■		
Philadelphia, Town of	Highway Garage	Philadelphia Town Of	33019 Us Rte 11		■	■		
Philadelphia, Town of	School	Indian River HS	32925 U S Rt 11		■	■		
Philadelphia, Town of	School	Indian River Interm School	32430 U S Rt 11		■	■		
Philadelphia, Town of	School	Indian River MS	32735 Cnty Rte 29		■	■		
Philadelphia, Town of	School	Philadelphic Christian Day Sch	Orebed Rd		■	■		■
Philadelphia, Village of	Fire Station	Philadelphia Fire Dept	3 Antwerp St		■	■		
Philadelphia, Village of	Highway Garage	Philadelphia Village Of	Main St		■	■		
Philadelphia, Village of	School	Philadelphia Primary	3 Sand St		■	■		

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Emergency Facilities/Critical Infrastructure in Delineated Hazard Areas
Source: Jefferson County GIS data, HAZUS-MH embedded databases
Note: Facilities identified but not located in any of the listed hazard areas are not shown

Municipality	Facility Type	Name	Address / Location	Flood (A/AE Zones)	Earthquake (PGA 4-5% of gravity)	Earthquake (Soil Types D & E)	Landslide (Moderate Susceptibility)	Wildfire
		School						
Philadelphia, Village of	Waste Water Treatment Facility	Philadelphia (V) WWTP	Garden Road		■	■		
Rodman, Town of	Communications Facility	OEM	25246 County Route 189					■
Rodman, Town of	Fire Station	Rodman Fire Dept	21495 County Route 69					■
Rodman, Town of	Communications Facility	OEM	32250 State Rte. 126					■
Sackets Harbor, Village of	Coast Guard	Coast Guard	500 W Main St			■	■	
Sackets Harbor, Village of	Fire Station	Sackets Harbor Fire Hall	112 N Broad St			■	■	
Sackets Harbor, Village of	Police	Sackets Harbor Police Dept	112 N Broad St			■	■	
Sackets Harbor, Village of	School	Sackets Harbor Central School	215 S Broad St			■	■	
Sackets Harbor, Village of	Waste Water Treatment Facility	Sackets Harbor Sewage Treatment Plant	Hill Street			■	■	
Theresa, Town of	Fire Station	Redwood Volunteer Fire Dept	Stine Rd		■	■	■	■
Theresa, Town of	Waste Water Treatment Facility	Redwood SD WWTP	Old State Route 37		■		■	
Theresa, Village of	Fire Station	Theresa Fire Dept	400 Mill St		■			
Theresa, Village of	Highway Garage	Theresa Town Of	328 Mill St		■			
Theresa, Village of	Highway Garage	Theresa Village Of	Commercial St		■			
Theresa, Village of	School	Theresa Primary School	125 Bridge St		■			

Appendix B
Emergency Facilities/Critical Infrastructure in Delineated Hazard Areas
Source: Jefferson County GIS data, HAZUS-MH embedded databases
Note: Facilities identified but not located in any of the listed hazard areas are not shown

Municipality	Facility Type	Name	Address / Location	Flood (A/AE Zones)	Earthquake (PGA 4-5% of gravity)	Earthquake (Soil Types D & E)	Landslide (Moderate Susceptibility)	Wildfire
Theresa, Village of	Waste Water Treatment Facility	Theresa (V) WWT Facilities	124 Commercial Street		■			■
Watertown, Town of	Communications Facility	WNER 1410	County Route 65			■		
Watertown, Town of	Communications Facility	WTNY 790	County Route 65			■		
Watertown, Town of	EMS	Town Of Watertown Ambulance Squad	20312 State Route 3			■		
Watertown, Town of	Fire Station	Fire Dept	20312 County Route 63			■		
Watertown, Town of	Waste Water Treatment Facility	Watertown (T) SD#1	6873 Brookside Dr.Mun Bldg			■		
Watertown, City of	Communications Facility	WATN 1240	South Hycliff Drive			■		
Watertown, City of	Communications Facility	WRVJ Ch 219	Washington Street			■		
Watertown, City of	EMS	Guifoyle Ambulance	438 Newell St	■		■		
Watertown, City of	Fire Station	City of Watertown Fire Dept	224 S Massey St			■		
Watertown, City of	Highway Garage	Watertown DPW	Newell St			■		
Watertown, City of	Hospital	Samaritan Medical Center	830 Washington Street			■		
Watertown, City of	Nursing Home	Samaritan Keep Home	133 Pratt Street			■		
Watertown, City of	Nursing Home	Whispering Pines Adult Home	1120 Coffeen St			■		
Watertown, City of	Police	Emergency Operation Center	175 Arsenal St			■		

Appendix B
Emergency Facilities/Critical Infrastructure in Delineated Hazard Areas
Source: Jefferson County GIS data, HAZUS-MH embedded databases
Note: Facilities identified but not located in any of the listed hazard areas are not shown

Municipality	Facility Type	Name	Address / Location	Flood (A/AE Zones)	Earthquake (PGA 4-5% of gravity)	Earthquake (Soil Types D & E)	Landslide (Moderate Susceptibility)	Wildfire
Watertown, City of	Police	Police Dept-Records	751 Waterman Dr			■		
Watertown, City of	Police	Sheriff's Dept-Civil Office	753 Waterman Dr			■		
Watertown, City of	School	BOCES Jeffer-Lewis-Hamil-Herk-Oneida School	20104 NYS Route 3			■		
Watertown, City of	School	Case JHS	1237 Washington St			■		
Watertown, City of	School	Faith Fellowship Christian Sch	131 Moore Ave			■		
Watertown, City of	School	Holy Family School	Sterling Place			■		
Watertown, City of	School	Jefferson County Community College	1220 Coffeen St	■		■		
Watertown, City of	School	Knickerbocker School	739 Knickerbocker Dr			■		
Watertown, City of	School	North ES	171 E Hoard St			■		
Watertown, City of	School	Ohio Street School	1537 Ohio St			■		
Watertown, City of	School	Sacred Heart School	320 West Lynde Street			■		
Watertown, City of	School	Sherman School	836 Sherman St			■		
Watertown, City of	School	St Patrick's School	733 S Massey Street			■		
Watertown, City of	School	Starbuck School	430 E Hoard St			■		
Watertown, City of	School	Watertown SHS	1335 Washington St			■		
Watertown, City of	Water Treatment Facility	Watertown WTF	1701 Huntington St.			■		
Watertown, City of	Waste Water Treatment Facility	Watertown City WPCP	700 Wm. T. Field Drive			■		
Wilna, Town of	EMS	Natural Bridge Ambulance Inc And	High St		■	■		

Appendix B
Emergency Facilities/Critical Infrastructure in Delineated Hazard Areas
Source: Jefferson County GIS data, HAZUS-MH embedded databases
Note: Facilities identified but not located in any of the listed hazard areas are not shown

Municipality	Facility Type	Name	Address / Location	Flood (A/AE Zones)	Earthquake (PGA 4-5% of gravity)	Earthquake (Soil Types D & E)	Landslide (Moderate Susceptibility)	Wildfire
		Fire Dept						
Wilna, Town of	Fire Station	Natural Bridge Fire Dept #31	High St		■	■		
Wilna, Town of	Highway Garage	Wilna Town Of	39767 NYS Rte 3		■			
Wilna, Town of	School	Christian Heritage School	P O Box 187 Martin St Rd		■	■		

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APPENDIX C:

HISTORIC AND CULTURAL RESOURCES IN DELINEATED HAZARD AREAS

Tables include only georeferenced resources identified as located in at least one of the delineable hazard areas related to flooding, earthquakes, landslides, and wildfires.

ALL historic and cultural resources are located in areas exposed to extreme temperatures, extreme winds (including tornados), lightning, and winter storms. Other hazards either have no delineable hazard areas or do not affect any identified historic and cultural resources.

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Appendix C
Historic and Cultural Resources in Delineated Hazard Areas
Source: NYS OPHRP
Note: Resources identified but not located in any of the listed hazard areas are not shown

Municipality	Historic Structure / Landmark	Address / Location	Flood (A/AE Zones)	Earthquake (PGA 4-5% of gravity)	Earthquake (Soil Types D & E)	Landslide (Moderate Susceptibility)	Wildfire
Adams, Village of	Adams Commercial Historic District	Main and North Main Streets; East and West Church Streets	■		■		
Adams, Village of	Smith-Ripley House	29 East Church Street			■		
Alexandria, Town of	George C. Boldt Yacht House	NW of Alexandria Bay on Wellesley Island	■	■			
Alexandria, Town of	Densmore Methodist Church of the Thousand Islands	Rt. 100 at Densmore Bay		■	■		■
Alexandria, Town of	Ingleside	W of Alexandria Bay on Cherry Island	■	■		■	
Alexandria, Town of	Longue Vue Island	St. Lawrence River	■	■		■	
Alexandria Bay, Village of	Church of Saint Lawrence	Fuller Street		■		■	
Alexandria Bay, Village of	Cornwall Brothers' Store	2 Howell Pl.	■	■		■	
Alexandria Bay, Village of	Holland Library	7 Market Street		■		■	
Antwerp, Town and Village of	Antwerp Historic District	Main, Depot, Maple Streets et al.; Lexington, Hoyt, Madison Avenues		■	■		■
Antwerp, Town of	Dr. Abner Benton House	Main St.	■	■	■		■
Brownville, Village of	William Archer House	112 Washington St.			■		
Brownville, Village of	General Jacob Brown Mansion	Brown Blvd.			■		

Appendix C
Historic and Cultural Resources in Delineated Hazard Areas
Source: NYS OPHRP
Note: Resources identified but not located in any of the listed hazard areas are not shown

Municipality	Historic Structure / Landmark	Address / Location	Flood (A/AE Zones)	Earthquake (PGA 4-5% of gravity)	Earthquake (Soil Types D & E)	Landslide (Moderate Susceptibility)	Wildfire
Brownville, Village of	Brownville Hotel	Brown Blvd. and W. Main St.			■		
Brownville, Village of	St. Paul's Church (Episcopal)	210 Washington Street			■		
Brownville, Village of	Vogt House	110 Main St.					■
Brownville, Village of	Arthur Walrath House	114 Corner Pike			■		
Cape Vincent, Town and Village of	Broadway Historic District	St. Lawrence River, W. edge of Village of Cape Vincent, on Broadway & Tibbetts Point	■			■	■
Cape Vincent, Town of	Xavier Chevalier House	Gosier Rd.			■	■	■
Cape Vincent, Town of	Nicholas Cocaigne House	Favret Rd.			■	■	■
Cape Vincent, Town of	Remy Dezengremel House	Rosiere Rd.	■		■	■	■
Cape Vincent, Town of	Joseph Docteur House	Rosiere Rd.			■	■	■
Cape Vincent, Town of	Reuter Dyer House	Rosiere Rd.			■	■	■
Cape Vincent, Town of	Johnson House	Tibbetts Point Rd.	■		■	■	
Cape Vincent, Town of	Captain Louis Peugnet House	Tibbetts Point Rd.			■	■	
Cape Vincent, Town of	George Reynolds House	River Rd.			■	■	
Cape Vincent, Town of	Rogers Brothers Farmstead	Dablon Point Road	■		■	■	■

Appendix C
Historic and Cultural Resources in Delineated Hazard Areas
Source: NYS OPHRP
Note: Resources identified but not located in any of the listed hazard areas are not shown

Municipality	Historic Structure / Landmark	Address / Location	Flood (A/AE Zones)	Earthquake (PGA 4-5% of gravity)	Earthquake (Soil Types D & E)	Landslide (Moderate Susceptibility)	Wildfire
Cape Vincent, Town of	St. Vincent of Paul Catholic Church	Kanady St.			■	■	
Cape Vincent, Town of	Tibbetts Point Light	Tibbetts Point	■				
Cape Vincent, Town of	Union Meeting House	Millens Bay Rd.			■	■	
Cape Vincent, Town of	Claude Vautrin House	Mason Rd.			■	■	■
Cape Vincent, Town of	Warren Wilson House	Favret Rd.			■	■	■
Cape Vincent, Village of	Levi Anthony Building	Broadway			■	■	
Cape Vincent, Village of	Aubertine Building	Broadway			■	■	
Cape Vincent, Village of	John Borland House	Market St.			■	■	
Cape Vincent, Village of	James Buckley House	Joseph St.			■	■	
Cape Vincent, Village of	E. K. Burnham House	565 Broadway				■	
Cape Vincent, Village of	Duvillard Mill	Broadway	■		■	■	
Cape Vincent, Village of	Jean Philippe Galband du Fort House	James St.			■	■	
Cape Vincent, Village of	Glen Building	Broadway				■	
Cape Vincent, Village of	Vincent LeRay House	Broadway (NY 12E)				■	
Cape Vincent, Village of	Lewis House	Market St.	■			■	

Appendix C
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Source: NYS OPHRP
Note: Resources identified but not located in any of the listed hazard areas are not shown

Municipality	Historic Structure / Landmark	Address / Location	Flood (A/AE Zones)	Earthquake (PGA 4-5% of gravity)	Earthquake (Soil Types D & E)	Landslide (Moderate Susceptibility)	Wildfire
Cape Vincent, Village of	Roxy Hotel	310 Broadway				■	
Cape Vincent, Village of	Cornelius Sacket House	571 Broadway			■	■	
Cape Vincent, Village of	General Sacket House	4407 James St.			■	■	
Cape Vincent, Village of	St. John's Episcopal Church	Market St.			■	■	
Cape Vincent, Village of	Otis Starkey House	Point St.			■	■	
Carthage, Village of	First Baptist Church and Cook Memorial Building	511 State Street			■		
Carthage, Village of	State Street Historic District	249-401 State St., 246-274 State St. and 106-108 Mechanic St.			■		
Carthage, Village of	US Post Office	521 State St.					
Chaumont, Village of	Cedar Grove Cemetery	Washington St.	■		■	■	■
Chaumont, Village of	Chaumont Grange Hall and Dairymen's League Building	Main St.			■	■	
Chaumont, Village of	Chaumont Historic District	Along Main St., roughly between Washington and Church Sts.			■	■	■
Chaumont, Village of	Chaumont House	Main St.			■	■	■
Chaumont, Village of	Chaumont Railroad Station	Main St.			■	■	
Chaumont, Village	Evans-Gaige-	Evans Rd.			■	■	

Appendix C
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Source: NYS OPHRP
Note: Resources identified but not located in any of the listed hazard areas are not shown

Municipality	Historic Structure / Landmark	Address / Location	Flood (A/AE Zones)	Earthquake (PGA 4-5% of gravity)	Earthquake (Soil Types D & E)	Landslide (Moderate Susceptibility)	Wildfire
of	Dillenback House						
Chaumont, Village of	George House	Washington St.			■	■	
Clayton, Town of	Fairview Manor	38289 NY 12E	■			■	■
Clayton, Village of	Clayton Historic District	203--215 & 200--326 James St., 500--544 & 507--537 Riverside Dr.	■		■	■	
Clayton, Village of	Captain Simon Johnstone House	507 Riverside Dr.			■	■	
Dexter, Village of	Dexter Universalist Church	Brown and Kirby Streets			■		
Ellisburg, Town of	Pierrepont Manor Complex	N of Mannsville on Ellisburg St.	■				■
Evans Mills, Village of	LeRay Hotel	Main and Noble Sts.					
Henderson, Town of	Cyrus Bates House	7185 NY 3			■	■	■
Hounsfield, Town of	Bedford Creek Bridge	Campbell's Point Rd. over Bedford Creek	■		■	■	
Hounsfield, Town of	Conklin Farm	Evans Rd.	■		■		■
Hounsfield, Town of	District School No. 19	Co. Rd. 69			■	■	■
Hounsfield, Town of	District School No. 20	NY 3, S of Co. Rd. 75				■	
Hounsfield, Town of	East Hounsfield Christian Church	NY 3			■		
Hounsfield, Town of	Galloo Island Light	Galloo Island	■		■		■
Hounsfield, Town of	Dr. Samuel Guthrie House	Co. Rd. 75/Military Rd.			■	■	■
Hounsfield, Town of	Madison Barracks	Military Rd.	■		■	■	■
Hounsfield, Town of	Simon Read Farm	Cady Road	■		■		■

Appendix C
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Source: NYS OPHRP
Note: Resources identified but not located in any of the listed hazard areas are not shown

Municipality	Historic Structure / Landmark	Address / Location	Flood (A/AE Zones)	Earthquake (PGA 4-5% of gravity)	Earthquake (Soil Types D & E)	Landslide (Moderate Susceptibility)	Wildfire
Hounsfield, Town of	Ressequie Farm	Parker Rd.			■	■	■
Hounsfield, Town of	Shore Farm	Military Rd., E of Mill Creek	■		■	■	■
Hounsfield, Town of	Stephen Simmons House	Camps Mills Rd., W of Old Slat Points Rd.			■	■	
Hounsfield, Town of	Star Grange No. 9	Sulphur Springs Rd. between Jericho and Spencer Rds.			■	■	
Hounsfield, Town of	Stephen Simmons House	Salt Point Rd.			■	■	■
Hounsfield, Town of	Sulphur Springs Cemetery	Co. Rd. 62, SW of Spencer Rd.			■	■	■
LeRay, Town of	James LeRay Mansion Complex	NE of Black River on Camp Drum Military Reservation					■
Lyme, Town of	Angell Farm	South Shore Road, CR 57	■		■	■	■
Lyme, Town of	District School No. 3	Jct. NY 3 and County Rd. 57, Putnam Corners			■	■	
Lyme, Town of	Getman Farmhouse	S. Shore Rd.	■		■	■	■
Lyme, Town of	Lance Farm	S. Shore Rd.			■	■	■
Lyme, Town of	Point Salubrious Historic District	Point Salubrious Rd.	■			■	■
Lyme, Town of	The Row	Main St. at Shaver Creek, Three Mile Bay	■		■	■	
Lyme, Town of	Old Stone Shop	Main St., Three Mile Bay			■	■	
Lyme, Town of	Taft House	Main St., Three Mile Bay			■	■	
Lyme, Town of	Taylor Boathouse	Bay View Dr., Three Mile Bay	■		■		
Lyme, Town of	Three Mile Bay Historic District	Jct. of Church and Depot Sts., Three Mile Bay			■	■	
Lyme, Town of	Union Hall	S. Shore Rd.	■				

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Municipality	Historic Structure / Landmark	Address / Location	Flood (A/AE Zones)	Earthquake (PGA 4-5% of gravity)	Earthquake (Soil Types D & E)	Landslide (Moderate Susceptibility)	Wildfire
Lyme, Town of	United Methodist Church	S. Shore Rd.	■				
Lyme, Town of	Wheeler, Menzo, House	Main and Depot Sts.			■	■	
Lyme, Town of	Wilcox Farmhouse	Carrying Place Rd.			■	■	
Orleans, Town of	Biddlecom House (LaFarge Retainer Houses)	Main Street (NY 180); East side			■	■	■
Orleans, Town of	Budlong House (LaFarge Retainer Houses)	Main Street (NY 180); East side			■	■	
Orleans, Town of	Buttermilk Flat Schoolhouse No. 22	Buttermilk Flat Road; East of Carter Street Road			■		■
Orleans, Town of	Carter Street Schoolhouse No. 21	Dog Hill Road at Carter Street			■		
Orleans, Town of	Central Garage	Clayton Street			■	■	
Orleans, Town of	Charles Ford House	Ford Street			■	■	
Orleans, Town of	Elijah Horr House	NY 180	■		■		■
Orleans, Town of	Irwin Brothers Store	NY 180			■		
Orleans, Town of	La Farge Land Office	Southwest corner of Main and Mill Streets			■	■	
Orleans, Town of	La Fargeville United Methodist Church	Main Street			■	■	
Orleans, Town of	Methodist Episcopal Church	NY 180			■	■	
Orleans, Town of	Methodist-Protestant Church at Fisher's Landing	Reed Point Road			■	■	
Orleans, Town of	A. Newton Farm	NY 180; North and South	■		■	■	■

Appendix C
Historic and Cultural Resources in Delineated Hazard Areas
Source: NYS OPHRP
Note: Resources identified but not located in any of the listed hazard areas are not shown

Municipality	Historic Structure / Landmark	Address / Location	Flood (A/AE Zones)	Earthquake (PGA 4-5% of gravity)	Earthquake (Soil Types D & E)	Landslide (Moderate Susceptibility)	Wildfire
		Sides					
Orleans, Town of	Rock Island Light Station	N of Fishers Landing on Rock Island	■				
Orleans, Town of	John N. Rottiers Farm	NY 180			■		■
Orleans, Town of	Saint John's Roman Catholic Church	Main Street (NY 180)			■	■	
Orleans, Town of	Saint Paul's Episcopal Church	Main Street			■	■	■
Orleans, Town of	Stone Mills Union Church	NY 180 near jct. with Carter St.			■		
Orleans, Town of	Byron J. Strough House	Clayton Street; South side; West of junction NY 411			■	■	
Orleans, Town of	Thousand Island Grange Hall	Gore Road			■	■	■
Orleans, Town of	Thousand Island Park Historic District	S tip of Wellesley Island	■		■		■
Orleans, Town of	Tracy Farm	East Side Wilder Road; South of jct. Overbluff Road			■		
Rutland, Town of	George Brothers Building	Mill St.					■
Sackets Harbor, Village of	Elisha Camp House	310 General Smith Dr.			■	■	■
Sackets Harbor, Village of	Madison Barracks	Military Rd.	■		■	■	■
Sackets Harbor, Village of	Sackets Harbor Battlefield	Coastline and area from Sackets Harbor SW to and including Horse Island	■		■	■	■
Sackets Harbor, Village of	Sackets Harbor Village Historic District	Main, Washington, Pike, Edmund, Hill, Hamilton, Broad, and Ambrose Sts.	■		■	■	■

Appendix C
Historic and Cultural Resources in Delineated Hazard Areas
Source: NYS OPHRP
Note: Resources identified but not located in any of the listed hazard areas are not shown

Municipality	Historic Structure / Landmark	Address / Location	Flood (A/AE Zones)	Earthquake (PGA 4-5% of gravity)	Earthquake (Soil Types D & E)	Landslide (Moderate Susceptibility)	Wildfire
Sackets Harbor, Village of	Shore Farm	Military Rd., E of Mill Creek	■		■	■	■
Sackets Harbor, Village of	Union Hotel	Main and Ray Sts.			■		
Watertown, City of	Emerson Place	20-30 Emerson Place			■		
Watertown, City of	Roswell P. Flower Memorial Library	229 Washington St.			■		
Watertown, City of	Jefferson County Courthouse Complex	SE corner of Arsenal and Sherman Sts.			■		
Watertown, City of	Paddock Arcade	Washington St. between Arsenal and Store Sts.			■		
Watertown, City of	Paddock Mansion	228 Washington St.			■		
Watertown, City of	Public Square Historic District	Roughly Court, Arsenal, Washington, Franklin and State Sts.			■		
Watertown, City of	St. Paul's Episcopal Church	308 Clay Street			■		
Watertown, City of	Emma Flower Taylor Mansion	241 Clinton Street			■		
Watertown, City of	Thomas Memorial AME Zion Church	715 Morrison Street			■		
Watertown, City of	Trinity Episcopal Church and Parish House	219-227 Sherman Street			■		
Watertown, City of	Watertown Masonic Temple	240 Washington St.			■		

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APPENDIX D –

PARTICIPATING JURISDICTIONS MITIGATION ACTION EVALUATION AND PRIORITIZATION

Municipal action items from the December 2009 Draft remain.

County action items from the December 2009 Draft have been superseded.

The following items have been added as an **Addendum**:

- Revised County action items – several of which will be County-led initiatives with direct involvement and participation from each of the municipalities

- Additional Municipal Action Items – documenting municipal buy-in on a series of County-led initiatives that will have direct involvement and participation from each of the municipalities

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PRIORITIZATION OF ACTIONS

(Name of Jurisdiction) **Town of Clayton**

Action	"-" = cost (unfavorable)				"0"=neutral or not applicable			"+" = benefit (favorable)			(high, medium, or low)		
	S	T	A	P	L	E	E	Can be implemented easily	Achieves multiple objectives	Can be implemented quickly	Overall Benefits	Overall Costs	Priority
Bald Rock Road, Clayton, NY Existing culvert crossing Bald Rock Road, a Town road, is undersized and causing flooding which results in continued extensive, costly damage to two private residences	+	+	+	+	+	+	+	+	+	+	Medium	Medium	Medium
Lovers Lane, Clayton, NY Existing culvert crossing Lovers Lane, a Town road, is undersized and causing flooding which results in continued extensive, costly damage to three residences	+	+	+	+	+	+	+	+	+	+	Medium	Medium	Medium
Black Creek Road, Clayton, NY Existing culvert crossing Black Creek Road, a Town road, is undersized and causing flooding which results in continued extensive, costly damage to three residences	+	+	+	+	+	+	+	+	+	+	Medium	Medium	Medium
Factory Street, Depauville, NY Existing culvert crossing Factory Stree, a Town road, is undersized and causing flooding which results in continued extensive, costly damage to three residences	+	+	+	+	+	+	+	+	+	+	Medium	Medium	Medium
Factory Street, Depauville, NY Replace drainage under the road and replace drainage culverts behind three residences, causing continued extensive, costly damage .	+	+	+	-	-	+	+	+	+	+	High	High	High

PRIORITIZATION OF ACTIONS

(Name of Jurisdiction) Village of Clayton

Action	"-" = cost (unfavorable)				"0"=neutral or not applicable			"+" = benefit (favorable)			(high, medium, or low)		
	S	T	A	P	L	E	E	Can be implemented easily	Achieves multiple objectives	Can be implemented quickly	Overall Benefits	Overall Costs	Priority
Jane St., James St., John St., Clayton, NY Removal of trees on these streets causing hazards to roadways	+	+	0	+	-	+	+	+	+	+	High	Low	Medium
Gardner Street, Clayton, NY Erect a concrete wall around area of flooding at the Sewage Treatment Plant on Gardner St.	+	+	+	+	-	+	+	-	+	-	Medium	High	Medium
Bartlett Point Road, Clayton, NY Erect a concrete wall around area of flooding at the Water Low Lift Plant on Bartlett Point Road.	+	+	+	+	-	+	+	-	+	-	Medium	High	Medium
Bartlett Point Road, Clayton NY Develop and Implement a Stormwater Mangement for erosion of soil Behind residences	+	+	+	+	+	+	+	-	+	-	Medium	High	Medium

PRIORITIZATION OF ACTIONS

Village of Deferiet

Action	"-" = cost (unfavorable)				"0"=neutral or not applicable			"+" = benefit (favorable)			(high, medium, or low)		
	S	T	A	P	L	E	E	Can be implemented easily	Achieves multiple objectives	Can be implemented quickly	Overall Benefits	Overall Costs	Priority
Forming a storm sewer system for Anderson Ave, Wilna Ave, and Martin Ave.	0	+	-	0	0	-	+	-	+	-	Med	High	Med
Completing the Structural Updates at the Wastewater Treatment Building to prevent structural collapse	+	+	+	0	0	+	+	+	-	+	High	Low	High
Removing the New Growth and Large Trees around the Old Sewage Treatment Facility ensure operability as backup	+	0	0	0	0	0	+	+	+	+	Low	Low	Med
Gathering Information on the Village's Flood Plain Ordinance and the Flood Plain Manager	+	+	+	0	-	0	+	+	0	+	Low	Low	Low
Removal and Replacement of the Asbestos water main from Well house 2 to the Water Tower	+	-	-	0	0	-	+	-	+	-	High	High	High

PRIORITIZATION OF ACTIONS

(Name of Jurisdiction) **Village of Glen Park**

Action	"-" = cost (unfavorable)				"0"=neutral or not applicable			"+" = benefit (favorable)			(high, medium, or low)		
	S	T	A	P	L	E	E	Can be implemented easily	Achieves multiple objectives	Can be implemented quickly	Overall Benefits	Overall Costs	Priority
NFIP Program Update the program. Currently documentation has been lost and unable to locate	+	0	+	+	+	+	0	+	+	+	Med	Low	1
Public Notification Develop a plan for notification of residence of natural hazards that might approach the area	+	+	+	+	0	+	0	+	+	+	High	Med	2
600 Church Street Installation of storm drain in flood prone area	+	+	+	+	-	0	+	-	+	-	High	High	3
Michigan Street Installation of storm drains in flood prone area	+	+	+	+	-	0	+	-	+	-	High	High	4
600 Main Street Installation of storm drains in flood prone area	0	+	0	0	+	0	+	+	+	+	High	Med	5

PRIORITIZATION OF ACTIONS

(Name of Jurisdiction) **Town of Henderson**

Action	"-" = cost (unfavorable)				"0"=neutral or not applicable			"+" = benefit (favorable)			(high, medium, or low)		
	S	T	A	P	L	E	E	Can be implemented easily	Achieves multiple objectives	Can be implemented quickly	Overall Benefits	Overall Costs	Priority
Ayles Road in the Town of Henderson Replacement of 4 culverts between State Route 178 and Shear Rd to reduce damage and disruption caused by seasonal flooding in both the spring and fall of the year	+	+	+	+	0	0	+	+	+	+	Med	Med	1
Shear Road in the Town of Henderson 1 mile from Bishop Street: Replace partially collapsed 24" culvert with 48" culvert to reduce damages and disruption due to flooding in area (year round)	+	+	+	+	0	0	+	+	+	+	Med	Med	2
Tree Removal and Trimming Removal of dead & overgrown trees on County Route 123	+	+	+	-	-	+	+	+	+	+	High	Med	3
Programmable Emergency signs	+	+	0	0	0	+	0	+	+	+	Med	Low	4

PRIORITIZATION OF ACTIONS

(Name of Jurisdiction) Town of Lorraine

Action	"-" = cost (unfavorable)						"0" = neutral or not applicable	"+" = benefit (favorable)		(high, medium, or low)		
	S	T	A	P	L	E	E	Can be implemented easily	Achieves multiple objectives	Can be implemented quickly	Overall Benefits	Overall Costs	Priority
Cutting Trees. Can be implemented easily with little political and legal issues Reasonable cost achieves multiple objectives	+	+	0	0	0	+	0	+	+	+	High +	Low	medium
Join NFIP (establish a flood plan)	+	0	+	0	+	+	+	+	+	+	med.	med.	med.
Replacing culverts on various town roads that are undersized	+	+	+	+	+	+	+	+	+	+	High	med.	High
Cleaning creek beds on outlet side of Bridges	+	+	+	+	+	+	+	0	+	+	High	med.	High

PRIORITIZATION OF ACTIONS

(Name of Jurisdiction) **City of Watertown**

Action	"-" = cost (unfavorable)				"0"=neutral or not applicable			"+" = benefit (favorable)			(high, medium, or low)		
	S	T	A	P	L	E	E	Can be implemented easily	Achieves multiple objectives	Can be implemented quickly	Overall Benefits	Overall Costs	Priority
Pratt Street Storm Sewer and catch basin	+	+	+	+	+	+	+	-	+	-	High	High	1
200 Mill St. Inspection and repair of storm sewer	+	+	+	+	+	+	+	-	+	+	High	High	2
Tree removal and trimming throughout the City Tree removal and trimming at various locations in the City of Watertown	+	+	0	-	0	+	+	+	+	+	Med	Med	3
Public Awareness Expand and disseminate GIS and other hazards on the internet	+	+	+	+	0	+	0	+	+	+	Low	Low	4
Storm Sewer Mainterance Expand a current program of cleaning storm sewers	+	+	0	0	0	+	+	+	+	+	Med	Med	5

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APPENDIX D – ADDENDUM

PARTICIPATING JURISDICTIONS MITIGATION ACTION EVALUATION AND PRIORITIZATION

The following items have been added as an **Addendum**:

- Revised County action items – several of which will be County-led initiatives with direct involvement and participation from each of the municipalities

- Additional Municipal Action Items – documenting municipal buy-in on a series of County-led initiatives that will have direct involvement and participation from each of the municipalities.

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PRIORITIZATION OF ACTIONS – SUPPLEMENT JUNE 2010

(Name of Jurisdiction) **Jefferson County, NY**

Action	"-" = cost (unfavorable)				"0"=neutral or not applicable			"+" = benefit (favorable)			(high, medium, or low)		
	S	T	A	P	L	E	E	Can be implemented easily	Achieves multiple objectives	Can be implemented quickly	Overall Benefits	Overall Costs	Priority
Public Notification Utilize a web based mass notification program using reverse 911 technology to notify residents and businesses of up and coming emergencies.	+	+	-	+	+	+	0	+	+	+	Medium	Medium	High 1
Lightning Protection Installing lightning protection to emergency communications infrastructure.	+	+	+	+	-	+	0	-	+	-	High	Medium	High 4
Battery-Back-up power for Traffic Signal Installation of batteries and solar powered charging system to ensure operation of traffic control device on State Rt. 283/State Rt. 342 Town of LeRay during power outages.	-	+	-	-	-	+	+	-	+	-	High	Medium	Low 18
Emergency Management Software Installation and implementation of a web based disaster management software to allow efficient management and control of disastrous situations.	+	+	+	+	0	+	0	+	+	+	Medium	Medium	Medium 11
Building Construct storage building on Count y Rt.190 Town of Pamelia to allow secure storage of stock piled assets.	+	+	+	+	+	+	0	-	+	-	High	High	Medium 8

PRIORITIZATION OF ACTIONS – SUPPLEMENT JUNE 2010

(Name of Jurisdiction) **Jefferson County, NY**

Action	"-" = cost (unfavorable)				"0"=neutral or not applicable			"+" = benefit (favorable)			(high, medium, or low)		
	S	T	A	P	L	E	E	Can be implemented easily	Achieves multiple objectives	Can be implemented quickly	Overall Benefits	Overall Costs	Priority
Building Construct a building on Waterman Drive in the City of Watertown to house portable critical infrastructure equipment.	+	+	-	+	-	0	-	-	+	-	High	High	Medium 10
Storm Drainage Install storm drainage system County Route 26 Village of Antwerp.	-	+	+	+	+	+	+	-	+	-	High	High	Medium 9
Storm Drainage Install storm drainage system, County Route 38 Town of LeRay.	-	+	+	+	+	+	+	-	+	-	High	Medium	Medium 6
Stream Bank Erosion Protection Stream bank erosion and stabilization on County Route 69 Town of Adams.	-	+	+	+	+	+	+	-	+	-	High	Medium	Medium 16
Tree Removal Tree removal and trimming along various county roads throughout Jefferson County.	+	+	+	-	+	+	+	+	+	+	High	Medium	Medium 5

PRIORITIZATION OF ACTIONS – SUPPLEMENT JUNE 2010

(Name of Jurisdiction) **Jefferson County, NY**

Action	"-" = cost (unfavorable)				"0"=neutral or not applicable			"+" = benefit (favorable)			(high, medium, or low)		
	S	T	A	P	L	E	E	Can be implemented easily	Achieves multiple objectives	Can be implemented quickly	Overall Benefits	Overall Costs	Priority
Embankment Stabilization Replacement Replace deteriorated road embankment stabilization on County Route 59 Town of Brownville as well as address coastal erosion due to excessive wave action.	-	+	+	+	+	+	+	+	+	-	High	Medium	Medium 15
Public Notification Purchase portable variable message board for deployment throughout Jefferson County.	+	+	+	+	+	+	+	+	+	+	High	Medium	High 14
Hillside stabilization Stabilization of hillside on County Route 69 in the Town of Rodman.	-	+	+	+	+	+	+	+	+	+	High	Medium	High 12
Coastal Erosion Mitigation Mitigation effort for coastal erosion on County Route 6 Town of Cape Vincent.	-	+	+	+	+	+	+	-	+	-	High	Medium	High 13
Public Awareness Expand and Disseminate GIS and other hazard information on the internet	+	+	+	+	+	+	0	+	+	+	High	Low	Medium 7

PRIORITIZATION OF ACTIONS – SUPPLEMENT JUNE 2010

(Name of Jurisdiction) **Jefferson County, NY**

Action	"-" = cost (unfavorable)				"0"=neutral or not applicable			"+" = benefit (favorable)			(high, medium, or low)		
	S	T	A	P	L	E	E	Can be implemented easily	Achieves multiple objectives	Can be implemented quickly	Overall Benefits	Overall Costs	Priority
Public awareness program on Hazards, Prevention, and Mitigation: County will maintain a hazard mitigation and mitigation planning web presence (local municipal web sites to link up to this site, if they haven't already done so); all participating jurisdictions to support preparation of a joint annual hazard mitigation and mitigation planning fact sheet and its distribution; periodic discussion of hazard mitigation and the mitigation plan at other regular local meetings; use of annual flyers, newsletters, advertisements, or radio/tv announcements, etc. at the discretion of each jurisdiction (incorporating as much free information as possible from the FEMA Publications Warehouse and other appropriate sources). *(public education)*	-	+	-	+	0	+	-	+	+	+	High	Low	High 3
Code update: Review existing local codes and ordinances against the identified hazards to determine whether there need to be any amendments to address identified hazards and, where a need is identified, modify/amend the codes/ordinances as applicable. *(prevention)*	-	+	+	+	-	+	+	+	+	0	Low	Low	Med 20
Code enforcement: Enforcement of NYS and Local Building Codes with Continual CEO training. *(prevention)*	-	+	+	+	-	+	+	-	+	-	High	Med	Med 19
1.B. Ensure that local comprehensive plans incorporate natural disaster mitigation techniques through a courtesy review of draft plans by the County Planning Department	0	+	+	+	0	0	0	+	+	+	Med	Low	Med 21
2E. Update information on the JCOFEM web site regarding preparing for emergencies to incorporate profiled hazards not already discussed in these documents, and ensure that the information continues to be maintained on the web site.	0	+	+	+	+	+	+	+	+	+	High	Low	High 2

PRIORITIZATION OF ACTIONS – SUPPLEMENT JUNE 2010

(Name of Jurisdiction) **Jefferson County, NY**

Action	"-" = cost (unfavorable)				"0"=neutral or not applicable			"+" = benefit (favorable)			(high, medium, or low)		
	S	T	A	P	L	E	E	Can be implemented easily	Achieves multiple objectives	Can be implemented quickly	Overall Benefits	Overall Costs	Priority
Hold periodic workshops for municipalities regarding zoning and planning issues that arise regarding natural hazards and hazard mitigation.	+	0	+	+	+	+	+	+	+	0	Low	Low	Low 23
Ensure that the principles of this hazard mitigation plan are integrated into the new and updated development plans/strategies.	+	+	-	-	-	+	+	-	+	0	Med	Low	Med 22

PRIORITIZATION OF ACTIONS – SUPPLEMENT JUNE 2010

(Name of Jurisdiction) **Clayton, Town of**

Action	"-" = cost (unfavorable)				"0"=neutral or not applicable			"+" = benefit (favorable)			(high, medium, or low)		
	S	T	A	P	L	E	E	Can be implemented easily	Achieves multiple objectives	Can be implemented quickly	Overall Benefits	Overall Costs	Priority
Public awareness program on Hazards, Prevention, and Mitigation: County will maintain a hazard mitigation and mitigation planning web presence (local municipal web sites to link up to this site, if they haven't already done so); all participating jurisdictions to support preparation of a joint annual hazard mitigation and mitigation planning fact sheet and its distribution; periodic discussion of hazard mitigation and the mitigation plan at other regular local meetings; use of annual flyers, newsletters, advertisements, or radio/tv announcements, etc. at the discretion of each jurisdiction (incorporating as much free information as possible from the FEMA Publications Warehouse and other appropriate sources). *(public education)*	-	+	-	+	0	+	-	+	+	+	High	Low	High
Code update: Review existing local codes and ordinances against the identified hazards to determine whether there need to be any amendments to address identified hazards and, where a need is identified, modify/amend the codes/ordinances as applicable. *(prevention)*	-	+	+	+	-	+	+	+	+	0	Low	Low	Med
Code enforcement: Enforcement of NYS and Local Building Codes with Continual CEO training. *(prevention)*	-	+	+	+	-	+	+	-	+	-	High	Med	Med
1.B. Ensure that local comprehensive plans incorporate natural disaster mitigation techniques through a courtesy review of draft plans by the County Planning Department	0	+	+	+	0	0	0	+	+	+	Med	Low	Med
Hold periodic workshops for municipalities regarding zoning and planning issues that arise regarding natural hazards and hazard mitigation.	+	0	+	+	+	+	+	+	+	0	Low	Low	Low

PRIORITIZATION OF ACTIONS – SUPPLEMENT JUNE 2010

(Name of Jurisdiction) **Clayton, Village of**

Action	"-" = cost (unfavorable)				"0"=neutral or not applicable			"+" = benefit (favorable)			(high, medium, or low)		
	S	T	A	P	L	E	E	Can be implemented easily	Achieves multiple objectives	Can be implemented quickly	Overall Benefits	Overall Costs	Priority
Public awareness program on Hazards, Prevention, and Mitigation: County will maintain a hazard mitigation and mitigation planning web presence (local municipal web sites to link up to this site, if they haven't already done so); all participating jurisdictions to support preparation of a joint annual hazard mitigation and mitigation planning fact sheet and its distribution; periodic discussion of hazard mitigation and the mitigation plan at other regular local meetings; use of annual flyers, newsletters, advertisements, or radio/tv announcements, etc. at the discretion of each jurisdiction (incorporating as much free information as possible from the FEMA Publications Warehouse and other appropriate sources). *(public education)*	-	+	-	+	0	+	-	+	+	+	High	Low	High
Code update: Review existing local codes and ordinances against the identified hazards to determine whether there need to be any amendments to address identified hazards and, where a need is identified, modify/amend the codes/ordinances as applicable. *(prevention)*	-	+	+	+	-	+	+	+	+	0	Low	Low	Med
Code enforcement: Enforcement of NYS and Local Building Codes with Continual CEO training. *(prevention)*	-	+	+	+	-	+	+	-	+	-	High	Med	Med
1.B. Ensure that local comprehensive plans incorporate natural disaster mitigation techniques through a courtesy review of draft plans by the County Planning Department	0	+	+	+	0	0	0	+	+	+	Med	Low	Med
Hold periodic workshops for municipalities regarding zoning and planning issues that arise regarding natural hazards and hazard mitigation.	+	0	+	+	+	+	+	+	+	0	Low	Low	Low

PRIORITIZATION OF ACTIONS – SUPPLEMENT JUNE 2010

(Name of Jurisdiction) **Defereit, Village of**

Action	"-" = cost (unfavorable)				"0"=neutral or not applicable			"+" = benefit (favorable)			(high, medium, or low)		
	S	T	A	P	L	E	E	Can be implemented easily	Achieves multiple objectives	Can be implemented quickly	Overall Benefits	Overall Costs	Priority
Public awareness program on Hazards, Prevention, and Mitigation: County will maintain a hazard mitigation and mitigation planning web presence (local municipal web sites to link up to this site, if they haven't already done so); all participating jurisdictions to support preparation of a joint annual hazard mitigation and mitigation planning fact sheet and its distribution; periodic discussion of hazard mitigation and the mitigation plan at other regular local meetings; use of annual flyers, newsletters, advertisements, or radio/tv announcements, etc. at the discretion of each jurisdiction (incorporating as much free information as possible from the FEMA Publications Warehouse and other appropriate sources). *(public education)*	-	+	-	+	0	+	-	+	+	+	High	Low	High
Code update: Review existing local codes and ordinances against the identified hazards to determine whether there need to be any amendments to address identified hazards and, where a need is identified, modify/amend the codes/ordinances as applicable. *(prevention)*	-	+	+	+	-	+	+	+	+	0	Low	Low	Med
Code enforcement: Enforcement of NYS and Local Building Codes with Continual CEO training. *(prevention)*	-	+	+	+	-	+	+	-	+	-	High	Med	Med
1.B. Ensure that local comprehensive plans incorporate natural disaster mitigation techniques through a courtesy review of draft plans by the County Planning Department	0	+	+	+	0	0	0	+	+	+	Med	Low	Med
Hold periodic workshops for municipalities regarding zoning and planning issues that arise regarding natural hazards and hazard mitigation.	+	0	+	+	+	+	+	+	+	0	Low	Low	Low

(Name of Jurisdiction) **Glen Park, Village of**

Action	"-" = cost (unfavorable)				"0"=neutral or not applicable			"+" = benefit (favorable)			(high, medium, or low)		
	S	T	A	P	L	E	E	Can be implemented easily	Achieves multiple objectives	Can be implemented quickly	Overall Benefits	Overall Costs	Priority
Public awareness program on Hazards, Prevention, and Mitigation: County will maintain a hazard mitigation and mitigation planning web presence (local municipal web sites to link up to this site, if they haven't already done so); all participating jurisdictions to support preparation of a joint annual hazard mitigation and mitigation planning fact sheet and its distribution; periodic discussion of hazard mitigation and the mitigation plan at other regular local meetings; use of annual flyers, newsletters, advertisements, or radio/tv announcements, etc. at the discretion of each jurisdiction (incorporating as much free information as possible from the FEMA Publications Warehouse and other appropriate sources). *(public education)*	-	+	-	+	0	+	-	+	+	+	High	Low	High
Code update: Review existing local codes and ordinances against the identified hazards to determine whether there need to be any amendments to address identified hazards and, where a need is identified, modify/amend the codes/ordinances as applicable. *(prevention)*	-	+	+	+	-	+	+	+	+	0	Low	Low	Med
Code enforcement: Enforcement of NYS and Local Building Codes with Continual CEO training. *(prevention)*	-	+	+	+	-	+	+	-	+	-	High	Med	Med
1.B. Ensure that local comprehensive plans incorporate natural disaster mitigation techniques through a courtesy review of draft plans by the County Planning Department	0	+	+	+	0	0	0	+	+	+	Med	Low	Med
Hold periodic workshops for municipalities regarding zoning and planning issues that arise regarding natural hazards and hazard mitigation.	+	0	+	+	+	+	+	+	+	0	Low	Low	Low

PRIORITIZATION OF ACTIONS – SUPPLEMENT JUNE 2010

(Name of Jurisdiction) **Henderson, Town of**

Action	"-" = cost (unfavorable)				"0"=neutral or not applicable			"+" = benefit (favorable)			(high, medium, or low)		
	S	T	A	P	L	E	E	Can be implemented easily	Achieves multiple objectives	Can be implemented quickly	Overall Benefits	Overall Costs	Priority
Public awareness program on Hazards, Prevention, and Mitigation: County will maintain a hazard mitigation and mitigation planning web presence (local municipal web sites to link up to this site, if they haven't already done so); all participating jurisdictions to support preparation of a joint annual hazard mitigation and mitigation planning fact sheet and its distribution; periodic discussion of hazard mitigation and the mitigation plan at other regular local meetings; use of annual flyers, newsletters, advertisements, or radio/tv announcements, etc. at the discretion of each jurisdiction (incorporating as much free information as possible from the FEMA Publications Warehouse and other appropriate sources). *(public education)*	-	+	-	+	0	+	-	+	+	+	High	Low	High
Code update: Review existing local codes and ordinances against the identified hazards to determine whether there need to be any amendments to address identified hazards and, where a need is identified, modify/amend the codes/ordinances as applicable. *(prevention)*	-	+	+	+	-	+	+	+	+	0	Low	Low	Med
Code enforcement: Enforcement of NYS and Local Building Codes with Continual CEO training. *(prevention)*	-	+	+	+	-	+	+	-	+	-	High	Med	Med
1.B. Ensure that local comprehensive plans incorporate natural disaster mitigation techniques through a courtesy review of draft plans by the County Planning Department	0	+	+	+	0	0	0	+	+	+	Med	Low	Med
Hold periodic workshops for municipalities regarding zoning and planning issues that arise regarding natural hazards and hazard mitigation.	+	0	+	+	+	+	+	+	+	0	Low	Low	Low

PRIORITIZATION OF ACTIONS – SUPPLEMENT JUNE 2010

(Name of Jurisdiction) **Lorraine, Town of**

Action	"-" = cost (unfavorable)				"0"=neutral or not applicable			"+" = benefit (favorable)			(high, medium, or low)		
	S	T	A	P	L	E	E	Can be implemented easily	Achieves multiple objectives	Can be implemented quickly	Overall Benefits	Overall Costs	Priority
Public awareness program on Hazards, Prevention, and Mitigation: County will maintain a hazard mitigation and mitigation planning web presence (local municipal web sites to link up to this site, if they haven't already done so); all participating jurisdictions to support preparation of a joint annual hazard mitigation and mitigation planning fact sheet and its distribution; periodic discussion of hazard mitigation and the mitigation plan at other regular local meetings; use of annual flyers, newsletters, advertisements, or radio/tv announcements, etc. at the discretion of each jurisdiction (incorporating as much free information as possible from the FEMA Publications Warehouse and other appropriate sources). *(public education)*	-	+	-	+	0	+	-	+	+	+	High	Low	High
Code update: Review existing local codes and ordinances against the identified hazards to determine whether there need to be any amendments to address identified hazards and, where a need is identified, modify/amend the codes/ordinances as applicable. *(prevention)*	-	+	+	+	-	+	+	+	+	0	Low	Low	Med
Code enforcement: Enforcement of NYS and Local Building Codes with Continual CEO training. *(prevention)*	-	+	+	+	-	+	+	-	+	-	High	Med	Med
1.B. Ensure that local comprehensive plans incorporate natural disaster mitigation techniques through a courtesy review of draft plans by the County Planning Department	0	+	+	+	0	0	0	+	+	+	Med	Low	Med
Hold periodic workshops for municipalities regarding zoning and planning issues that arise regarding natural hazards and hazard mitigation.	+	0	+	+	+	+	+	+	+	0	Low	Low	Low

PRIORITIZATION OF ACTIONS – SUPPLEMENT JUNE 2010

(Name of Jurisdiction) **Watertown, City of**

Action	"-" = cost (unfavorable)				"0"=neutral or not applicable			"+" = benefit (favorable)			(high, medium, or low)		
	S	T	A	P	L	E	E	Can be implemented easily	Achieves multiple objectives	Can be implemented quickly	Overall Benefits	Overall Costs	Priority
Public awareness program on Hazards, Prevention, and Mitigation: County will maintain a hazard mitigation and mitigation planning web presence (local municipal web sites to link up to this site, if they haven't already done so); all participating jurisdictions to support preparation of a joint annual hazard mitigation and mitigation planning fact sheet and its distribution; periodic discussion of hazard mitigation and the mitigation plan at other regular local meetings; use of annual flyers, newsletters, advertisements, or radio/tv announcements, etc. at the discretion of each jurisdiction (incorporating as much free information as possible from the FEMA Publications Warehouse and other appropriate sources). *(public education)*	-	+	-	+	0	+	-	+	+	+	High	Low	High
Code update: Review existing local codes and ordinances against the identified hazards to determine whether there need to be any amendments to address identified hazards and, where a need is identified, modify/amend the codes/ordinances as applicable. *(prevention)*	-	+	+	+	-	+	+	+	+	0	Low	Low	Med
Code enforcement: Enforcement of NYS and Local Building Codes with Continual CEO training. *(prevention)*	-	+	+	+	-	+	+	-	+	-	High	Med	Med
1.B. Ensure that local comprehensive plans incorporate natural disaster mitigation techniques through a courtesy review of draft plans by the County Planning Department	0	+	+	+	0	0	0	+	+	+	Med	Low	Med
Hold periodic workshops for municipalities regarding zoning and planning issues that arise regarding natural hazards and hazard mitigation.	+	0	+	+	+	+	+	+	+	0	Low	Low	Low

APPENDIX E–

PARTICIPATING JURISDICTIONS MITIGATION ACTION IMPLEMENTATION STRATEGY

Municipal action items from the December 2009 Draft remain.

County action items from the December 2009 Draft have been superseded.

The following items have been added as an **Addendum:**

- Revised County action items – several of which will be County-led initiatives with direct involvement and participation from each of the municipalities.

- Additional Municipal Action Items – documenting municipal buy-in on a series of County-led initiatives that will have direct involvement and participation from each of the municipalities.

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IMPLEMENTATION STRATEGY WORKSHEET

(Name of Jurisdiction) Town of Clayton

Before completing this form, your jurisdiction should already have considered the full range of possible mitigation actions set forth in the Risk Assessment Interim Deliverable, selected a subset of the actions that your jurisdiction would like to implement, AND filled out the "Prioritization Worksheet". Now, on this page, translate from the "Prioritization Worksheets" each action and its priority rank, then fill in the remainder of the row

PRIORITY*	Mitigation Action *	Please list the hazards that the action will address.	Please say whether the action will affect existing structures, future structures, both or neither?	What municipal department will take the lead on moving forward with the project?	What is the existing authority or local planning mechanism through which the action can be implemented?	What is the target date for project completion?	What is the estimated cost of the project? *(order of magnitude dollars, or qualitative high/med/low)*	What funding source do you anticipate? *(i.e., local staff time, local budget, grant funding, etc.)*
1	Bald Rock Road, Clayton, NY Existing culvert crossing Bald Rock Road, a Town road, is undersized upgrade to reduce damages	Flooding	Both	Town of Clayton Highway Department	Town of Clayton Highway Department	June 2011	Medium	Local Budget
2	Lovers Lane, Clayton, NY Existing culvert crossing Lovers Lane, a Town Road, is undersized upgrade to reduce damages	Flooding	Both	Town of Clayton Highway Department	Town of Clayton Highway Department	June 2012	Medium	Local Budget
3	Black Creek Road, Clayton, NY Existing culvert crossing Black Creek Road, a Town road, is undersized upgrade to reduce damages	Flooding	Both	Town of Clayton Highway Department	Town of Clayton Highway Department	June 2013	Medium	Local Budget
4	Factory Street, Depauville, NY Existing culvert crossing Factory Street, a Town road, is undersized upgrade to reduce damages	Flooding	Both	Town of Clayton Highway Department	Town of Clayton Highway Department	June 2014	Medium	Local Budget
5	Factory Street, Depauville, NY Drainage under roadway and behind residences is inadequate. upgrade to reduce damages	Flooding	Both	Town of Clayton Highway Department	Town of Clayton Highway Department\ Engineering	2014	High	Local Budget Grant Funding

** "Priority" and "Mitigation Action" to be carried over from the STAPLEE worksheet*

IMPLEMENTATION STRATEGY WORKSHEET

(Name of Jurisdiction) Village of Clayton

Before completing this form, your jurisdiction should already have considered the full range of possible mitigation actions set forth in the Risk Assessment Interim Deliverable, selected a subset of the actions that your jurisdiction would like to implement, AND filled out the "Prioritization Worksheet". Now, on this page, translate from the "Prioritization Worksheets" each action and its priority rank, then fill in the remainder of the row

PRIORITY*	Mitigation Action *	Please list the hazards that the action will address.	Please say whether the action will affect existing structures, future structures, both or neither?	What municipal department will take the lead on moving forward with the project?	What is the existing authority or local planning mechanism through which the action can be implemented?	What is the target date for project completion?	What is the estimated cost of the project? *(order of magnitude dollars, or qualitative high/med/low)*	What funding source do you anticipate? *(i.e., local staff time, local budget, grant funding, etc.)*
Med	Jane St.., James, John St., Clayton NY Removal of Trees in right of way on Village Streets	Wind,Tornado Lightning Winter Storm Drought/Fire	Both	Village of Clayton DPW	Village of Clayton DPW	2011	Low	Local Budget
Med	Gardner St., Clayton, NY Protection of Critical Facility at Sewage Treatment Plant on Gardner Street in the Village of Clayton	Flooding	Existing	Village of Clatyon DPW Engineering	Village of Clayton DPW Engineering Zoning/Planning	2012	High	Local Budget Grant Funding
Med	Bartlett Point Road, Clayton,. NY Protection of Critical Facility at Water Low Lift Facility on Bartlett Point in the Village of Clayton	Flooding	Existing	Village of Clayton DPW Engineering	Village of Clayton DPW Engineering Zoning/Planning	2013	High	Local Budget Grant Funding
Med	Bartlett Point Road, Clayton, NY Development and Implement Storm Water Management Plan	Flooding	Both	Village of Clayton DPW Engineering	Village of Clayton DPW Engineering Zoning/Planning	2013	High	Local Budget Grant Funding

** "Priority" and "Mitigation Action" to be carried over from the STAPLEE worksheet*

IMPLEMENTATION STRATEGY WORKSHEET

Village of Deferiet

Before completing this form, your jurisdiction should already have considered the full range of possible mitigation actions set forth in the Risk Assessment Interim Deliverable, selected a subset of the actions that your jurisdiction would like to implement, AND filled out the "Prioritization Worksheet". Now, on this page, translate from the "Prioritization Worksheets" each action and its priority rank, then fill in the remainder of the row

PRIORITY*	Mitigation Action *	Please list the hazards that the action will address.	Please say whether the action will affect existing structures, future structures, both or neither?	What municipal department will take the lead on moving forward with the project?	What is the existing authority or local planning mechanism through which the action can be implemented?	What is the target date for project completion?	What is the estimated cost of the project? *(order of magnitude dollars, or qualitative high/med/low)*	What funding source do you anticipate? *(i.e., local staff time, local budget, grant funding, etc.)*
Med	Forming a storm sewer system for Anderson Ave, Wilna Ave, and Martin Ave.	Flooding	Affects existing and future assets	Engineers, DPW and Village Board	DPW	2015	1 Million	N/A
High	Completing the Structural Updates at the Wastewater Treatment Building to prevent structural collapse	Earthquake	Affects existing	Engineers and Village Board	Village Board	2010	$20,000	Sewer Fund / Village Budget
Med	Removing the New Growth and Large Trees around the Old Sewage Treatment Facility ensure operability as backup	Wind,Tornado Lightning, Winter Storm, Drought,Fire	Affects existing and future assets	DPW	DPW	2010	$2000	Village Budget
Low	Gathering Information on the Village's Flood Plain Ordinance and the Flood Plain Manager	Flooding	Affects existing and future assets	Mayor and Code Enforcer	Planning Board	2010	High	N/A
High	Removal and Replacement of the Asbestos water main from Well house 2 to the Water Tower	This will prevent asbestos from entering the water system in the event of a water main break.	Affects existing and future assets	Engineers, DPW and Village Board	Village Board	2015	$100,000	Rural Water, USDA, Other State and Federal Agencies

** "Priority" and "Mitigation Action" to be carried over from the STAPLEE worksheet*

IMPLEMENTATION STRATEGY WORKSHEET

(Name of Jurisdiction) Village of Glen Park

Before completing this form, your jurisdiction should already have considered the full range of possible mitigation actions set forth in the Risk Assessment Interim Deliverable, selected a subset of the actions that your jurisdiction would like to implement, AND filled out the "Prioritization Worksheet". Now, on this page, translate from the "Prioritization Worksheets" each action and its priority rank, then fill in the remainder of the row

PRIORITY*	Mitigation Action *	Please list the hazards that the action will address.	Please say whether the action will affect existing structures, future structures, both or neither?	What municipal department will take the lead on moving forward with the project?	What is the existing authority or local planning mechanism through which the action can be implemented?	What is the target date for project completion?	What is the estimated cost of the project? *(order of magnitude dollars, or qualitative high/med/low)*	What funding source do you anticipate? *(i.e., local staff time, local budget, grant funding, etc.)*
1	NFIP Program Update the program. Currently documentation has been lost and unable to locate	Flood Protection Planning	Both	Village DPW	Village DPW	2011	Low	Budget
2	Public Notification Develop a plan for notification of residence of natural hazards that might approach the area	All	Both	Village DPW	Village DPW	2012	Med	HMGP Budget
3	600 Church Street Installation of storm drain in flood prone area	Flooding	Both	Village DPW	Village DPW	2013	High	HMGP
4	Michigan Street Installation of storm drains in flood prone area	Flooding	Both	Village DPW	Village DPW	2014	High	HMGP
5	600 Main Street Installation of storm drains in flood prone area	Flooding	Both	Village DPW	Village DPW	2015	High	HMGP

** "Priority" and "Mitigation Action" to be carried over from the STAPLEE worksheet*

IMPLEMENTATION STRATEGY WORKSHEET

(Name of Jurisdiction) Town of Henderson

Before completing this form, your jurisdiction should already have considered the full range of possible mitigation actions set forth in the Risk Assessment Interim Deliverable, selected a subset of the actions that your jurisdiction would like to implement, AND filled out the "Prioritization Worksheet". Now, on this page, translate from the "Prioritization Worksheets" each action and its priority rank, then fill in the remainder of the row

PRIORITY*	Mitigation Action *	Please list the hazards that the action will address.	Please say whether the action will affect existing structures, future structures, both or neither?	What municipal department will take the lead on moving forward with the project?	What is the existing authority or local planning mechanism through which the action can be implemented?	What is the target date for project completion?	What is the estimated cost of the project? *(order of magnitude dollars, or qualitative high/med/low)*	What funding source do you anticipate? *(i.e., local staff time, local budget, grant funding, etc.)*
1	Ayles Road in the Town of Henderson Seasonal flooding in both the Spring and Fall	Flooding	Both	Town of Henderson Highway Department	Town of Henderson Highway Department & Jefferson County Highway Dept.	2011	high	
2	Shear Road in the Town of Henderson Year Round Flooding	Flooding	Both	Town of Henderson Highway Department	Town of Henderson Highway Department & Jefferson County Highway Dept.	2012	high	
3	Tree Removal and Trimming Removal of dead & overgrown trees on County Route 123	Wind,Tornado Lightning, Winter Storm, Drought,Fire	Both	Town of Henderson Highway Department	Town of Henderson Highway Department & Jefferson County Highway Dept.	2010	low	
4	Programmable Emergency Signs	All	Future Assets	Town of Henderson Highway Department & Emergency Management	Town of Henderson Highway Department & Emergency Management	2010	med	

* *"Priority" and "Mitigation Action" to be carried over from the STAPLEE worksheet*

Lorraine, Town of

IMPLEMENTATION STRATEGY WORKSHEET

(Jurisdiction)

Cut Dead Trees on county ~~State~~ and Town Rds.	Wind, Tornado Lightning, Winter Storm, Drought, Fire	Both	Lorraine Hwy Dept.	Lorraine Hwy Dept.	Nov. 2009 December 2010	Medium	Local Budget
Replace various Culverts on Town Roads That are undersized and Don't Have Enough Flood	Flooding	Both	Lorraine Hwy Dept.	Lorraine Hwy Dept.	December 2013	High	Local Budget Grants
Establish a Flood Plan (Join NFIP)	Flood Emergency	Both	Planning Board	Planning Board Town Board	December 2011	Medium	Grants Local Budgets
Junk Law to reduce damages caused by flying debris during high wind events	Wind Tornado	Both	Planning Board Town Board Enforcement	Planning Board Town Board Enforcement clerk.	December 2012	Medium	Local Budget

and "Mitigation Action" to be carried over from the STAPLEE worksheet

IMPLEMENTATION STRATEGY WORKSHEET

(Name of Jurisdiction) City of Watertown

Before completing this form, your jurisdiction should already have considered the full range of possible mitigation actions set forth in the Risk Assessment Interim Deliverable, selected a subset of the actions that your jurisdiction would like to implement, AND filled out the "Prioritization Worksheet". Now, on this page, translate from the "Prioritization Worksheets" each action and its priority rank, then fill in the remainder of the row

PRIORITY*	Mitigation Action *	Please list the hazards that the action will address.	Please say whether the action will affect existing structures, future structures, both or neither?	What municipal department will take the lead on moving forward with the project?	What is the existing authority or local planning mechanism through which the action can be implemented?	What is the target date for project completion?	What is the estimated cost of the project? *(order of magnitude dollars, or qualitative high/med/low)*	What funding source do you anticipate? *(i.e., local staff time, local budget, grant funding, etc.)*
1	Pratt Street Storm sewer and catch basin	Flooding	Both	City of Watertown Dept. of Public Works	City of Watertown Dept. of Public Works	2013	High	HMGP Grant
2	200 Mill St. Inspection and repair of storm sewer	Flooding	Both	City of Watertown Dept. of Public Works	City of Watertown Dept. of Public Works	2011	High	HMGP Grant Budget
3	Tree removal and trimming throughout the City Tree removal and trimming at various locations in the City of Watertown.	Wind, Tornado Lightning, Winter Storm, Drought, Fire	Both	City of Watertown Dept. of Public Works	City of Watertown Dept. of Public Works	2012	Med	HMGP Budget
4	Public Awareness Expand and disseminate GIS and other hazards on the internet	All	Both	City of Watertown Informational Technology	City of Watertown Informational Technology	2012	Med	HMGP
5	Storm Sewer Maintenance Expand a current program of cleaning storm sewers	Flooding	Both	City of Watertown Dept of Public Works	City of Watertown Dept of Public Works	2013	Med	HMGP

** "Priority" and "Mitigation Action" to be carried over from the STAPLEE worksheet*

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APPENDIX E – ADDENDUM

PARTICIPATING JURISDICTIONS MITIGATION ACTION IMPLEMENTATION STRATEGY

The following items have been added as an **Addendum**:

- Revised County action items – several of which will be County-led initiatives with direct involvement and participation from each of the municipalities.

- Additional Municipal Action Items – documenting municipal buy-in on a series of County-led initiatives that will have direct involvement and participation from each of the municipalities.

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IMPLEMENTATION STRATEGY WORKSHEET – SUPPLEMENT JUNE 2010

(Name of Jurisdiction) **Jefferson County**

Before completing this form, your jurisdiction should already have considered the full range of possible mitigation actions set forth in the Risk Assessment Interim Deliverable, selected a subset of the actions that your jurisdiction would like to implement, AND filled out the "Prioritization Worksheet". Now, on this page, translate from the "Prioritization Worksheets" each action and its priority rank, then fill in the remainder of the row

PRIORITY	Mitigation Action	Please list the hazards that the action will address.	Please say whether the action will affect existing structures, future structures, both or neither?	What municipal department will take the lead on moving forward with the project?	What is the existing authority or local planning mechanism through which the action can be implemented?	What is the target date for project completion?	What is the estimated cost of the project?	What funding source do you anticipate?
1	Public Notification Public Notification for hazardous events utilizing a web based mass notification program using Reverse 911 technology	All	Both	Jefferson County Fire & Emergency Management	Emergency Management and 911	2010	Medium	HMGP Grant Budget
4	Lightning Protection Ensure critical infrastructure operation by installing lightning protection to emergency communication towers.	Lightning	Both	Jefferson County Fire and Emergency Management	Emergency Management	2012	Medium	HMGP Grant
5	Tree Removal and Trimming various locations Prevent road closures and power outages through tree removal and trimming along various county roads.	Extreme wind. Lightning, Tornado, Winter Storm Drought/Fire	Both	Jefferson County Highway Dept.	Jefferson County Highway Dept.	2010	Medium	Budget
6	County Route 38 Town of LeRay Reduce property damage due to flooding through installation of storm drainage system	Flooding	Both	Jefferson County Highway Dept.	Jefferson County Highway Dept.	2011	Medium	HMGP Budget
7	Public Awareness and Planning Identifying problems and mitigation efforts through expanding GIS to collect and develop more sophisticated hazard mapping	All	Both	Jefferson County Planning	Jefferson County Planning	2012	Medium	HMGP Budget

PRIORITY	Mitigation Action	Please list the hazards that the action will address.	Please say whether the action will affect existing structures, future structures, both or neither?	What municipal department will take the lead on moving forward with the project?	What is the existing authority or local planning mechanism through which the action can be implemented?	What is the target date for project completion?	What is the estimated cost of the project?	What funding source do you anticipate?
8	Building – County Route 190 Watertown NY Reduce damages associated with ice jam related flooding through construction of a building for storage of stock piled assets (Sand Bags)	Ice Jam related flooding	Both	Jefferson County Highway Dept.	Jefferson County Highway Dept.	2012	High	HMGP Grant Budget
9	County Route 26 Village of Antwerp Reduce property damage due to flooding through installation of storm drainage system	Flooding	Both	Jefferson County Highway Dept.	Jefferson County Highway Dept.	2014	High	HMGP Budget
10	Building – Waterman Dr, Watertown, NY Provide appropriate shelter for mission critical infrastructure through construction of garage for storage of portable critical infrastructure.	All	Both	Jefferson County Buildings and Grounds	Emergency Management	2013	High	HMGP
11	Emergency Management Software Installation and implementation of a web based disaster management software to identify resources used in a disaster and in turn allow for efficient management of the disaster.	All	Both	Jefferson County Emergency Management	Jefferson County Emergency Management & Informational Technology Depart.	2011	Medium	SHSP Grant Budget
12	County Route 69 Town of Rodman Hill side stabilization project to reduce public and private property damage, as well as potential road closure and emergency response to area.	Landslide	Both	Jefferson County Highway	Jefferson County Highway	2012	Medium	Budget
13	County Route 6 Town of Cape Vincent Mitigation of public and private property damage due to coastal erosion	Coastal Erosion	Both	Jefferson County Highway	Jefferson County Highway	2013	Medium	Budget

PRIORITY	Mitigation Action	Please list the hazards that the action will address.	Please say whether the action will affect existing structures, future structures, both or neither?	What municipal department will take the lead on moving forward with the project?	What is the existing authority or local planning mechanism through which the action can be implemented?	What is the target date for project completion?	What is the estimated cost of the project?	What funding source do you anticipate?
14	Public Notification Purchase portable variable message board for portable deployment to advise the public of emergencies.	All	Both	Jefferson County Highway Dept.	Jefferson County Highway Dept.	2012	Med	HMGP Budget
15	County Route 59 Town of Brownville Replace deteriorated bridge and road embankment stabilization as well as address coastal erosion due to excessive wave action. Mitigate private and public property damage and ensure emergency response	Coastal erosion and wave action.	Both	Jefferson County Highway Dept.	Jefferson County Highway Dept.	2013	Medium	HMGP Budget
16	County Route 69 Town of Adams Stream bank erosion protection and stabilization project to prevent road wash out and private and municipal property damage.	Erosion	Both	Jefferson County Highway Dept.	Jefferson County Highway Dept.	2012	Medium	Budget
17	Public Awareness Expand and Disseminate GIS and other hazard information on the internet	All	Both	Jefferson County Planning	Jefferson County Planning	2012	Low	HMGP
18	State Route 283 & State Route 342 Intersection Installation of batteries and solar charging panels to operate traffic signal during power outages to ensure the calm traffic flow during power outages caused by storms	All	Existing assets	Jefferson County Highway & New York State Department of Transportation	Jefferson County Highway Dept.	2012	Low	HMGP Grant

PRIORITY	Mitigation Action	Please list the hazards that the action will address.	Please say whether the action will affect existing structures, future structures, both or neither?	What municipal department will take the lead on moving forward with the project?	What is the existing authority or local planning mechanism through which the action can be implemented?	What is the target date for project completion?	What is the estimated cost of the project?	What funding source do you anticipate?
3	Public awareness program on Hazards, Prevention, and Mitigation: County will maintain a hazard mitigation and mitigation planning web presence (local municipal web sites to link up to this site, if they haven't already done so); all participating jurisdictions to support preparation of a joint annual hazard mitigation and mitigation planning fact sheet and its distribution; periodic discussion of hazard mitigation and the mitigation plan at other regular local meetings; use of annual flyers, newsletters, advertisements, or radio/tv announcements, etc. at the discretion of each jurisdiction (incorporating as much free information as possible from the FEMA Publications Warehouse and other appropriate sources). *(public education)*	All	The education itself doesn't directly apply to either existing or new structures, but any subsequent activities undertaken by those educated could impact both existing and new structures as well as other types of assets such as the population itself	JCOFEM and Municipal Agencies	NA	Ongoing	Low	Local budget
20	Code update: Review existing local codes and ordinances against the identified hazards to determine whether there need to be any amendments to address identified hazards and, where a need is identified, modify/amend the codes/ordinances as applicable. *(prevention)*	All	Primarily applies to new structures (though would also apply to improvements made to existing structures in some circumstances)	JCOFEM and Municipal Agencies	Existing local codes and ordinances	Ongoing	Low	Staff time/ Local budget
19	Code enforcement: Enforcement of NYS and Local Building Codes with Continual CEO training. *(prevention)*	All	Primarily applies to new structures (though would also apply to improvements made to existing structures in some circumstances)	JCOFEM and Municipal Agencies	Existing local codes and ordinances	Ongoing	Medium	Staff time/ Local budget
21	1.B. Ensure that local comprehensive plans incorporate natural disaster mitigation techniques through a courtesy review of draft plans by the County Planning Department	All hazards	Both	County Planning (with support from JCOFEM) and Municipal Agencies	Maintenance of CEMP	Ongoing	Low	County Budget, local staff time

PRIORITY	Mitigation Action	Please list the hazards that the action will address.	Please say whether the action will affect existing structures, future structures, both or neither?	What municipal department will take the lead on moving forward with the project?	What is the existing authority or local planning mechanism through which the action can be implemented?	What is the target date for project completion?	What is the estimated cost of the project? [1]	What funding source do you anticipate?
2	2E. Update information on the JCOFEM web site regarding preparing for emergencies to incorporate profiled hazards not already discussed in these documents, and ensure that the information continues to be maintained on the web site.	All hazards	Both	JCOFEM	JCOFEM	Ongoing	Low	County Budget, local staff time
23	Hold periodic workshops for municipalities regarding zoning and planning issues that arise regarding natural hazards and hazard mitigation.	All hazards	Both	JCOFEM, County Planning Department and Municipal Agencies	CEMP, Hazard Mitigation Plan	Ongoing	Low	County Budget, local staff time
20	Ensure that the principles of this hazard mitigation plan are integrated into the new and updated development plans/strategies.	All hazards	Both	County Planning	Existing Plans, Hazard Mitigation Plan	Ongoing until Comprehensive Plan is completed	Low	County Budget, local staff time

[1] **The County cost structure is as follows: Low cost = less than $10,000; Medium = $10,001-$50,000; High = $50,000 and above**

IMPLEMENTATION STRATEGY WORKSHEET - – SUPPLEMENT JUNE 2010

(Name of Jurisdiction) Clayton, Town of

PRIORITY	Mitigation Action	Please list the hazards that the action will address.	Please say whether the action will affect existing structures, future structures, both or neither?	Which municipal representative will liaise / coordinate with the County to ensure municipal involvement?	What is the existing authority or local planning mechanism through which the action can be implemented?	What is the target date for project completion?	What is the estimated cost of the project? [1]	What funding source do you anticipate?
3	Public awareness program on Hazards, Prevention, and Mitigation: County will maintain a hazard mitigation and mitigation planning web presence (local municipal web sites to link up to this site, if they haven't already done so); all participating jurisdictions to support preparation of a joint annual hazard mitigation and mitigation planning fact sheet and its distribution; periodic discussion of hazard mitigation and the mitigation plan at other regular local meetings; use of annual flyers, newsletters, advertisements, or radio/tv announcements, etc. at the discretion of each jurisdiction (incorporating as much free information as possible from the FEMA Publications Warehouse and other appropriate sources). *(public education)*	All	The education itself doesn't directly apply t either existing or new structures, but any subsequent activities undertaken by those educated could impact both existing and new structures as well as other types of assets such as the population itself	CPG Member Town Supervisor	JCOFEM and Municipal Agencies	Ongoing	Low	Local budget
20	Code update: Review existing local codes and ordinances against the identified hazards to determine whether there need to be any amendments to address identified hazards and, where a need is identified, modify/amend the codes/ordinances as applicable. *(prevention)*	All	Primarily applies to new structures (though would also apply to improvements made to existing structures in some circumstances)	CPG Member Town Supervisor	JCOFEM and Municipal Agencies	Ongoing	Low	Staff Time/ Local budget
10	Code enforcement: Enforcement of NYS and Local Building Codes with Continual CEO training. *(prevention)*	All	Primarily applies to new structures (though would also apply to improvements made to existing structures in some circumstances)	CPG Member Town Supervisor	JCOFEM and Municipal Agencies	Ongoing	Medium	Staff time/ Local budget
21	1.B. Ensure that local comprehensive plans incorporate natural disaster mitigation techniques through a courtesy review of draft plans by the County Planning Department	All hazards	Both	CPG Member Town Supervisor	County Planning (with support from JCOFEM) and Municipal Agencies	Ongoing	Low	County Budget, local staff time
23	Hold periodic workshops for municipalities regarding zoning and planning issues that arise regarding natural hazards and hazard mitigation.	All hazards	Both	CPG Member Town Supervisor	JCOFEM, County Planning Department and Municipal Agencies	Ongoing	Low	County Budget, local staff time

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IMPLEMENTATION STRATEGY WORKSHEET - – SUPPLEMENT JUNE 2010

(Name of Jurisdiction) **Clayton, Village of**

PRIORITY	Mitigation Action	Please list the hazards that the action will address.	Please say whether the action will affect existing structures, future structures, both or neither?	Which municipal representative will liaise / coordinate with the County to ensure municipal involvement?	What is the existing authority or local planning mechanism through which the action can be implemented?	What is the target date for project completion?	What is the estimated cost of the project? [1]	What funding source do you anticipate?
3	Public awareness program on Hazards, Prevention, and Mitigation: County will maintain a hazard mitigation and mitigation planning web presence (local municipal web sites to link up to this site, if they haven't already done so); all participating jurisdictions to support preparation of a joint annual hazard mitigation and mitigation planning fact sheet and its distribution; periodic discussion of hazard mitigation and the mitigation plan at other regular local meetings; use of annual flyers, newsletters, advertisements, or radio/tv announcements, etc. at the discretion of each jurisdiction (incorporating as much free information as possible from the FEMA Publications Warehouse and other appropriate sources). *(public education)*	All	The education itself doesn't directly apply t either existing or new structures, but any subsequent activities undertaken by those educated could impact both existing and new structures as well as other types of assets such as the population itself	CPG Member Village Trustee	JCOFEM and Municipal Agencies	Ongoing	Low	Local budget
20	Code update: Review existing local codes and ordinances against the identified hazards to determine whether there need to be any amendments to address identified hazards and, where a need is identified, modify/amend the codes/ordinances as applicable. *(prevention)*	All	Primarily applies to new structures (though would also apply to improvements made to existing structures in some circumstances)	CPG Member Village Trustee	JCOFEM and Municipal Agencies	Ongoing	Low	Staff Time/ Local budget
10	Code enforcement: Enforcement of NYS and Local Building Codes with Continual CEO training. *(prevention)*	All	Primarily applies to new structures (though would also apply to improvements made to existing structures in some circumstances)	CPG Member Village Trustee	JCOFEM and Municipal Agencies	Ongoing	Medium	Staff time/ Local budget
21	1.B. Ensure that local comprehensive plans incorporate natural disaster mitigation techniques through a courtesy review of draft plans by the County Planning Department	All hazards	Both	CPG Member Village Trustee	County Planning (with support from JCOFEM) and Municipal Agencies	Ongoing	Low	County Budget, local staff time
23	Hold periodic workshops for municipalities regarding zoning and planning issues that arise regarding natural hazards and hazard mitigation.	All hazards	Both	CPG Member Village Trustee	JCOFEM, County Planning Department and Municipal Agencies	Ongoing	Low	County Budget, local staff time

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IMPLEMENTATION STRATEGY WORKSHEET - – SUPPLEMENT JUNE 2010

(Name of Jurisdiction) **Defereit, Village of**

PRIORITY	Mitigation Action	Please list the hazards that the action will address.	Please say whether the action will affect existing structures, future structures, both or neither?	Which municipal representative will liaise / coordinate with the County to ensure municipal involvement?	What is the existing authority or local planning mechanism through which the action can be implemented?	What is the target date for project completion?	What is the estimated cost of the project? [1]	What funding source do you anticipate?
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10	Code enforcement: Enforcement of NYS and Local Building Codes with Continual CEO training. *(prevention)*	All	Primarily applies to new structures (though would also apply to improvements made to existing structures in some circumstances)	CPG Member Village Trustee	JCOFEM and Municipal Agencies	Ongoing	Medium	Staff time/ Local budget
21	1.B. Ensure that local comprehensive plans incorporate natural disaster mitigation techniques through a courtesy review of draft plans by the County Planning Department	All hazards	Both	CPG Member Village Trustee	County Planning (with support from JCOFEM) and Municipal Agencies	Ongoing	Low	County Budget, local staff time
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IMPLEMENTATION STRATEGY WORKSHEET - – SUPPLEMENT JUNE 2010

(Name of Jurisdiction) Glen Park, Village of

PRIORITY	Mitigation Action	Please list the hazards that the action will address.	Please say whether the action will affect existing structures, future structures, both or neither?	Which municipal representative will liaise / coordinate with the County to ensure municipal involvement?	What is the existing authority or local planning mechanism through which the action can be implemented?	What is the target date for project completion?	What is the estimated cost of the project? [1]	What funding source do you anticipate?
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21	1.B. Ensure that local comprehensive plans incorporate natural disaster mitigation techniques through a courtesy review of draft plans by the County Planning Department	All hazards	Both	CPG Member Village Trustee	County Planning (with support from JCOFEM) and Municipal Agencies	Ongoing	Low	County Budget, local staff time
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IMPLEMENTATION STRATEGY WORKSHEET - – SUPPLEMENT JUNE 2010

(Name of Jurisdiction) Henderson, Town of

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20	Code update: Review existing local codes and ordinances against the identified hazards to determine whether there need to be any amendments to address identified hazards and, where a need is identified, modify/amend the codes/ordinances as applicable. *(prevention)*	All	Primarily applies to new structures (though would also apply to improvements made to existing structures in some circumstances)	CPG Member Town Supervisor	JCOFEM and Municipal Agencies	Ongoing	Low	Staff Time/ Local budget
19	Code enforcement: Enforcement of NYS and Local Building Codes with Continual CEO training. *(prevention)*	All	Primarily applies to new structures (though would also apply to improvements made to existing structures in some circumstances)	CPG Member Town Supervisor	JCOFEM and Municipal Agencies	Ongoing	Medium	Staff time/ Local budget
21	1.B. Ensure that local comprehensive plans incorporate natural disaster mitigation techniques through a courtesy review of draft plans by the County Planning Department	All hazards	Both	CPG Member Town Supervisor	County Planning (with support from JCOFEM) and Municipal Agencies	Ongoing	Low	County Budget, local staff time
23	Hold periodic workshops for municipalities regarding zoning and planning issues that arise regarding natural hazards and hazard mitigation.	All hazards	Both	CPG Member Town Supervisor	JCOFEM, County Planning Department and Municipal Agencies	Ongoing	Low	County Budget, local staff time

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IMPLEMENTATION STRATEGY WORKSHEET - – SUPPLEMENT JUNE 2010

(Name of Jurisdiction) Lorraine, Town of

PRIORITY	Mitigation Action	Please list the hazards that the action will address.	Please say whether the action will affect existing structures, future structures, both or neither?	Which municipal representative will liaise / coordinate with the County to ensure municipal involvement?	What is the existing authority or local planning mechanism through which the action can be implemented?	What is the target date for project completion?	What is the estimated cost of the project? [1]	What funding source do you anticipate?
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20	Code update: Review existing local codes and ordinances against the identified hazards to determine whether there need to be any amendments to address identified hazards and, where a need is identified, modify/amend the codes/ordinances as applicable. *(prevention)*	All	Primarily applies to new structures (though would also apply to improvements made to existing structures in some circumstances)	CPG Member Town Supervisor	JCOFEM and Municipal Agencies	Ongoing	Low	Staff Time/ Local budget
10	Code enforcement: Enforcement of NYS and Local Building Codes with Continual CEO training. *(prevention)*	All	Primarily applies to new structures (though would also apply to improvements made to existing structures in some circumstances)	CPG Member Town Supervisor	JCOFEM and Municipal Agencies	Ongoing	Medium	Staff time/ Local budget
21	1.B. Ensure that local comprehensive plans incorporate natural disaster mitigation techniques through a courtesy review of draft plans by the County Planning Department	All hazards	Both	CPG Member Town Supervisor	County Planning (with support from JCOFEM) and Municipal Agencies	Ongoing	Low	County Budget, local staff time
23	Hold periodic workshops for municipalities regarding zoning and planning issues that arise regarding natural hazards and hazard mitigation.	All hazards	Both	CPG Member Town Supervisor	JCOFEM, County Planning Department and Municipal Agencies	Ongoing	Low	County Budget, local staff time

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IMPLEMENTATION STRATEGY WORKSHEET - – SUPPLEMENT JUNE 2010

(Name of Jurisdiction) Watertown, City of

PRIORITY	Mitigation Action	Please list the hazards that the action will address.	Please say whether the action will affect existing structures, future structures, both or neither?	Which municipal representative will liaise / coordinate with the County to ensure municipal involvement?	What is the existing authority or local planning mechanism through which the action can be implemented?	What is the target date for project completion?	What is the estimated cost of the project? [1]	What funding source do you anticipate?
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20	Code update: Review existing local codes and ordinances against the identified hazards to determine whether there need to be any amendments to address identified hazards and, where a need is identified, modify/amend the codes/ordinances as applicable. *(prevention)*	All	Primarily applies to new structures (though would also apply to improvements made to existing structures in some circumstances)	CPG Member Mayor	JCOFEM and Municipal Agencies	Ongoing	Low	Staff Time/ Local budget
10	Code enforcement: Enforcement of NYS and Local Building Codes with Continual CEO training. *(prevention)*	All	Primarily applies to new structures (though would also apply to improvements made to existing structures in some circumstances)	CPG Member Mayor	JCOFEM and Municipal Agencies	Ongoing	Medium	Staff time/ Local budget
21	1.B. Ensure that local comprehensive plans incorporate natural disaster mitigation techniques through a courtesy review of draft plans by the County Planning Department	All hazards	Both	CPG Member Mayor	County Planning (with support from JCOFEM) and Municipal Agencies	Ongoing	Low	County Budget, local staff time
23	Hold periodic workshops for municipalities regarding zoning and planning issues that arise regarding natural hazards and hazard mitigation.	All hazards	Both	CPG Member Mayor	JCOFEM, County Planning Department and Municipal Agencies	Ongoing	Low	County Budget, local staff time

[1] **The County cost structure is as follows: Low cost = less than $10,000; Medium = $10,001-$50,000; High = $50,000 and above**

APPENDIX F –

NATIONAL FLOOD INSURANCE PROGRAM COMPLIANCE ACTIONS

Note that Pages F-2 through F-4 and Pages F-24 through F-27 have been added since the December 2009 Draft in order to address FEMA comments.

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Local Administrators for Flood Damage Protection in Jefferson County Municipalities

Information held on record by Jefferson County as of 5/18/2010.
For municipalities where Jefferson County does not have the name of the Local Administrator on record:
Individuals marked * are listed as Floodplain Administrator by FEMA as of 11/7/2007.
Individuals in italics have not been formally identified as Floodplain Administrators but attended NFIP training workshop facilitated by NYSDEC on October 5, 2009.

Town	Local Administrator	Name	Telephone Number	Year of Flood Damage Prevention Ordinance	Flood Map Date
Adams (T)	Code Enforcement Officer or Building Inspector	David Ross	(315) 785-5130 (W) (315) 232 2749 (H)	1996	1985
Adams (V)	Code Enforcement Officer	David Ross	(315) 232-2749	1993	1985
Alexandria (T)	Zoning Enforcement Officer	Gloria Kernehan	(315) 482-9519	1987	1985
Alexandria Bay (V)	Zoning Inspector	Brad Millet	(315) 482-9519	1987	1978
Antwerp (T)	Land Use Enforcement Officer	Cindy Shaw	(315) 846-5901	1988	1986
Antwerp (V)		Thomas Johnson*			*No published FIRM*
Black River (V)	Zoning enforcement Officer	David Lachenauer	(315) 773-5721	1989	1989
Brownville (T)		Leo Thompson* *Ron McGregor*		*missing*	1992
Brownville (V)	Zoning Officer	Michael Baltista	(315) 771-5892	1992	1986
Cape Vincent (T)	Zoning Enforcement Officer	Alan Wood	(315) 654-2102	1994	1992
Cape Vincent (V)	Village Planning Board	Jerry Golden	(315) 493-6222	1987	1985
Carthage (V)	Code Enforcement Officer	Rick Soluri	(315) 7493-6222	1997	1991
Champion (T)	Zoning Enforcement Officer	David Koster	(315) 493-3240	1993	1993
Chaumont (V)	Building Inspector	David Lachenauer	(315) 649-2900 (W) (315) 649-5017 (H)	1987	1999

Town	Local Administrator	Name	Telephone Number	Year of Flood Damage Prevention Ordinance	Flood Map Date
Clayton (T)	Zoning Enforcement Officer	Henry LaClair	(315) 686-3512 Ext. 28	1993	1986
Clayton (V)	Village Building Inspector	Richard Ingerson	(315) 686-3512	1987	1977
Deferiet (V)		Gail La Lierre* *Timothy Irey* *John Oakes*			*No Published FIRM*
Dexter (V)	Building Inspector	James Millington	(315) 639-6260	1987	1994
Ellisburg (T)	Zoning Enforcement Officer	Cindy Shaw	(315) 846-5138	1994	1992
Ellisburg (V)		Cindy Shaw Charles David	(315) 846-5138	1987	1985
Evans Mills (V)	Code Enforcement Officer	Terry McKeever	(315) 642-5683	1990	1992
Glen Park (V)		Constance Hoard*			*No Published FIRM*
Henderson (T)	Zoning Enforcement Officer	Francis Sibrava	(315) 938-5542	1999	1992
Herrings (V)	Village Board	David Arnold, Mayor	(315) 493-4172	1987	1985
Hounsfield (T)	Zoning Enforcement Officer	Marlene Lennox	(315) 782-6380	1991	1992
LeRay (T)	Zoning Enforcement Officer	Dean Russell	(315) 619-5224	1991	1992
Lorraine (T)	*Currently*	*Not*	*participating*	*in*	*NFIP*
Lyme (T)	Zoning Enforcement Officer	Dave Rush Jim Millington	(315) 649-2788	1993	1993
Mannsville (V)	*Currently*	*Not*	*participating*	*in*	*NFIP*
Orleans (T)		Walter Perry* *Terry Brown*		1984/1985	1978
Pamelia (T)	Zoning Officer	Walt VanTassel	(315) 785-8453	1992	1992
Philadelphia (T)		Matthew Montroy*		1989	1989
Philadelphia (V)	Building Inspector	Terry McKeever	(315) 642-5683	1987	1993
Rodman (T)		Gordon Cole*		*missing*	1985

Town	Local Administrator	Name	Telephone Number	Year of Flood Damage Prevention Ordinance	Flood Map Date
Rutland (T)	Zoning Enforcement Officer	Harold Wheeler	(315) 788-3440	1992	1992
Sackets Harbor (V)		James Corbin* *Stephen Swain* *Gary Gibson*			1994
Theresa (T)	Building Inspector and Zoning Enforcement Officer	Rick Soluri	(315) 628-5015 (315) 783-6771	1987	1985
Theresa (V)	Building Inspector and Zoning Enforcement Officer	Rick Soluri	(315) 686-3076	1987	1985
Watertown (C)	City Engineer	Kurt Hauk	(315) 785-7740	1993	1993
Watertown (T)	Building Inspector	Durwood Cook Jon Grant	(315) 782-8248	1993	1993
West Carthage (V)	Code Enforcement Officer	Ron Blinebry	(315) 493-2552	1991	1990
Wilna (T)	Code Enforcement Officer	Rick Soluri	(315) 493-2771	1997	1992
Worth (T)				*missing*	*No published FIRM*

Jefferson County Multi-Jurisdictional Hazard Mitigation Planning Project
NFIP COMPLIANCE ACTIONS WORKSHEET

(Name of Jurisdiction) Town of Clayton

First:

1. Please fill in the following table. *(Note: All municipalities in Jefferson County participate in the NFIP except for the Town of Lorraine and Village of Mannsville; NFIP participating communities DO have a floodplain management ordinance AND a Floodplain Administrator on the books.)*

Name of Your Jurisdiction	Adoption Date of your Current Floodplain Management Ordinance	Position Title of Your Jurisdiction's Designated Floodplain Administrator	Number of Municipal Staff with Roles in Enforcement of Floodplain Management Ordinance
Town of Clayton	**1993**	**Zoning Enforcement Officer**	**1**
Please give a brief description of activities currently undertaken by your municipality to enforce your floodplain management ordinance: **Zoning Enforcement Officer is involved with the building code process and will monitor the activities**			

Next:

2. If your current floodplain management ordinance was adopted before 1996 and has not been subsequently revised, then fill in Row 1 on Pages 2 and 3. *(Please leave Row 1 blank if your ordinance is current as of 1996 or later.)*
3. If your jurisdiction currently does not have a specific person filling the position title of Floodplain Administrator, or if the person filling this position is unaware of their role/responsibilities, then fill in Row 2 on Pages 2 and 3. *(Otherwise please leave Row 2 blank).*
4. If you consider the present level of staffing insufficient to adequately enforce your floodplain management ordinance, then fill in Row 3 on Pages 2 and 3. *(Please leave Row 3 blank if you feel current staffing levels are adequate.)*
5. Please fill in Row 4 on Pages 2 and 3 to evaluate how you plan to update your floodplain management ordinance to be consistent with revised Flood Insurance Rate Maps that may at some point become available in the future for Jefferson County. (*Note that FEMA has not included Jefferson County as part of its Map Modernization study; thus, no new mapping is anticipated in the near future. However, everyone should still fill in Row 4.)*
6. If floodplain management staff members in your municipality are not Certified Floodplain Managers (CFMs), then please fill in Row 5 on Pages 2 and 3. *(Please leave Row 5 blank if your floodplain managers are already CFMs.)*
7. If your municipality is not already a participant in FEMA's Community Rating System (CRS), please fill in Row 6 on Pages 2 and 3. *(No jurisdictions in Jefferson County currently participate in the CRS; everyone should fill in Row 6.)*
8. If you consider there to be additional activities that could be undertaken to enforce your municipality's floodplain management ordinance beyond what your municipality is already doing, please list these actions in the blank Rows 7 and 8 on Pages 2 and 3. *(Otherwise, you can leave Rows 7 and 8 blank.)* * Feel free to attach additional pages if you need more space.

Jefferson County Multi-Jurisdictional Hazard Mitigation Planning Project
NFIP COMPLIANCE ACTIONS WORKSHEET

(Name of Jurisdiction) Town of Clayton

PRIORITIZATION

NFIP Compliance Action	"-" = cost (unfavorable)					"0"=neutral or not applicable		"+" = benefit (favorable)			(high, medium, or low)		
	S	T	A	P	L	E	E	Can be implemented easily	Achieves multiple objectives	Can be implemented quickly	Overall Benefits	Overall Costs	Priority
1. Update/revise floodplain management ordinances to comply with latest FEMA regulations	+	+	-	+	O	+	+	-	+	-	High	High	High
2. Designate/install a specific person to be your municipality's Floodplain Administrator	+	+	-	+	O	+	+	-	+	-	High	Medium	High
3. Add/train sufficient members of staff to adequately enforce NFIP regulations/floodplain management ordinances	+	+	-	+	O	+	+	-	+	-	High	High	Medium
4. Update/revise floodplain management ordinances to be consistent with potential future new FIRMs	O	+	-	O	-	+	+	-	+	-	High	High	High
5. Require staff involved in Floodplain management and ordinance enforcement to become Certified Floodplain Managers (CFMs)	+	+	+	-	+	-	+	-	+	-	Medium	High	Medium
6. Join the Community Rating System (CRS)	+	+	-	+	+	+	+	-	+	-	High	Low	High
7.													
8.													

Jefferson County Multi-Jurisdictional Hazard Mitigation Planning Project
NFIP COMPLIANCE ACTIONS WORKSHEET

(Name of Jurisdiction) Town of Clayton

IMPLEMENTATION STRATEGY

Priority	NFIP Compliance Action	Applies to community structures (existing/ new/both/ neither)	Primary Department Responsible	Existing Local Planning Mechanism through which the action will be implemented	Target Date	Cost Estimate	Funding Source
High	1. Update/revise floodplain management ordinances to comply with latest FEMA regulations	Existing	Zoning	Zoning	2011	Low	Local Budget
High	2. Designate/install a specific person to be your municipality's Floodplain Administrator	Existing	Zoning	Zoning Town Board	2012	Low	Local Budget
Medium	3. Add/train sufficient members of staff to adequately enforce NFIP regulations/floodplain management ordinances	Existing	Town Board	Supervisor	2011	Medium	Local Budget
High	4. Update/revise floodplain management ordinances to be consistent with potential future new FIRMs	Both	Zoning Planning	Zoning/Planning Board	2011	Low	Local Budget
Medium	5. Require staff involved in Floodplain management and ordinance enforcement to become Certified Floodplain Managers (CFMs)	Existing	Zoning	Zoning Planning Board	2014	Low	Local Budget
High	6. Join the Community Rating System (CRS)	Existing	Zoning	Zoning	Unknown	Unknown	Local Budget
	7.						
	8.						

Jefferson County Multi-Jurisdictional Hazard Mitigation Planning Project
NFIP COMPLIANCE ACTIONS WORKSHEET

(Name of Jurisdiction) Village of Clayton

First:

1. Please fill in the following table. *(Note: All municipalities in Jefferson County participate in the NFIP except for the Town of Lorraine and Village of Mannsville; NFIP participating communities DO have a floodplain management ordinance AND a Floodplain Administrator on the books.)*

Name of Your Jurisdiction	Adoption Date of your Current Floodplain Management Ordinance	Position Title of Your Jurisdiction's Designated Floodplain Administrator	Number of Municipal Staff with Roles in Enforcement of Floodplain Management Ordinance
Village of Clayton	**1987**	**Village Building Inspector**	**1**
Please give a brief description of activities currently undertaken by your municipality to enforce your floodplain management ordinance: **Village Building Inspector is involved with the building code process and will monitor the activities**			

Next:

2. If your current floodplain management ordinance was adopted before 1996 and has not been subsequently revised, then fill in Row 1 on Pages 2 and 3. *(Please leave Row 1 blank if your ordinance is current as of 1996 or later.)*
3. If your jurisdiction currently does not have a specific person filling the position title of Floodplain Administrator, or if the person filling this position is unaware of their role/responsibilities, then fill in Row 2 on Pages 2 and 3. *(Otherwise please leave Row 2 blank).*
4. If you consider the present level of staffing insufficient to adequately enforce your floodplain management ordinance, then fill in Row 3 on Pages 2 and 3. *(Please leave Row 3 blank if you feel current staffing levels are adequate.)*
5. Please fill in Row 4 on Pages 2 and 3 to evaluate how you plan to update your floodplain management ordinance to be consistent with revised Flood Insurance Rate Maps that may at some point become available in the future for Jefferson County. (*Note that FEMA has not included Jefferson County as part of its Map Modernization study; thus, no new mapping is anticipated in the near future. However, everyone should still fill in Row 4.)*
6. If floodplain management staff members in your municipality are not Certified Floodplain Managers (CFMs), then please fill in Row 5 on Pages 2 and 3. *(Please leave Row 5 blank if your floodplain managers are already CFMs.)*
7. If your municipality is not already a participant in FEMA's Community Rating System (CRS), please fill in Row 6 on Pages 2 and 3. *(No jurisdictions in Jefferson County currently participate in the CRS; everyone should fill in Row 6.)*
8. If you consider there to be additional activities that could be undertaken to enforce your municipality's floodplain management ordinance beyond what your municipality is already doing, please list these actions in the blank Rows 7 and 8 on Pages 2 and 3. *(Otherwise, you can leave Rows 7 and 8 blank.)* * Feel free to attach additional pages if you need more space.

Jefferson County Multi-Jurisdictional Hazard Mitigation Planning Project
NFIP COMPLIANCE ACTIONS WORKSHEET

(Name of Jurisdiction) Village of Clayton

PRIORITIZATION

NFIP Compliance Action	"-" = cost (unfavorable)					"0"=neutral or not applicable		"+" = benefit (favorable)			(high, medium, or low)		
	S	T	A	P	L	E	E	Can be implemented easily	Achieves multiple objectives	Can be implemented quickly	Overall Benefits	Overall Costs	Priority
1. Update/revise floodplain management ordinances to comply with latest FEMA regulations	+	+	-	+	O	+	+	-	+	-	High	High	High
2. Designate/install a specific person to be your municipality's Floodplain Administrator	+	+	-	+	O	+	+	-	+	-	High	Low	High
3. Add/train sufficient members of staff to adequately enforce NFIP regulations/floodplain management ordinances	+	+	-	+	O	+	+	-	+	-	High	Medium	Medium
4. Update/revise floodplain management ordinances to be consistent with potential future new FIRMs	O	+	-	O	-	+	+	-	+	-	High	Medium	High
5. Require staff involved in Floodplain management and ordinance enforcement to become Certified Floodplain Managers (CFMs)	+	+	+	-	+	-	+	-	+	-	Medium	High	Medium
6. Join the Community Rating System (CRS)	+	+	-	+	+	+	+	-	+	-	High	Low	High
7.													
8.													

Jefferson County Multi-Jurisdictional Hazard Mitigation Planning Project
NFIP COMPLIANCE ACTIONS WORKSHEET

(Name of Jurisdiction) Village of Clayton

IMPLEMENTATION STRATEGY

Priority	NFIP Compliance Action	Applies to community structures (existing/ new/both/ neither)	Primary Department Responsible	Existing Local Planning Mechanism through which the action will be implemented	Target Date	Cost Estimate	Funding Source
High	1. Update/revise floodplain management ordinances to comply with latest FEMA regulations	Existing	Zoning	Zoning	2011	Low	Local Budget
High	2. Designate/install a specific person to be your municipality's Floodplain Administrator	Existing	Zoning	Zoning Village Board	2012	Low	Local Budget
Medium	3. Add/train sufficient members of staff to adequately enforce NFIP regulations/floodplain management ordinances	Existing	Town Board	Mayor	2012	Medium	Local Budget
High	4. Update/revise floodplain management ordinances to be consistent with potential future new FIRMs	Both	Zoning Planning	Zoning/Planning Board	2011	Low	Local Budget
Medium	5. Require staff involved in Floodplain management and ordinance enforcement to become Certified Floodplain Managers (CFMs)	Existing	Zoning	Zoning Planning Board	2014	Low	Local Budget
High	6. Join the Community Rating System (CRS)	Existing	Zoning	Zoning	Unknown	Unknown	Local Budget
	7.						
	8.						

Jefferson County Multi-Jurisdictional Hazard Mitigation Planning Project
NFIP COMPLIANCE ACTIONS WORKSHEET

(Name of Jurisdiction) Village of Deferiet

First:

1. Please fill in the following table. *(Note: All municipalities in Jefferson County participate in the NFIP except for the Town of Lorraine and Village of Mannsville; NFIP participating communities DO have a floodplain management ordinance AND a Floodplain Administrator on the books.)*

Name of Your Jurisdiction	Adoption Date of your Current Floodplain Management Ordinance	Position Title of Your Jurisdiction's Designated Floodplain Administrator	Number of Municipal Staff with Roles in Enforcement of Floodplain Management Ordinance
Village of Deferiet			
Please give a brief description of activities currently undertaken by your municipality to enforce your floodplain management ordinance: **Unable to locate ordinance at this time. If unable to locate contact will be made with state and local NFIP coordinator.** *Note- No Special Flood Hazard Area			

Next:

2. If your current floodplain management ordinance was adopted before 1996 and has not been subsequently revised, then fill in Row 1 on Pages 2 and 3. *(Please leave Row 1 blank if your ordinance is current as of 1996 or later.)*
3. If your jurisdiction currently does not have a specific person filling the position title of Floodplain Administrator, or if the person filling this position is unaware of their role/responsibilities, then fill in Row 2 on Pages 2 and 3. *(Otherwise please leave Row 2 blank).*
4. If you consider the present level of staffing insufficient to adequately enforce your floodplain management ordinance, then fill in Row 3 on Pages 2 and 3. *(Please leave Row 3 blank if you feel current staffing levels are adequate.)*
5. Please fill in Row 4 on Pages 2 and 3 to evaluate how you plan to update your floodplain management ordinance to be consistent with revised Flood Insurance Rate Maps that may at some point become available in the future for Jefferson County. (*Note that FEMA has not included Jefferson County as part of its Map Modernization study; thus, no new mapping is anticipated in the near future. However, everyone should still fill in Row 4.)*
6. If floodplain management staff members in your municipality are not Certified Floodplain Managers (CFMs), then please fill in Row 5 on Pages 2 and 3. *(Please leave Row 5 blank if your floodplain managers are already CFMs.)*
7. If your municipality is not already a participant in FEMA's Community Rating System (CRS), please fill in Row 6 on Pages 2 and 3. *(No jurisdictions in Jefferson County currently participate in the CRS; everyone should fill in Row 6.)*
8. If you consider there to be additional activities that could be undertaken to enforce your municipality's floodplain management ordinance beyond what your municipality is already doing, please list these actions in the blank Rows 7 and 8 on Pages 2 and 3. *(Otherwise, you can leave Rows 7 and 8 blank.)* * Feel free to attach additional pages if you need more space.

Jefferson County Multi-Jurisdictional Hazard Mitigation Planning Project
NFIP COMPLIANCE ACTIONS WORKSHEET

(Name of Jurisdiction) Village of Deferiet

PRIORITIZATION

NFIP Compliance Action	"-" = cost (unfavorable)					"0"=neutral or not applicable		"+" = benefit (favorable)			(high, medium, or low)		
	S	T	A	P	L	E	E	Can be implemented easily	Achieves multiple objectives	Can be implemented quickly	Overall Benefits	Overall Costs	Priority
1. Update/revise floodplain management ordinances to comply with latest FEMA regulations	+	+	+	+	O	+	O	+	+	+	High	Low	1
2. Designate/install a specific person to be your municipality's Floodplain Administrator	+	+	+	+	O	+	O	+	+	+	High	Low	2
3. Add/train sufficient members of staff to adequately enforce NFIP regulations/floodplain management ordinances	+	+	+	+	+	+	O	+	+	+	High	Low	3
4. Update/revise floodplain management ordinances to be consistent with potential future new FIRMs	+	+	+	+	+	+	+	+	+	+	Med	Med	4
5. Require staff involved in Floodplain management and ordinance enforcement to become Certified Floodplain Managers (CFMs)	+	+	+	+	+	+	O	-	+	-	Med	Med	5
6. Join the Community Rating System (CRS)	+	+	+	+	+	+	O	+	+	-	Med	Med	6
7.													
8.													

Jefferson County Multi-Jurisdictional Hazard Mitigation Planning Project
NFIP COMPLIANCE ACTIONS WORKSHEET

(Name of Jurisdiction) Village of Deferiet

IMPLEMENTATION STRATEGY

Priority	NFIP Compliance Action	Applies to community structures (existing/ new/both/ neither)	Primary Department Responsible	Existing Local Planning Mechanism through which the action will be implemented	Target Date	Cost Estimate	Funding Source
1	1. Update/revise floodplain management ordinances to comply with latest FEMA regulations	Both	Administration	Administration	2011	Low	Budget
2	2. Designate/install a specific person to be your municipality's Floodplain Administrator	Both	Administration	Administration	2011	Low	Budget
3	3. Add/train sufficient members of staff to adequately enforce NFIP regulations/floodplain management ordinances	Both	Administration	Administration	2011	Low	Budget
4	4. Update/revise floodplain management ordinances to be consistent with potential future new FIRMs	Both	Administration	Administration	2012	Low	Budget
5	5. Require staff involved in Floodplain management and ordinance enforcement to become Certified Floodplain Managers (CFMs)	Both	Administration	Administration	2012	Low	Budget
6	6. Join the Community Rating System (CRS)	Both	Administration	Administration	2012	Low	Budget
	7.						
	8.						

Jefferson County Multi-Jurisdictional Hazard Mitigation Planning Project
NFIP COMPLIANCE ACTIONS WORKSHEET

(Name of Jurisdiction) Village of Glen Park

First:

1. Please fill in the following table. *(Note: All municipalities in Jefferson County participate in the NFIP except for the Town of Lorraine and Village of Mannsville; NFIP participating communities DO have a floodplain management ordinance AND a Floodplain Administrator on the books.)*

Name of Your Jurisdiction	Adoption Date of your Current Floodplain Management Ordinance	Position Title of Your Jurisdiction's Designated Floodplain Administrator	Number of Municipal Staff with Roles in Enforcement of Floodplain Management Ordinance
Village of Glen Park	**Unknown**	**Unknown**	**Unknown**

Please give a brief description of activities currently undertaken by your municipality to enforce your floodplain management ordinance:

Village officials are unable to locate any documentation reference to NFIP in our records apart from a letter from FEMA dated 9/12/1986. The village will work at updating NFIP documentation.

* Note - No Special Flood Hazard Area

Next:

2. If your current floodplain management ordinance was adopted before 1996 and has not been subsequently revised, then fill in Row 1 on Pages 2 and 3. *(Please leave Row 1 blank if your ordinance is current as of 1996 or later.)*
3. If your jurisdiction currently does not have a specific person filling the position title of Floodplain Administrator, or if the person filling this position is unaware of their role/responsibilities, then fill in Row 2 on Pages 2 and 3. *(Otherwise please leave Row 2 blank).*
4. If you consider the present level of staffing insufficient to adequately enforce your floodplain management ordinance, then fill in Row 3 on Pages 2 and 3. *(Please leave Row 3 blank if you feel current staffing levels are adequate.)*
5. Please fill in Row 4 on Pages 2 and 3 to evaluate how you plan to update your floodplain management ordinance to be consistent with revised Flood Insurance Rate Maps that may at some point become available in the future for Jefferson County. *(Note that FEMA has not included Jefferson County as part of its Map Modernization study; thus, no new mapping is anticipated in the near future. However, everyone should still fill in Row 4.)*
6. If floodplain management staff members in your municipality are not Certified Floodplain Managers (CFMs), then please fill in Row 5 on Pages 2 and 3. *(Please leave Row 5 blank if your floodplain managers are already CFMs.)*
7. If your municipality is not already a participant in FEMA's Community Rating System (CRS), please fill in Row 6 on Pages 2 and 3. *(No jurisdictions in Jefferson County currently participate in the CRS; everyone should fill in Row 6.)*

Jefferson County Multi-Jurisdictional Hazard Mitigation Planning Project
NFIP COMPLIANCE ACTIONS WORKSHEET

(Name of Jurisdiction) Village of Glen Park

PRIORITIZATION

NFIP Compliance Action	"-" = cost (unfavorable)					"0"=neutral or not applicable		"+" = benefit (favorable)			(high, medium, or low)		
	S	T	A	P	L	E	E	Can be implemented easily	Achieves multiple objectives	Can be implemented quickly	Overall Benefits	Overall Costs	Priority
1. Update/revise floodplain management ordinances to comply with latest FEMA regulations	+	+	+	+	0	+	0	+	+	+	Med	Low	1
2. Designate/install a specific person to be your municipality's Floodplain Administrator	+	0	+	+	+	0	0	+	0	+	Low	Low	2
3. Add/train sufficient members of staff to adequately enforce NFIP regulations/floodplain management ordinances	+	+	+	-	+	0	0	+	+	+	Low	Low	3
4. Update/revise floodplain management ordinances to be consistent with potential future new FIRMs	+	+	-	-	-	+	+	-	+	-	Med	Med	4
5. Require staff involved in Floodplain management and ordinance enforcement to become Certified Floodplain Managers (CFMs)	+	0	+	+	0	0	+	-	0	-	Low	Low	5
6. Join the Community Rating System (CRS)	+	0	+	+	+	0	+	+	+	+	Low	Low	6
7.													
8.													

Jefferson County Multi-Jurisdictional Hazard Mitigation Planning Project
NFIP COMPLIANCE ACTIONS WORKSHEET

(Name of Jurisdiction) Village of Glen Park

IMPLEMENTATION STRATEGY

Priority	NFIP Compliance Action	Applies to community structures (existing/ new/both/ neither)	Primary Department Responsible	Existing Local Planning Mechanism through which the action will be implemented	Target Date	Cost Estimate	Funding Source
1	1. Update/revise floodplain management ordinances to comply with latest FEMA regulations	Both	Village DPW	Village DPW	2011	Low	Budget
2	2. Designate/install a specific person to be your municipality's Floodplain Administrator	Both	Village DPW	Village DPW	2011	Low	Budget
3	3. Add/train sufficient members of staff to adequately enforce NFIP regulations/floodplain management ordinances	Both	Village DPW	Village DPW	2011	Low	Budget
4	4. Update/revise floodplain management ordinances to be consistent with potential future new FIRMs	Both	Mayor	Mayor	2013	Med	Budget
5	5. Require staff involved in Floodplain management and ordinance enforcement to become Certified Floodplain Managers (CFMs)	Both	Mayor	Mayor	2013	Med	Budget
6	6. Join the Community Rating System (CRS)	Both	Mayor	Mayor	2013	Low	Budget
	7.						
	8.						

Jefferson County Multi-Jurisdictional Hazard Mitigation Planning Project
NFIP COMPLIANCE ACTIONS WORKSHEET

(Name of Jurisdiction)___TOWN OF HENDERSON_____

First:

1. Please fill in the following table. *(Note: All municipalities in Jefferson County participate in the NFIP except for the Town of Lorraine and Village of Mannsville; NFIP participating communities DO have a floodplain management ordinance AND a Floodplain Administrator on the books.)*

Name of Your Jurisdiction	Adoption Date of your Current Floodplain Management Ordinance	Position Title of Your Jurisdiction's Designated Floodplain Administrator	Number of Municipal Staff with Roles in Enforcement of Floodplain Management Ordinance
Town of Henderson	**08-10-1994**	**Town of Henderson Planning board**	**5**
Please give a brief description of activities currently undertaken by your municipality to enforce your floodplain management ordinance: **All construction has to be presented to the Zoning officer for review. If the construction is with in a designated flood area the zoning officer refers the plans to the planning board for their review. The planning board has a section of Town law before them to adhere to and apply to the proposed plan before them.**			

Next:

2. If your current floodplain management ordinance was adopted before 1996 and has not been subsequently revised, then fill in Row 1 on Pages 2 and 3. *(Please leave Row 1 blank if your ordinance is current as of 1996 or later.)*
3. If your jurisdiction currently does not have a specific person filling the position title of Floodplain Administrator, or if the person filling this position is unaware of their role/responsibilities, then fill in Row 2 on Pages 2 and 3. *(Otherwise please leave Row 2 blank).*
4. If you consider the present level of staffing insufficient to adequately enforce your floodplain management ordinance, then fill in Row 3 on Pages 2 and 3. *(Please leave Row 3 blank if you feel current staffing levels are adequate.)*
5. Please fill in Row 4 on Pages 2 and 3 to evaluate how you plan to update your floodplain management ordinance to be consistent with revised Flood Insurance Rate Maps that may at some point become available in the future for Jefferson County. (*Note that FEMA has not included Jefferson County as part of its Map Modernization study; thus, no new mapping is anticipated in the near future. However, everyone should still fill in Row 4.)*
6. If floodplain management staff members in your municipality are not Certified Floodplain Managers (CFMs), then please fill in Row 5 on Pages 2 and 3. *(Please leave Row 5 blank if your floodplain managers are already CFMs.)*
7. If your municipality is not already a participant in FEMA's Community Rating System (CRS), please fill in Row 6 on Pages 2 and 3. *(No jurisdictions in Jefferson County currently participate in the CRS; everyone should fill in Row 6.)*

(Name of Jurisdiction)___TOWN OF HENDERSON_____

8. If you consider there to be additional activities that could be undertaken to enforce your municipality's floodplain management ordinance beyond what your municipality is already doing, please list these actions in the blank Rows 7 and 8 on Pages 2 and 3. *(Otherwise, you can leave Rows 7 and 8 blank.)* * Feel free to attach additional pages if you need more space.

Jefferson County Multi-Jurisdictional Hazard Mitigation Planning Project
NFIP COMPLIANCE ACTIONS WORKSHEET

(Name of Jurisdiction)___TOWN OF HENDERSON_____

PRIORITIZATION

NFIP Compliance Action	"-" = cost (unfavorable)					"0"=neutral or not applicable		"+" = benefit (favorable)			(high, medium, or low)		
	S	T	A	P	L	E	E	Can be implemented easily	Achieves multiple objectives	Can be implemented quickly	Overall Benefits	Overall Costs	Priority
1. Update/revise floodplain management ordinances to comply with latest FEMA regulations	+	+	+	+	+	+	+	+	+	+	High	Low	high
2. Designate/install a specific person to be your municipality's Floodplain Administrator													
3. Add/train sufficient members of staff to adequately enforce NFIP regulations/floodplain management ordinances													
4. Update/revise floodplain management ordinances to be consistent with potential future new FIRMs	+	+	+	+	+	+	+	+	+	+	High	Med	High
5. Require staff involved in Floodplain management and ordinance enforcement to become Certified Floodplain Managers (CFMs)	+	+	+	+	+	+	+	+	+	–	High	Med	High
6. Join the Community Rating System (CRS)	+	+	+	+	+	+	+	+	+	+	High	Low	High
7.													
8.													

Jefferson County Multi-Jurisdictional Hazard Mitigation Planning Project
NFIP COMPLIANCE ACTIONS WORKSHEET

(Name of Jurisdiction)___TOWN OF HENDERSON_____

IMPLEMENTATION STRATEGY

Priority	NFIP Compliance Action	Applies to community structures (existing/ new/both/ neither)	Primary Department Responsible	Existing Local Planning Mechanism through which the action will be implemented	Target Date	Cost Estimate	Funding Source
High	1. Update/revise floodplain management ordinances to comply with latest FEMA regulations	Both	Planning board	Planning board and zoning officer	2011	L	Town
	2. Designate/install a specific person to be your municipality's Floodplain Administrator	Both	Planning board	Planning board	2011	L	Town
	3. Add/train sufficient members of staff to adequately enforce NFIP regulations/floodplain management ordinances	Both	Planning Board	Planning board	2011	M	County/to wn
High	4. Update/revise floodplain management ordinances to be consistent with potential future new FIRMs	Both	Planning and town board	Town board	2011	L	Town
High	5. Require staff involved in Floodplain management and ordinance enforcement to become Certified Floodplain Managers (CFMs)	Both	Planning and town boards	Town board	2011	L	Town
High	6. Join the Community Rating System (CRS)	Both	Town and planning board	Town board	2010	L	Town
	7.						
	8.						

Jefferson County Multi-Jurisdictional Hazard Mitigation Planning Project
NFIP COMPLIANCE ACTIONS WORKSHEET

(Name of Jurisdiction) City of Watertown

First:

1. Please fill in the following table. *(Note: All municipalities in Jefferson County participate in the NFIP except for the Town of Lorraine and Village of Mannsville; NFIP participating communities DO have a floodplain management ordinance AND a Floodplain Administrator on the books.)*

Name of Your Jurisdiction	Adoption Date of your Current Floodplain Management Ordinance	Position Title of Your Jurisdiction's Designated Floodplain Administrator	Number of Municipal Staff with Roles in Enforcement of Floodplain Management Ordinance
City of Watertown	**1993**	**City Engineer**	**1**
Please give a brief description of activities currently undertaken by your municipality to enforce your floodplain management ordinance: **City engineer is involved in the building code process for the City of Watertown. These are enforced by the codes department for the City of Watertown. The City Engineer is a Certified Flood Plan Manager.**			

Next:

2. If your current floodplain management ordinance was adopted before 1996 and has not been subsequently revised, then fill in Row 1 on Pages 2 and 3. *(Please leave Row 1 blank if your ordinance is current as of 1996 or later.)*
3. If your jurisdiction currently does not have a specific person filling the position title of Floodplain Administrator, or if the person filling this position is unaware of their role/responsibilities, then fill in Row 2 on Pages 2 and 3. *(Otherwise please leave Row 2 blank).*
4. If you consider the present level of staffing insufficient to adequately enforce your floodplain management ordinance, then fill in Row 3 on Pages 2 and 3. *(Please leave Row 3 blank if you feel current staffing levels are adequate.)*
5. Please fill in Row 4 on Pages 2 and 3 to evaluate how you plan to update your floodplain management ordinance to be consistent with revised Flood Insurance Rate Maps that may at some point become available in the future for Jefferson County. *(Note that FEMA has not included Jefferson County as part of its Map Modernization study; thus, no new mapping is anticipated in the near future. However, everyone should still fill in Row 4.)*
6. If floodplain management staff members in your municipality are not Certified Floodplain Managers (CFMs), then please fill in Row 5 on Pages 2 and 3. *(Please leave Row 5 blank if your floodplain managers are already CFMs.)*
7. If your municipality is not already a participant in FEMA's Community Rating System (CRS), please fill in Row 6 on Pages 2 and 3. *(No jurisdictions in Jefferson County currently participate in the CRS; everyone should fill in Row 6.)*
8. If you consider there to be additional activities that could be undertaken to enforce your municipality's floodplain management ordinance beyond what your municipality is already doing, please list these actions in the blank Rows 7 and 8 on Pages 2 and 3. *(Otherwise, you can leave Rows 7 and 8 blank.)* * Feel free to attach additional pages if you need more space.

Jefferson County Multi-Jurisdictional Hazard Mitigation Planning Project
NFIP COMPLIANCE ACTIONS WORKSHEET

(Name of Jurisdiction) City of Watertown

PRIORITIZATION

NFIP Compliance Action	"-" = cost (unfavorable)					"0"=neutral or not applicable		"+" = benefit (favorable)			(high, medium, or low)		
	S	T	A	P	L	E	E	Can be implemented easily	Achieves multiple objectives	Can be implemented quickly	Overall Benefits	Overall Costs	Priority
1. Update/revise floodplain management ordinances to comply with latest FEMA regulations	+	+	-	+	-	+	0	+	+	+	Med	Low	1
2. Designate/install a specific person to be your municipality's Floodplain Administrator													
3. Add/train sufficient members of staff to adequately enforce NFIP regulations/floodplain management ordinances													
4. Update/revise floodplain management ordinances to be consistent with potential future new FIRMs	+	+	-	-	-	+	0	+	+	+	Med	Low	2
5. Require staff involved in Floodplain management and ordinance enforcement to become Certified Floodplain Managers (CFMs)													
6. Join the Community Rating System (CRS)	+	0	-	+	+	+	0	+	0	+	Med	Low	3
7.													
8.													

Jefferson County Multi-Jurisdictional Hazard Mitigation Planning Project
NFIP COMPLIANCE ACTIONS WORKSHEET

(Name of Jurisdiction) City of Watertown

IMPLEMENTATION STRATEGY

Priority	NFIP Compliance Action	Applies to community structures (existing/ new/both/ neither)	Primary Department Responsible	Existing Local Planning Mechanism through which the action will be implemented	Target Date	Cost Estimate	Funding Source
1	1. Update/revise floodplain management ordinances to comply with latest FEMA regulations	Both	City Engineer	City Engineer Office	2011	Minimal	Budget
	2. Designate/install a specific person to be your municipality's Floodplain Administrator						
	3. Add/train sufficient members of staff to adequately enforce NFIP regulations/floodplain management ordinances						
2	4. Update/revise floodplain management ordinances to be consistent with potential future new FIRMs	Both	City Engineer	City Engineer Office	2012	Minimal	Budget
	5. Require staff involved in Floodplain management and ordinance enforcement to become Certified Floodplain Managers (CFMs)						
3	6. Join the Community Rating System (CRS)	Both	City Engineer	City Engineer Office	2012	Minimal	Budget
	7.						
	8.						

Hazard Mitigation Plan – NFIP Requirements

As of October 1, 2008, Flood Mitigation Assistance (FMA) Plan requirements were added to 44 CFR §201.6, which applies to Local Hazard Mitigation Plans (LHMPs.) These changes result in new requirements for NFIP-related information to be included in LHMPs and create a single planning requirement that applies to FMA, as well as HMGP and PDM, grant eligibility. This document explains the new requirements and provides suggestions to assist communities in meeting them.

1. Assessing Vulnerability: Addressing Repetitive Loss Properties

Requirement §201.6(c)(2)(ii): *[The risk assessment] must also address National Flood Insurance Program (NFIP) insured structures that have been repetitively damaged by floods.*

As part of the Risk Assessment, LHMPs must discuss repetitive loss and severe repetitive loss properties as defined by the National Flood Insurance Program (NFIP).

A Repetitive Loss Property is defined in the Flood Insurance Manual as "an NFIP insured structure that has had at least two paid flood losses of more than $1,000 each in any 10-year period since 1978."

Severe Repetitive Loss Properties are defined in 44 CFR §79.2(g) as follows:

> Severe Repetitive Loss Properties are defined as single or multifamily residential properties that are covered under an NFIP flood insurance policy and:
>
> (1) That have incurred flood-related damage for which 4 or more separate claims payments have been made, with the amount of each claim (including building and contents payments) exceeding $5,000, and with the cumulative amount of such claims payments exceeding $20,000; or
>
> (2) For which at least 2 separate claims payments (building payments only) have been made under such coverage, with cumulative amount of such claims exceeding the market value of the building.
>
> (3) In both instances, at least 2 of the claims must be within 10 years of each other, and claims made within 10 days of each other will be counted as 1 claim.

The plan should include the following information about repetitive loss and severe repetitive loss properties:

- Number of properties in the community.
- Number, dates, and amounts of claims paid.
- Maps showing areas of repetitive loss concentration.
- If and how these properties will be mitigated or addressed in the future.

Use of flood insurance claim information is subject to The Privacy Act of 1974, as amended, which prohibits public release of the names of policy holders and the amount of the claim payment or assistance. Do not identify specific parcel, address, or ownership information; however, summary information and maps can be made public.

The best resources for repetitive loss information are the State NFIP Coordinator and FEMA Insurance Specialist.

2. Identification and Analysis of Mitigation Actions: National Flood Insurance Program (NFIP) Compliance
Requirement: §201.6(c)(3)(ii): *[The mitigation strategy] must also address the jurisdiction's participation in the National Flood Insurance Program (NFIP), and continued compliance with NFIP requirements, as appropriate.*

LHMP's Mitigation Strategy must describe the community's participation in the NFIP and include actions that address continued compliance with the NFIP. There is a variety of information that addresses NFIP participation; similarly, there are many ways to address continued compliance with the NFIP.

National Flood Insurance Program Participation
This section provides an overview of information to consider for inclusion in the LHMP regarding NFIP participation.

Topic	Considerations	Where to find information
Insurance Summary	• How many NFIP policies are in the community? What is the total premium and coverage?	• State NFIP Coordinator or FEMA NFIP Specialist
	• How many claims have been paid in the community? What is the total amount of paid claims? How many of the claims were for substantial damage?	• FEMA NFIP or Insurance Specialist
	• Number of structures exposed to flood risk within the community	• Community Floodplain Administrator (FPA)
	• Describe any areas of flood risk with limited NFIP policy coverage	• Community FPA & FEMA Insurance Specialist
Staff resources	• Does the community have a dedicated Floodplain Manager or NFIP Coordinator?	• Community FPA
	• Is floodplain management an auxiliary duty?	• Community FPA
	• Is there a Certified Floodplain Manager on staff?	• Community FPA
	• Provide an explanation of NFIP administration services (e.g., permit review, GIS, education or outreach, inspections, engineering capability)	• Community FPA
	• What are the barriers to running an effective NFIP program in the community, if any?	• Community FPA

Topic	Considerations	Where to find information
Compliance history	• Is the community in good standing with the NFIP? • Are there any outstanding compliance issues (i.e., current violations)? • When was the most recent Community Assistance Visit (CAV) or Community Assistance Contact (CAC)? • Is a CAV or CAC scheduled or needed?	• State NFIP Coordinator, FEMA NFIP Specialist, community records
Regulation	• When did the community enter the NFIP? • What did the community's Flood Insurance Rate Maps (FIRMs) become effective? • Are the FIRMs digital or paper? • Does the Floodplain Ordinance meet or exceed FEMA or State minimum requirements? If so, in what ways? • Provide an explanation of the permitting process and include a copy of floodplain permit	• Community Status Book http://www.fema.gov/fema/csb.shtm • Community FPA, State or FEMA NFIP Specialists • Community FPA • Community FPA
Community Rating System (CRS)	• Does the community participate in CRS? • What is the community's CRS Class Ranking? • What categories and activities provide CRS points and how can the class be improved? • Does the plan include CRS planning requirements	• Community FPA, State, FEMA NFIP • Flood Insurance Manual http://www.fema.gov/business/nfip/manual.shtm • Community FPA, FEMA CRS Coordinator, ISO representative • CRS manual http://www.fema.gov/library/viewRecord.do?id=2434

NFIP Continued Compliance Actions

The requirement to include actions related to continued compliance with the NFIP in the LHMP's Mitigation Strategy is not met by discussing ways to reduce flood risk. The Mitigation Strategy must include actions that address the administration of the NFIP in the community. This section outlines topics to consider when developing NFIP compliance related actions.

Topic	Considerations
Staff resources	Identify need for additional staff Identify training needs of existing staff
Compliance	When is the next Community Assistance Visit anticipated? If unknown, discuss any need for CAV, CAC, or other compliance assistance.
Regulation	Are there potential ordinance changes to consider to strengthen requirements? Are there potential improvements to permitting process or other administrative aspects of the community's NFIP program? Could the community enhance its floodplain services?
Flood Risk Maps	Are there flood prone areas that need new flood studies? What areas are highest priority and why? Does the community have new data that can be included in future flood map updates?
Community Outreach	Consider outreach and education to provide in the community. Outreach can be targeted to increase NFIP policies, promote NFIP services, or increase knowledge of local flood risk, among other topics. Consider a variety of audiences, such as elected officials or builders.
Community Rating System (CRS)	Does the community want to participate in the CRS program? Does the community want to improve its current CRS class ranking? Identify activities the community is or will be pursuing to gain CRS points.

APPENDIX G –

PLANNING COMMITTEE AND JURISDICTION REPRESENTATIVES

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The following Planning Committee members are documented as having attended meetings and/or completed the various deliverables that were required of participating jurisdictions during the planning process:

1. Fully Participating Municipalities:

Municipality	Representatives	Title/Position/Role
Jefferson, County of	Joe Plummer	Director, JCOFEM
	Fred Lampman	Deputy Director, JCOFEM
	Amy Crandall	Administrative Assistant, JCFOEM
	Jim Lawrence	Superintendent, JC Highway Department
	Don Canfield	Director, JC Department of Planning
	Betsy Varno	Planner, JC Department of Planning
	Michael Kaskan	Deputy Administrator, JC Administration
Clayton, Town of	Candie Pecor	Administrative Assistant
	Robert Boulton	Highway Superintendent
	Kathleen Laclair	Clerk
Clayton, Village of	Candie Pecor	Administrative Assistant
	Dana Pledger	DWP Superintendent
Deferiet, Village of	Robert Foster	Mayor
	Shane Intorcia	DPW
	Michael Bigness	DPW
Glen Park, Village of	Ralph Skinner	DPW Superintendent
Henderson, Town of	Steven Cote	Councilman
Lorraine, Town of	Carl Dealing	Highway Superintendent
	Robin Dealing	Public
	Vince Moore	Supervisor
Watertown, City of	Milton Sayre	Fire Chief
	Matt Owen	Information Technology Department

2. Partially Participating Municipalities:

Municipality	Representatives	Title/Position/Role
Adams, Town of	Ty Edmonds	Deputy Highway Superintendent
Alexandria, Town of	Martha Millett	Supervisor
Antwerp, Village of	Richard Pitts	DPW Superintendent

Municipality	Representatives	Title/Position/Role
Black River, Village of	Steven Lillie	DPW Superintendent
Brownville, Town of	Leo Thompson	Supervisor
Champion, Town of	Thomas Stewart	Councilman
	Christina Vargulick	Clerk
	Terry Buckley	Supervisor
Chaumont, Village of	Paula Radley	Clerk
Dexter, Village of	James Eves	Mayor
	Gerry Kostyk	Fire Chief
Hounsfield, Town of	Mark Farrington	Fire Chief
	Bruce Alcombrack	Highway Superintendent
Lyme, Town of	Kim Wallace	Clerk
Philadelphia, Town of	Mark Leeson	Highway Superintendent
	Cheryl Horton	Supervisor
Philadelphia, Village of	Matthew Montroy	Mayor
Sackets Harbor, Village of	Lawrence Barone	Trustee
Theresa, Town of	Gerald Reynolds	Highway Superintendent
	Clinton Coolidge	Supervisor
Theresa, Village of	Jaime Drake	Trustee/Deputy Mayor

APPENDIX H –

MEETING AGENDAS AND PRESENTATIONS

This new Appendix contains copies of the agendas, attendance records, and presentations for the key Core Planning Group meetings held on

July 9, 2009:	Planning Process Kickoff Meeting
October 14, 2009:	Risk Assessment Question and Answer Session
November 10, 2009:	Mitigation Strategy Working Session

And also:

February 16, 2010:	Meeting to Present the Draft Plan to Public and County Legislators

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Jefferson County Multi-Jurisdictional
Natural Hazard Mitigation Planning Project
Kickoff Meeting
Thursday, July 9, 2009 (2pm and 7pm)
Jefferson Community College, Jules Building #6 Room 002
1220 Coffeen Street, Watertown, New York

Agenda

- Welcome & Opening Remarks…….*Joseph Plummer, JCOFEM*

- Overview of the Project…….....*Anna Foley, URS*
  Richard Franks, URS

  - Intent of the Project
    - Why Prepare a Hazard Mitigation Plan?
    - What is a Multi-Jurisdictional Plan?
    - Why Participate in a Multi-Jurisdictional Plan Development Process?
  - Organizational Structure of the Planning Group
  - Overview of the Plan Development Process
  - The Role of Participating Jurisdictions, Contractors, the Public & Other Stakeholders
  - Participation Criteria
  - Key Deliverables
  - Data Collection//Supporting Documents
  - Project Timeline
  - Next Steps

- Questions & Answers…….……*All*

- Closing Remarks……. *Joseph Plummer, JCOFEM*

- Adjourn

Please remember to
SIGN IN
if you haven't already done so.
Thank you.

Jefferson County Multi-Jurisdictional Hazard Mitigation Planning Project
Kickoff Meeting – Thursday, July 9, 2009 (2pm session)
Jefferson Community College, Jules Building #6 Room 002
1220 Coffeen Street, Watertown, New York

Last Name	First Name	Representing	Email Address	Phone
HISSONG	WESLEY	JEFFERSON COMUNITY College	whissong@sunyjefferson.edu	315-786-6517
STEWART	THOMAS E.	TOWN OF CHAMPION	NONE	315-493-2202
Varno	Betsy	Jefferson County Planning Dept	betsyv@co.jefferson.ny.us	315-785-3144
Skinner	Ralph	Village of Glen Park	rskinner6@twcny.rr.com	315-788-3499
Eves	JAMES	Dexter	jnbeves@copper.net	315 639 6499
LEESON	MARK	TOWN OF PHILADELPHIA	phillybarn@msn.com	315-642-0022
FARRINGTON	MARK	Town of Hounsfield	markfar@Americast.net	315-782-1485
KOSTYK	GERRY	DEXTER FIRE DEPT	gkostyk@thekeygroup.com	315-639-6977
Crandall	Amy	Jeff. Co. Fire/EMO	Cmyc@co.jefferson.ny.us	315-786-2654
Plummer	Joseph	Jeff. Co. Fire/EMO	josephpe@co.jefferson.ny.us	315-786-2654
Kaskan	Michael	Jeff Co. Admin	M.kk@co.jefferson.ny.us	315-785-3075
Canfield	Don	Jeff. Co. Planning Dept	donc@co.jefferson.ny.us	785-3144
SAYRE	M.L.T	CITY FIRE	MSAYRE@WATERTOWN-GOV	785-7812
BARONE	LAWRENCE	SACKETS HARBOR, NY	LBARONE2@EARTHLINK.NET	646-161

Jefferson County Multi-Jurisdictional Hazard Mitigation Planning Project
Kickoff Meeting – Thursday, July 9, 2009 (2pm session)
Jefferson Community College, Jules Building #6 Room 002
1220 Coffeen Street, Watertown, New York

Last Name	First Name	Representing	Email Address	Phone
ALCOMBRACK	BRUCE	TOWN OF HOUNSFIELD	Highway Superintendent @ TownofHounsfield.com	315-782-6390 EXT 1
MILLETT	MARTHA M	TOWN OF ALEXANDRIA	mmillett@ridgeview-tel.us.	315 482-3748
LaClair	Kathleen E.	Town of Clayton	twnclerk@townofclayton.com	315-686-3512 Ext. 24
Thompson	Leo K	T/ Brownville	FAX 639-3951	315-639-6266
Lillie	Steven	Village of Black River	Slillie brpw @ yahoo	315-773-5093
Radley	Paula	Village of Chaumont	village.chaumont@nnymail.com	315-649-2900
Wallace	Kim	Town of Lyme	lymetownclerk@twcny.rr.com	315-649-2788
Raymond	RON	NYSEMO Reg. 4		315-529-078
Foley	Anna	URS	anna_foley@urscorp.com	973-785-0700x339
Franks	Richard	URS	richard_franks@urscorp.com	973-785-0700x149

Jefferson County Multi-Jurisdictional Hazard Mitigation Planning Project
Kickoff Meeting – Thursday, July 9, 2009 (7pm session)
Jefferson Community College, Jules Building #6 Room 002
1220 Coffeen Street, Watertown, New York

Last Name	First Name	Representing	Email Address	Phone
Cote	Steven	Town Henderson	Cote investigations@Gmail.com	315-938-9225
Cote	Deborah	Frontier Housing Corp. Dexter, NY	frontierhousing@tds.net	315-639-3940
Montroy	Matthew	Village of Philadelphia	mattmontroy@hotmail.com	315-642-3400
Hassett	Martin	St. Law Co.	~~mhassett@stlawco.org~~	MHassett@stlawco.org

Jefferson County Multi-Jurisdictional Natural Hazard Mitigation Planning Project

Kickoff Meeting
July 9, 2009

Two Sessions: 2pm and 7pm

JCC Jules Center Room 002

Today's Agenda:

- Welcome & Opening Remarks…Joseph Plummer, JCOFEM
- Overview of the Process…Anna Foley and Richard Franks, URS
- Questions and Answers
- Closing Remarks…Joseph Plummer, JCOFEM
- Adjourn

The Consultant

URS

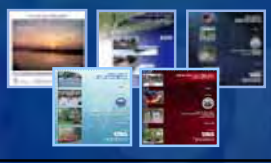
Anna Foley, Project Manager
973-785-0700 ext. 339
anna_foley@urscorp.com

Richard Franks, Deputy Project Manager
973-785-0700 ext. 449
richard_franks@urscorp.com

Our Commitment:
A FEMA-Approved Plan

URS Wayne Office Hazard Mitigation Plans

- Five FEMA-approved plans (191 jurisdictions, 2004 to present
- Five plans ongoing or under state/federal review covering additional 85 jurisdictions (not including those in Jefferson County)
- Methodology "tried and true in FEMA Region 2"



Mitigation and Mitigation Planning

- Hazard Mitigation is any sustained action taken to reduce or eliminate long-term risk to life and property from a hazard event.
- Hazard Mitigation Planning is a process for State, local, and Indian Tribal governments to identify policies, activities, and tools to implement mitigation actions.
- Consultants walk you through the process needed to meet FEMA requirements and author the plan.

Intent of the Project: Why Prepare a Hazard Mitigation Plan?

- Study natural hazards,
- Evaluate hazard effects, and
- Identify hazard mitigation measures that will reduce risks.

Mitigation Measures – Some Examples


- *Elevating a house to reduce flood damages*
- *Installing hurricane clips to roofs to reduce wind damage*
- *Retrofit structures with fire-resistant materials (e.g. roofing)*
- *Modifying building codes to incorporate hazard-resistant design*

Mitigation Works!

Elevated homes in Sweet Lake, LA (near Lake Charles) after Hurricane Rita (09/24/05).

Intent of the Project: Why Prepare a Hazard Mitigation Plan?

- Mitigation planning leads to judicious selection of risk reduction actions and established funding priorities.

- Implementation of mitigation actions is intended to reduce the costs of a future disaster.

Intent of the Project: Why Prepare a Hazard Mitigation Plan?

- Costs of a disaster can often exceed available State and Federal aid.

- Damages can be prevented by taking the time to:
  - learn about hazards and anticipate where and how they occur; and
  - allocate resources accordingly.

Intent of the Project: Why Prepare a Hazard Mitigation Plan?

- Disaster Mitigation Act of 2000 requires it!
- Plan preparation is funded by a FEMA grant
- No out-of-pocket cost to local municipalities

- Once the plan is approved by FEMA, participating jurisdictions will be eligible to apply for hazard mitigation project grants.

Key Point:

- Focus on natural hazards for the purposes of this planning effort.

Intent of the Project: What is a Multi-Jurisdictional Plan?

- Communities joining together to participate in a single local mitigation plan development process.
- Common:
  - Planning Process
  - Hazards
  - Goals
  - Plan Maintenance Procedures
- Unique:
  - Risks
  - Mitigation Actions
  - Participation
  - Plan Adoption

Intent of the Project: What is a Multi-Jurisdictional Plan?

- Each jurisdiction will identify its own set of mitigation actions for the plan
- No competition between municipalities

- Unique:
  - Risks
  - Mitigation Actions
  - Participation
  - Plan Adoption

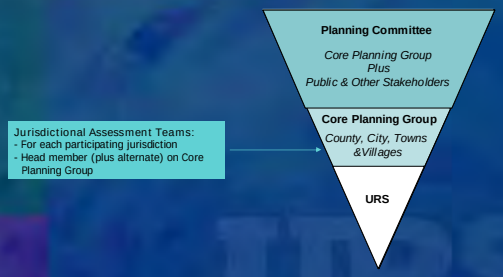
Intent of the Project: What is a Multi-Jurisdictional Plan?

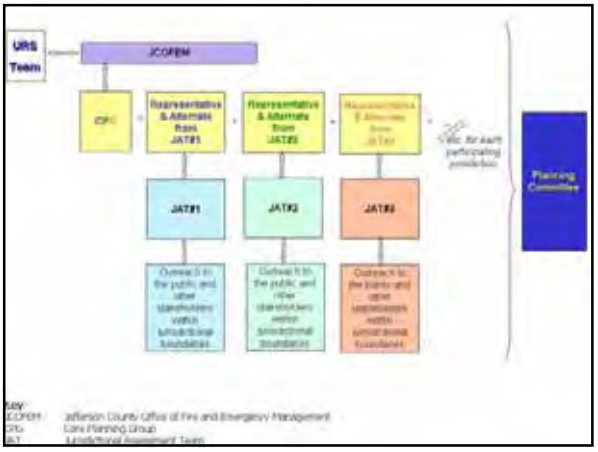
- Basic processes for single jurisdiction and multi-jurisdictional plans are identical.
- Difference lies in degree of complexity.

Intent of the Project: Why Participate in a Multi-Jurisdictional Plan Development Process?

- The burden on each municipality is minimal, but the cost to do a single jurisdiction plan is not.
- There are tremendous economies of scale (resources, staff hours, and $$) that are realized by coming together in a joint process.
- By participating in a multi-jurisdictional plan, your municipality will gain all the benefits of having a plan with the minimum level of effort in plan development.

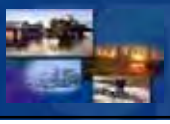
Organizational Structure of the Planning Group





Overview of the Plan Development Process: Key Steps

- Researching a full range of natural hazard events to determine which are the most prevalent;
- Identifying the location and extent of hazard areas;
- Identifying assets located within these hazard areas;



Overview of the Plan Development Process: Key Steps

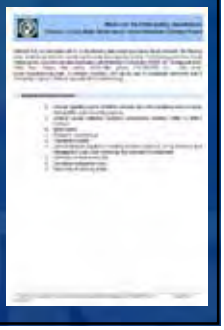
- Characterizing existing and potential future assets at risk;
- Assessing vulnerabilities to the most prevalent hazards; and
- Evaluating and prioritizing goals, objectives, and mitigation actions to reduce or avoid long-term vulnerabilities to the most prevalent hazards.



Key Steps

- Data Review - Incorporation of existing plans/studies/reports

A Wish List for Core Planning Group Member completion is included in your handout packet. Please return any information/data/documents to URS by 08/08/09.



Key Steps

- Identification of Potential Hazards
  - Evaluation of a full range of natural hazards
    - Hazards identified for inclusion & why
    - Hazards not identified & why not

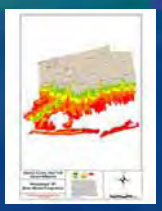
A questionnaire for Core Planning Group Member completion is included in your handout packet. Please return to URS by July 24th.

What is the "full range" of hazards that we consider for possible inclusion in the plan?

- Avalanches
- Coastal Erosion
- Wave Action
- Earthquakes
- Expansive Soils
- Floods
- Storm Surge
- Dam Failure
- Ice Jams
- Landslides
- Land Subsidence
- Drought
- Extreme Temps
- Hail
- Hurricanes / Tropical Storms
- Nor'easters
- Tornadoes
- Winter Storms / Ice Storms
- Tsunamis
- Volcanoes
- Wildfires
- Extreme Winds
- Lightning

Key Steps

- Risk Assessment
  - Hazard Profiles
    - Description of hazard
    - Location of hazard area
    - Extent (magnitude or severity)
    - Previous occurrences
    - Probability/likelihood of future occurrences



Key Steps

- Risk Assessment
  - Asset Identification and Characterization
    - Quantifies what is at risk
    - Five key types of assets considered:

- Improved property
- Emergency facilities
- Utilities
- Historic & cultural resources
- Population

Key Steps

- Risk Assessment
  - Damage Estimates
    - Estimate potential losses (dollars/ qualitative) to assets located in hazard areas
    - *Why?* To identify centers where the cost of potential damage is the highest

Key Steps

- Risk Assessment
  - Existing Land Uses and Future Development Trends in Hazard Areas

    - Where is new development planned?
    - How much of this is in hazard areas?
    - Are there codes/regulations in place to provide a certain degree of protection from the most frequent events?

A brief questionnaire will be distributed to Core Planning Group Members: Target dates: Distribution – 08/08/09, Return 08/23/09

Key Steps

- Capabilities and Resources
  - Plans, codes, and ordinances currently in place
  - Can contribute to, or be utilized for, hazard mitigation
  - Local Municipalities, County, State, Federal

A brief questionnaire will be distributed to Core Planning Group Members: Target dates: Distribution – 08/23/09, Return 09/07/09

Key Steps

- Mitigation Strategy
  - Goals
  - Evaluate full range of actions
  - Select actions
  - Prioritize selected actions
  - Identify responsible party, potential funding source, and time frame

This step will be the subject of a working session of the Core Planning Group and a series of three worksheets. Target dates: Distribution – 10/27/09, Working Session 11/06/09, Return 11/20/09

Key Steps

- Plan Maintenance
  - Final Plan is a "living document"
  - DMA 2000 requires updates, 5 year cycle
  - Regular monitoring and review of progress

Key Steps

- Plan Integration
  - DMA 2000 requires integration of mitigation plan into
    - job descriptions,
    - other local plans,
    - permitting vehicles,
    - etc...

Break – Please return in 10 minutes

Plan Development

Consultant
County
Municipalities
General Public
Other Stakeholders

The Role of Participating Jurisdictions

- Who Are Participating Jurisdictions:

  Jurisdictions that want the overall multi-jurisdictional plan to "count", in FEMA's eyes, as their jurisdiction's mitigation plan.

  - Participate, contribute

  AND

  - Formally adopt the Final Plan

The Role of Participating Jurisdictions

- Participating Jurisdictions must...
  - Attend meetings (three additional with URS- October, November and January)
  - Provide available data/documents on the "Wish List"
  - Respond to questionnaires (three)
  - Give the public and key stakeholders in their jurisdiction opportunities to participate in plan development – See Guidance Memo #1; use Outreach Log to track

The Role of Participating Jurisdictions

- Participating Jurisdictions must also…
  - Select mitigation actions (worksheet)
  - Define implementation strategy (worksheet)
  - Adopt the plan (by resolution)
  - Participate in plan maintenance/updates

The Role of Participating Jurisdictions

- If you do not participate actively in the plan's development (through submittal of Core Planning Group Deliverables)

OR

- If you do not identify an implementation strategy for at least two mitigation actions that your municipality will pursue

THEN

- FEMA will not approve the plan for your municipality.

The Jefferson County Planning Project

THE FINAL COUNTY-WIDE PLAN

Recognized by FEMA:
- County
- Jurisdictions meeting ALL of the participation criteria

NOT Recognized by FEMA:
- Any jurisdictions that don't meet ALL of the participation criteria

The Role of the Public and Other Stakeholders

- Who Are Other Stakeholders?

- Neighborhood groups
- Non-profit organizations (i.e. scout troops, Red Cross, Salvation Army)
- Housing organizations
- Environmental groups
- Historic preservation groups
- Parent-teacher organizations
- Church organizations
- Parks organizations
- State, federal, and local government offices
- Neighboring communities/counties
- Business and development organizations
- Academic institutions
- Utility providers
- Hospitals
- Tribal groups
- Transportation entities
- Regional planning organizations
- Emergency service providers
- Jurisdiction web site managers / IT staff
- Any local office and/or group with a public outreach focus

The Role of the Public and Other Stakeholders

- Role of the Public and Other Stakeholders:
  - Advisory role
  - Provide feedback
    - Historic hazard effects
    - Proposed mitigation actions
    - Etc…
  - CPG gets the word out to the public and other stakeholders in their area

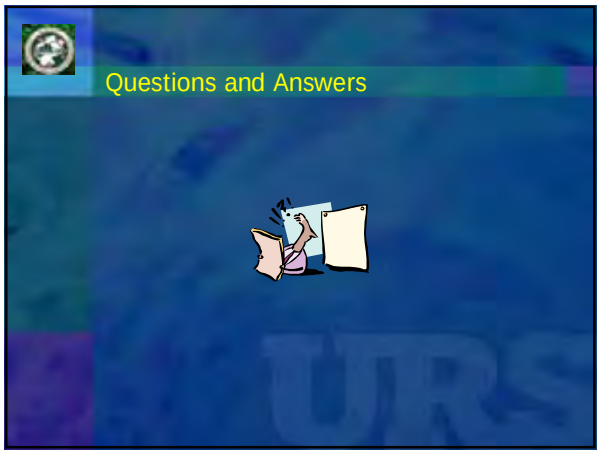
Key URS Deliverables

- Guidance Memorandums (3 throughout process, one of which is in today's handouts)
- Working Draft Plan Chapters (ongoing)
- Risk Assessment Interim Deliverable (September 2009)
- Draft Plan (December 2009)

Review: Planning Committee, NYSEMO & FEMA

- Final Plan (60 days from coordinated comments on Draft)


JEFFERSON COUNTY MULTI-JURISDICTIONAL HAZARD MITIGATION PLANNING PROJECT


Questions and Answers

Jefferson County Multi-Jurisdictional
Natural Hazard Mitigation Planning Project
Q&A Session on the Risk Assessment Interim Deliverable
October 14, 2009 (7 pm)
Jefferson County Office of Fire and Emergency Management
Metro-Jeff Public Safety Building, 753 Waterman Drive, Watertown

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Agenda

- Welcome & Opening Remarks……*Joseph Plummer, JCOFEM*

- **R**isk **A**ssessment **I**nterim **D**eliverable Overview ……....*Richard Franks, URS*

  - *Hazard Identification*
  - *Hazard Profiles*
  - *Asset Identification and Characterization*
  - *Land Uses and Development Trends*
  - *Damage Estimates*
  - *Types of Mitigation Actions to Consider for Various Hazards*

- To-Do Actions for Jurisdictions……. ……....*Richard Franks, URS*

- Questions & Answers…….……..*All*

- Closing Remarks…….....……. *Joseph Plummer, JCOFEM*

- Adjourn

Please remember to
SIGN IN
if you haven't already done so.
Thank you.

Jefferson County Multi-Jurisdictional Hazard Mitigation Planning Project
Q&A Session on the Risk Assessment Interim Deliverable – October 14, 2009 (7 pm)
Jefferson County Office of Fire and Emergency Management
Metro-Jeff Public Safety Building, 753 Waterman Drive, Watertown

Last Name	First Name	Representing	Email Address	Phone
Plummer	Joseph	Jeff Co Fire/EMO	josephP@co.jefferson.ny.us	786-2654
Eves	James	Village Dexter	mayordexter@tds.net	639-6260
Dealing	Carl	T/O Lorraine	lorrainehighway99@yahoo.com	315-232-4620
Dealing	Robin	T/O Lorraine		"
Pecor	Candie	T/o - V/o Clayton	townbarn@townofclayton.com	315-686-5122
Intercise	Shane	V/o Deferiet	Robert Foster@Hotmail.com	315 493-2707
Byness	Michael	V/o Deferiet	Robert.j.Foster@Hotmail.com	315 493-2707
FRANKS	RICHARD	ORS	richard_franks@ors-corp.com	973 785 0700 x449
Moore	Vince	Lorraine, Town of	Vincem.moore@gmail.com	232-4123
Lampman	Fred	Jefferson Co Fire/EMO	flampman@co.jefferson.ny.us	786-2654

Jefferson County

Multi-Jurisdictional
Hazard Mitigation Planning Project

Risk Assessment Interim Deliverable
Question & Answer Session
October 14, 2009
7:00 pm

Today's Agenda

- Welcome & Opening Remarks ..... *Joseph Plummer, KYOEM*
- Risk Assessment Interim Deliverable Overview ..... *Richard Franks, URS*
  - *Hazard Identification*
  - *Hazard Profiles*
  - *Asset Identification and Characterization*
  - *Land Uses and Development Trends*
  - *Damage Estimates*
  - *Types of Mitigation Actions to Consider for Various Hazards*
- To-Do Actions for Jurisdictions ..... *Richard Franks, URS*
- Questions & Answers ..... *All*
- Closing Remarks ..... *Joseph Plummer, KYOEM*
- Adjourn

Project Progress Timeline to Draft Plan

Kickoff Meeting:	July 9, 2009
Plan Development:	Ongoing
Local Feedback:	Ongoing
Risk Assessment Interim Deliverable:	September 27, 2009
Risk Assessment Q&A Session:	October 14, 2009
Mitigation Strategy Working Session:	November 6, 2009 *
Draft Plan:	December 11, 2009

* This is a targeted meeting date and is to be confirmed

Risk Assessment Interim Deliverable

- Working chapters of the overall plan:
  - Hazard Identification
  - Hazard Profiles
  - Asset Identification and Characterization
  - Damage Estimates
  - Land Uses and Development Trends
  - Types of Mitigation Actions to Consider for Various Hazards

Hazard Identification

- Evaluation of a full range of natural hazards
  - Hazards selected for further analysis and reasons why
  - Hazards not selected and reasons why not

Hazard Identification

Summary Results of the Hazard Identification and Evaluation Process

ATMOSPHERIC	GEOLOGIC
☐ Avalanche	☒ Earthquake
☒ Extreme Temperatures	☐ Expansive Soils
☒ Extreme Wind	☒ Landslide
☐ Hailstorm	☐ Land Subsidence
☐ Hurricane and Tropical Storm	☐ Tsunami
☒ Lightning	☐ Volcano
☐ Nor'easter	
☒ Tornado	OTHER
☒ Winter Storm	☒ Wildfire
HYDROLOGIC	
☒ Coastal Erosion	
☒ Dam Failure	
☒ Drought	
☒ Flood	
☒ Ice Jams	
☐ Storm Surge	
☐ Wave Action	

☒ = Hazard considered significant enough for further evaluation through the multi-jurisdictional hazard risk assessment.

23 natural hazards evaluated
15 considered significant enough for further evaluation through risk assessment

Jurisdiction	Extreme Temperature	Extreme Wind	Tornado	Lightning	Winter Storm	Coastal Erosion	Dam Failure	Drought	Flood	Ice Jam	Earthquake	Landslide	Wildfire
Jefferson, County of	•	•	•	•	•	•	•	•	•	•	•	•	•
Adams, Town of	•	•	•	•	•			•	•	•	•	•	•
Adams, Village of	•	•	•	•	•			•	•	•	•	•	•
Alexandria, Town of	•	•	•	•	•			•	•	•	•	•	•
Alexandria Bay, Village of	•	•	•	•	•			•	•	•	•	•	•
Ambrose, Town of	•	•	•	•	•			•	•	•	•	•	•
Ambrose, Village of	•	•	•	•	•			•	•		•		•
Black River, Village of	•	•	•	•	•			•	•		•		•
Brownville, Town of	•	•	•	•	•			•	•	•	•	•	•
Brownville, Village of	•	•	•	•	•			•	•		•		•
Cape Vincent, Town of	•	•	•	•	•			•	•		•	•	•
Cape Vincent, Village of	•	•	•	•	•			•	•		•	•	•
Carthage, Village of	•	•	•	•	•			•	•		•		•
Champion, Town of	•	•	•	•	•			•	•	•	•		•
Chaumont, Village of	•	•	•	•	•			•	•		•	•	•
Clayton, Town of	•	•	•	•	•			•	•		•	•	•
Clayton, Village of	•	•	•	•	•			•	•		•	•	•
Dexter, Village of	•	•	•	•	•			•	•	•	•	•	•
Ellisburg, Town of	•	•	•	•	•	•		•	•		•	•	•
Ellisburg, Village of	•	•	•	•	•			•	•		•	•	•
Evans Mills, Village of	•	•	•	•	•			•	•	•	•		•
Glen Park, Village of	•	•	•	•	•			•	•	•	•		•
Henderson, Town of	•	•	•	•	•			•	•		•	•	•
Hennings, Village of	•	•	•	•	•			•	•		•		•
Hounsfield, Town of	•	•	•	•	•			•	•		•	•	•
La Ray, Town of	•	•	•	•	•			•	•	•	•		•
Lorraine, Town of	•	•	•	•	•			•	•	•	•		•
Lyme, Town of	•	•	•	•	•			•	•		•	•	•
Mannsville, Village of	•	•	•	•	•			•	•		•	•	•
Orleans, Town of	•	•	•	•	•			•	•		•	•	•
Pamelia, Town of	•	•	•	•	•			•	•	•	•		•
Philadelphia, Town of	•	•	•	•	•			•	•		•		•
Philadelphia, Village of	•	•	•	•	•			•	•	•	•		•
Rodman, Town of	•	•	•	•	•			•	•		•		•
Rutland, Village of	•	•	•	•	•			•	•	•	•		•
Sackets Harbor, Village of	•	•	•	•	•			•	•			•	•
Theresa, Town of	•	•	•	•	•			•	•		•	•	•
Theresa, Village of	•	•	•	•	•			•	•		•		•
Watertown, City of	•	•	•	•	•			•	•		•		•
Watertown, Town of	•	•	•	•	•			•	•		•		•
West Carthage, Village of	•	•	•	•	•			•	•		•		•
Wilna, Town of	•	•	•	•	•			•	•	•	•		•
Worth, Town of	•	•	•	•	•			•	•		•		•

Hazard Profiles

- Description of hazard
- Location of hazard area
- Extent (magnitude or severity)
- Previous occurrences
- Probability/likelihood of future occurrences

Hazard Profiles

Countywide Hazards

- Assumed uniform risk of occurrence across the whole County
- No specific delineable risk areas
  - Extreme temperatures
  - Extreme winds
  - Winter storms
  - Tornados
  - Lightning

Hazard Profiles

Flood

Hazard Profiles

Flood - Repetitive Loss Areas

Hazard Profiles

Repetitive Loss Area 1 – Village of Clayton (1)

Hazard Profiles

Repetitive Loss Area 2 – Village of Brownville (1)

Hazard Profiles

Repetitive Loss Area 3 – Village of Carthage (1)
Town of Wilna (2)

Hazard Profiles

Repetitive Loss Area 4 – Town of Antwerp (1)

Hazard Profiles

Coastal Erosion

Hazard Profiles

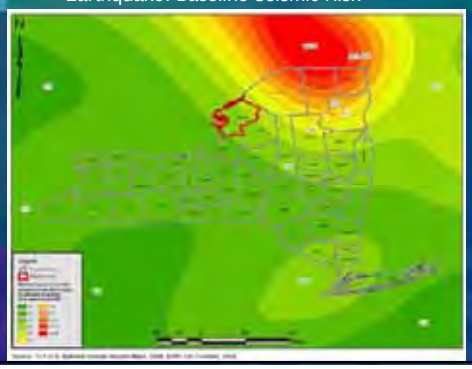
Dam Failure – Dam Locations

Hazard Profiles

Drought

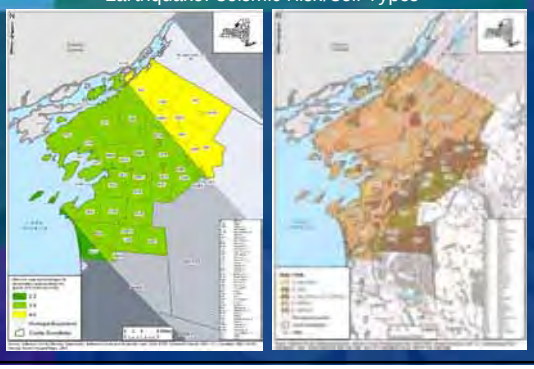
Hazard Profiles

Earthquake: Baseline Seismic Risk



Hazard Profiles

Earthquake: Seismic Risk/Soil Types



Hazard Profiles

Landslide

Hazard Profiles

Wildfire

Hazard Profiles

Mapping of Other Delineable Hazards

- Ice Jams
  - No published mapping but in many cases can be assumed similar to mapped floodplain
- Dam Failure
  - Few published dam failure inundation maps, still awaiting data
  - Maps so far received show inundation generally within existing stream banks

Hazard Profiles

Events vs. Hazards

- Hurricane = EVENT
- Nor'Easter = EVENT
- Tropical Storm = EVENT
- HAZARDS associated with these EVENTS are:
  - Flood
  - Wind
  - Surge
  - Snow

Asset Identification and Characterization

- Quantifies what is at risk
- Six categories of assets considered:
  - Improved property
  - Emergency facilities
  - Critical infrastructure & utilities
  - Historic & cultural resources
  - Population
  - Other key facilities

Asset Identification and Characterization

Municipality	Total Number of Parcels	Number of Improved Parcels	Percentage of Improved Parcels	Total Value of Improvements
Adams, Town of	1644	1204	73%	$231,730,004
Adams, Village of	720	629	87%	$75,977,600
Alexandria, Town of	3296	2291	70%	$258,310,394
Alexandria Bay, Village of	700	395	56%	$102,109,250
Antwerp, Town of	714	473	66%	$35,680,827
Antwerp, Village of	514	361	70%	$22,702,545
Black River, Village of	520	421	81%	$69,017,493
Brownville, Town of	2620	1971	75%	$197,388,898
Brownville, Village of	414	378	91%	$44,730,858
Cape Vincent, Town of	2194	1599	73%	$262,362,872
Cape Vincent, Village of	521	464	89%	$54,107,214
Carthage, Village of	1175	1017	87%	$148,112,520
Champion, Town of	1365	1011	74%	$138,423,000
Chaumont, Village of	372	293	79%	$48,776,745
Clayton, Town of	2921	2087	71%	$289,994,120
Clayton, Village of	903	876	97%	$138,058,500
Defreestville, Village of	136	124	91%	$26,130,800
Dexter, Village of	400	351	88%	$46,124,928
Ellisburg, Town of	2235	1551	69%	$138,937,917
Ellisburg, Village of	140	104	73%	$7,461,700
Evans Mills, Village of	256	218	85%	$27,721,000
Glen Park, Village of	230	189	76%	$30,193,813
Henderson, Town of	2068	1356	75%	$191,312,813
Hennings, Village of	60	51	85%	$7,974,100
Houseafield, Town of	1412	1036	72%	$121,487,623
LaFargeville, Town of	1700	1299	72%	$135,193,831
Lorraine, Town of	636	466	71%	$47,785,115
Lyme, Town of	2910	2119	72%	$196,346,342
Mannsville, Village of	194	161	83%	$19,161,854
Orleans, Town of	2197	1638	73%	$307,389,850
Pamelia, Town of	1482	1186	80%	$199,499,648
Philadelphia, Town of	427	290	68%	$74,670,490
Philadelphia, Village of	339	268	83%	$33,096,960
Redwood, Town of	712	490	69%	$38,203,936
Rutland, Town of	1270	912	72%	$87,630,201
Sackets Harbor, Village of	716	601	84%	$106,401,728
Theresa, Town of	1886	1158	61%	$89,173,151
Theresa, Village of	408	345	85%	$33,147,705
Wanstown, Town of	1920	1472	77%	$405,544,397
Wanstown, City of	9510	7453	78%	$1,214,445,012
West Carthage, Village of	644	563	87%	$77,438,900
Wilna, Town of	1137	829	73%	$70,613,576
Worth, Town of	400	257	64%	$9,374,136
County Total	36964	26269	71%	$6,959,319,272

*Not including some public buildings and other tax exempt structures

Improved Property:
Approx $7 Billion

Asset Identification and Characterization

- Improved Property in Delineated Hazard Areas:

Municipality	Total Improved Value	High Flood Risk (A/AE Zones)	Earthquake (PGA 4.59%g)	Earthquake (Soil Types D and E)	Landslide (Moderate Susceptibility)	Wildfire Hazard area
Adams, Town of	$195,730,004	3%	0%	66%	0%	13%
Adams, Village of	$75,977,600	2%	0%	100%	0%	14%
Alexandria, Town of	$258,310,394	23%	91%	69%	66%	30%
Alexandria Bay, Village of	$102,109,250	13%	100%	0%	90%	2%
Antwerp, Town of	$35,680,827	4%	100%	11%	2%	34%
Antwerp, Village of	$22,702,545	0%	100%	100%	0%	22%
Black River, Village of	$69,017,493	3%	0%	79%	0%	19%
Brownville, Town of	$197,388,898	4%	0%	61%	60%	17%
Brownville, Village of	$44,730,858	0%	0%	81%	0%	2%
Cape Vincent, Town of	$262,362,872	14%	0%	77%	92%	11%
Cape Vincent, Village of	$54,107,214	0%	0%	0%	66%	100%
Carthage, Village of	$148,112,520	9%	13%	95%	0%	11%
Champion, Town of	$138,423,000	2%	0%	9%	0%	28%
Chaumont, Village of	$48,776,745	2%	0%	0%	66%	100%
Clayton, Town of	$289,994,120	12%	0%	0%	63%	36%
Clayton, Village of	$138,058,500	7%	0%	0%	92%	6%
Defreestville, Village of	$26,130,800	4%	0%	0%	47%	0%
Dexter, Village of	$46,124,928	11%	0%	0%	100%	51%
Ellisburg, Town of	$138,937,917	9%	0%	0%	47%	76%
Ellisburg, Village of	$7,461,700	12%	0%	0%	77%	100%
Evans Mills, Village of	$27,721,000	7%	0%	0%	20%	0%
Glen Park, Village of	$30,193,813	3%	0%	0%	6%	0%
Henderson, Town of	$191,312,813	11%	0%	0%	72%	86%
Hennings, Village of	$7,974,100	39%	0%	0%	40%	0%
Houseafield, Town of	$121,487,623	3%	0%	0%	2%	70%
LaFargeville, Town of	$135,193,831	1%	10%	0%	0%	0%
Lorraine, Town of	$47,785,115	0%	0%	0%	26%	0%
Lyme, Town of	$196,346,342	13%	0%	0%	59%	67%
Mannsville, Village of	$19,161,854	0%	0%	0%	13%	16%
Orleans, Town of	$307,389,850	13%	2%	0%	59%	36%
Pamelia, Town of	$199,499,648	4%	0%	0%	91%	0%
Philadelphia, Town of	$74,670,490	1%	0%	99%	99%	0%
Philadelphia, Village of	$33,096,960	3%	100%	100%	0%	16%
Redwood, Town of	$38,203,936	3%	0%	0%	3%	0%
Rutland, Town of	$87,630,201	4%	0%	0%	1%	0%
Sackets Harbor, Village of	$106,401,728	2%	0%	0%	39%	84%
Theresa, Town of	$89,173,151	10%	0%	90%	83%	37%
Theresa, Village of	$33,147,705	6%	100%	0%	0%	0%
Wanstown, Town of	$405,544,397	0%	0%	0%	32%	0%
Wanstown, City of	$1,214,445,012	2%	0%	0%	94%	0%
West Carthage, Village of	$77,438,900	4%	0%	0%	31%	0%
Wilna, Town of	$70,613,576	4%	0%	70%	50%	0%
Worth, Town of	$9,374,136	0%	0%	0%	1%	0%
County Total	$6,959,319,272	4%	12%	42%	23%	22%

Asset Identification and Characterization

- Emergency Facilities: 86 (*Identified/Georeferenced)

Municipality	Fire Stations	Police Stations	EMS / Ambulance Stations	Hospitals	Coast Guard Stations
Adams, Town of	1				
Adams, Village of	2	1	1		
Alexandria, Town of	2				1
Alexandria Bay, Village of	2	1		1	
Antwerp, Town of	1				
Antwerp, Village of	1	1			
Black River, Village of	1		1		
Brownville, Town of					
Brownville, Village of	1				
Cape Vincent, Town of	2	1			
Cape Vincent, Village of					
Carthage, Village of	1	1		1	
Champion, Town of	2				
Chaumont, Village of					
Clayton, Town of	3	1			
Clayton, Village of	1		1		
Defreestville, Village of	1				
Dexter, Village of	2	1			
Ellisburg, Town of	1				
Ellisburg, Village of	2				
Evans Mills, Village of	3		1		
Glen Park, Village of	2				
Henderson, Town of	1				
Hennings, Village of					
Houseafield, Town of					
LaFargeville, Town of	2		1	1	
Lorraine, Town of	1				
Lyme, Town of	2				
Mannsville, Village of	2				
Orleans, Town of	3				
Pamelia, Town of	2				
Philadelphia, Town of					
Philadelphia, Village of	1				
Redwood, Town of	2				
Rutland, Town of	3				
Sackets Harbor, Village of	1	1			1
Theresa, Town of	1				
Theresa, Village of	1				
Wanstown, Town of	2		1		
Wanstown, City of	4	5	1	1	
West Carthage, Village of	1	1			
Wilna, Town of	1		1		
Worth, Town of					
County Total	52	14	8	4	2

Asset Identification and Characterization

- Critical Infrastructure and Utilities: 97(*)

Municipality	Waste Water Facilities	Public Works Facilities	Airports	Electric Power Facilities	Communications Facilities
Adams, Town of		1			1
Adams, Village of	1	2			1
Alexandria, Town of		2	1		
Alexandria Bay, Village of	1	1			
Antwerp, Town of		2			
Antwerp, Village of	1	1			
Black River, Village of					
Brownville, Town of		4			1
Brownville, Village of	1	1			
Cape Vincent, Town of		3			2
Cape Vincent, Village of	1	1			
Carthage, Village of		1			
Champion, Town of		1			3
Chaumont, Village of		1			
Clayton, Town of	2	1			
Clayton, Village of		1			
Defreestville, Village of	1				
Dexter, Village of	1	1			
Ellisburg, Town of		1			
Ellisburg, Village of		1			
Evans Mills, Village of	1	1			
Glen Park, Village of		1			
Henderson, Town of		2			
Hennings, Village of	1				
Houseafield, Town of		2	1		
LaFargeville, Town of			1	1	
Lorraine, Town of		2			
Lyme, Town of					
Mannsville, Village of		1			
Orleans, Town of	2	4			
Pamelia, Town of		5			
Philadelphia, Town of		1			1
Philadelphia, Village of	1	1			
Redwood, Town of		2			1
Rutland, Town of		1			4
Sackets Harbor, Village of	1				
Theresa, Town of	1				
Theresa, Village of	1	2			
Wanstown, Town of	1				2
Wanstown, City of	1				2
West Carthage, Village of	1	1			
Wilna, Town of		1			
Worth, Town of		1			
County Total	20	55	3	1	18

Asset Identification and Characterization

- Other Key Facilities: 52 (*)

Municipality	Schools	Residential Senior Care Facilities
Adams, Town of	2	
Adams, Village of	1	
Alexandria, Town of		
Alexandria Bay, Village of	2	
Antwerp, Town of		
Antwerp, Village of	1	
Black River, Village of	1	
Brownville, Town of	2	
Brownville, Village of		
Cape Vincent, Town of	2	
Cape Vincent, Village of	1	
Carthage, Village of	1	1
Champion, Town of	2	
Chaumont, Village of	1	
Clayton, Town of	1	
Clayton, Village of	1	
Defreestville, Village of		
Dexter, Village of	2	
Ellisburg, Town of	1	
Ellisburg, Village of		
Evans Mills, Village of	1	
Glen Park, Village of	1	
Henderson, Town of		
Hennings, Village of		
Houseafield, Town of		
LaFargeville, Town of	1	
Lorraine, Town of		
Lyme, Town of	1	
Mannsville, Village of	1	
Orleans, Town of	1	
Pamelia, Town of		
Philadelphia, Town of	4	
Philadelphia, Village of	1	
Redwood, Town of		
Rutland, Town of		
Sackets Harbor, Village of	1	
Theresa, Town of		
Theresa, Village of	1	
Wanstown, Town of		
Wanstown, City of	13	2
West Carthage, Village of	1	
Wilna, Town of	1	
Worth, Town of		
County Total	49	3

Asset Identification and Characterization

- Historic and Cultural Resources: 136

- Located in 22 out of 43 municipalities
- State and Federally-listed sites
- Other significant cultural and historical assets such as museums of local history provided by local sources and identified via general internet research.

Roswell P. Flower Memorial Library, Watertown

Asset Identification and Characterization

- Population (2000) = 111,738

Jurisdiction	Population		Households	
	Total	Percent of County	Total	Percent of County
Adams, Town of	5,158	4.3%	1,759	4.9%
Adams, Village of	1,624	1.5%	705	1.8%
Alexandria, Town of	3,009	2.7%	1,171	2.9%
Alexandria Bay, Village of	1,088	1.0%	482	1.2%
Antwerp, Town of	1,077	1.6%	361	0.9%
Antwerp, Village of	716	0.6%	260	0.6%
Black River, Village of	1,265	1.2%	521	1.3%
Brownville, Town of	3,301	2.2%	1,345	3.4%
Brownville, Village of	1,022	0.9%	409	1.0%
Cape Vincent, Town of	4,565	3.9%	719	2.2%
Cape Vincent, Village of	760	0.7%	348	0.9%
Carthage, Village of	3,501	3.3%	1,419	3.5%
Champion, Town of	2,239	3.9%	845	2.1%
Chaumont, Village of	392	0.3%	233	0.6%
Clayton, Town of	2,966	4.3%	1,166	2.7%
Clayton, Village of	1,521	1.6%	826	2.1%
Ledyard, Village of	309	0.3%	120	0.3%
Dexter, Village of	1,120	1.0%	420	1.0%
Ellisburg, Town of	2,872	3.2%	1,055	2.6%
Ellisburg, Village of	269	0.2%	91	0.2%
Evans Mills, Village of	485	0.5%	251	0.6%
Glen Park, Village of	467	0.4%	175	0.4%
Henderson, Town of	1,377	1.2%	577	1.4%
Hermon, Village of	129	0.1%	42	0.1%
Hounsfield, Town of	1,917	3.0%	697	1.7%
LaFargeville, Town of	19,210	17.1%	4,140	10.3%
Lorraine, Town of	936	0.8%	327	0.8%
Lyme, Town of	1,403	1.3%	580	1.4%
Mannsville, Village of	460	0.4%	143	0.4%
Orleans, Town of	2,463	2.2%	928	2.3%
Pamelia, Town of	2,897	2.6%	1,044	2.6%
Philadelphia, Town of	625	1.9%	213	0.5%
Philadelphia, Village of	1,519	1.4%	546	1.4%
Rodman, Town of	1,147	1.0%	383	1.0%
Rutland, Town of	2,939	2.6%	1,097	2.7%
Sackets Harbor, Village of	1,368	1.2%	619	1.6%
Theresa, Town of	1,602	2.2%	561	1.4%
Theresa, Village of	812	0.7%	308	0.8%
Watertown, City of	26,705	23.9%	11,036	27.5%
Watertown, Town of	4,462	4.0%	1,407	3.5%
West Carthage, Village of	2,332	1.9%	830	2.1%
Wilna, Town of	2,078	5.6%	756	1.9%
Worth, Town of	234	0.2%	96	0.2%
County Total	111,738	100%	40,303	100%

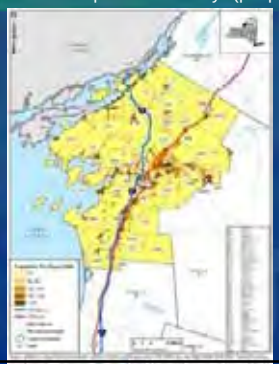
Asset Identification and Characterization

- Population – Vulnerable Sectors (2000) = 19%

Jurisdiction	Total Population	Under 5 Years	Percent of Municipal Total	65 Years and over	Percent of Municipal Total	Total Vulnerable Population	Percent of Municipal Total
Adams, Town of	5,158	200	4.3%	324	10.3%	524	14.6%
Adams, Village of	1,624	111	6.8%	263	16.3%	374	23.2%
Alexandria, Town of	3,009	167	5.6%	421	14.0%	588	19.5%
Alexandria Bay, Village of	1,088	47	4.3%	223	20.5%	300	27.6%
Antwerp, Town of	1,077	76	7.1%	82	7.6%	158	14.7%
Antwerp, Village of	716	26	3.6%	91	12.7%	127	17.7%
Black River, Village of	1,265	76	3.9%	177	13.8%	253	19.7%
Brownville, Town of	3,301	209	5.6%	417	11.3%	626	16.9%
Brownville, Village of	1,022	68	6.3%	160	13.7%	228	22.3%
Cape Vincent, Town of	2,565	69	1.9%	231	8.8%	280	10.8%
Cape Vincent, Village of	760	36	4.7%	184	24.2%	220	28.9%
Carthage, Village of	3,501	287	7.7%	339	14.2%	826	22.2%
Champion, Town of	2,239	136	6.0%	240	10.6%	376	16.6%
Chaumont, Village of	392	24	4.1%	92	13.5%	116	19.6%
Clayton, Town of	2,966	199	6.6%	349	11.6%	548	18.3%
Clayton, Village of	1,521	104	5.7%	380	20.9%	484	26.6%
Ledyard, Village of	309	20	6.3%	63	20.4%	83	26.9%
Dexter, Village of	1,120	64	5.7%	173	15.4%	237	21.2%
Ellisburg, Town of	2,872	178	6.2%	330	12.2%	528	18.4%
Ellisburg, Village of	269	11	4.1%	27	10.0%	38	14.1%
Evans Mills, Village of	485	39	8.4%	100	16.5%	139	29.0%
Glen Park, Village of	467	37	7.9%	63	12.8%	100	20.3%
Henderson, Town of	1,377	57	4.1%	261	19.0%	318	23.1%
Hermon, Village of	129	11	8.5%	6	4.7%	17	13.2%
Hounsfield, Town of	1,917	96	5.0%	243	12.7%	339	17.7%
LaFargeville, Town of	19,210	2,194	11.4%	441	2.3%	2635	13.7%
Lorraine, Town of	936	78	8.4%	68	7.3%	146	15.7%
Lyme, Town of	1,403	52	3.7%	263	18.7%	315	22.5%
Mannsville, Village of	460	39	8.8%	41	13.3%	100	23.0%
Orleans, Town of	2,463	146	5.9%	300	12.2%	446	18.1%
Pamelia, Town of	2,897	180	6.2%	234	8.1%	414	14.3%
Philadelphia, Town of	625	34	5.4%	55	8.8%	87	14.0%
Philadelphia, Village of	1,519	167	11.0%	138	9.1%	285	18.8%
Rodman, Town of	1,147	68	5.9%	98	8.5%	166	14.5%
Rutland, Town of	2,939	161	5.4%	291	9.9%	452	15.3%
Sackets Harbor, Village of	1,368	73	5.3%	153	10.8%	224	16.2%
Theresa, Town of	1,602	94	5.9%	103	6.4%	197	12.3%
Theresa, Village of	812	40	5.0%	81	10.0%	129	15.9%
Watertown, City of	26,705	2,076	7.8%	4,140	15.5%	6216	23.3%
Watertown, Town of	4,462	230	5.1%	442	9.9%	672	15.0%
West Carthage, Village of	2,332	197	8.4%	290	12.4%	487	20.9%
Wilna, Town of	2,078	133	6.4%	204	9.8%	337	16.2%
Worth, Town of	234	8	3.4%	28	12.0%	36	15.4%
County Total	111,738	8,108	7.3%	12,617	11.3%	20,625	18.5%

Asset Identification and Characterization

- Population Density (people per square mile)



- Average = 88 people/sq. mile
- State Average = 409 people/sq. mile

Land Uses and Development Trends

- Overview of land use and land cover across entire planning area
- Discussion of land use and development trends in each jurisdiction
- Potential for future development in hazard areas (vacant parcel analysis, and per hazard)
- Responses to LUDT questionnaires (tabulated)

Land Uses and Development Trends

Land Use

Land Cover

Land Uses and Development Trends

- Land Use Estimates

Land Use Category	Acreage	% of Total
Residential	184,071	23.0%
Community Services / Institutional	91,425	11.4%
Offices / General Business / Commercial	7,081	0.9%
Industrial	6,610	0.8%
Utilities	5,807	0.7%
Transportation	2,417	0.3%
Agriculture	293,472	36.7%
Parks / Open Space / Conservation	77,622	9.7%
Vacant	130,562	16.3%
Water	361	0.05%
Unclassified	215	0.03%
Total (Acres)	*799,644*	*100%*

Estimates of Annualized Losses for Each Hazard

- Incorporates historical loss data where available
- Makes use of HAZUS results from state plan where available
- Damage information for entire County scaled to participating jurisdictions based on improvement values where appropriate
- Limitations of analysis:
  - Very conservative for some hazards

Estimates of Annual Losses for Each Hazard

U_N = Unquantifiable but assumed negligible U_S = Unquantifiable but potentially significant

Municipality	Impr. Value	Tornado	Winter	Drought	Flood	Earthquake
Adams, Town of	$273,730,894	$37,369	$60,003	$53,834	$8,286	$10,021
Adams, Village of	$71,977,000	$10,002	$16,026	$950	$1,200	$4,334
Alexandria, Town of	$229,338,200	$30,993	$49,348	$13,383	$28,200	$34,793
Alexandria Bay, Village	$102,338,230	$13,948	$16,511	$401	$1,200	$1,859
Antwerp, Town of	$51,600,827	$10,278	$16,767	$13,476	$1,200	$2,031
Antwerp, Village of	$11,792,343	$10,037	$1,643	$67	$0	$1,200
Black River, Village of	$69,217,693	$9,327	$14,403	$628	$750	$1,937
Brownville, Town of	$151,281,200	$20,963	$33,228	$10,453	$14,200	$13,140
Brownville, Village of	$44,738,928	$6,063	$10,067	$167	$75	$1,332
Cape Vincent, Town of	$243,261,573	$32,718	$51,063	$13,383	$28,200	$34,907
Cape Vincent, Village of	$34,397,238	$4,554	$5,699	$952	$1,781	$1,205
Carthage, Village of	$146,112,220	$19,626	$30,696	$167	$7,200	$8,440
Champion, Town of	$139,612,200	$13,994	$23,256	$7,870	$1,200	$8,037
Chaumont, Village of	$61,376,243	$8,246	$9,211	$321	$630	$2,232
Clayton, Town of	$265,894,130	$35,174	$55,395	$28,763	$11,790	$12,852
Clayton, Village of	$139,079,300	$18,403	$28,861	$284	$5,730	$7,977
Dexter, Village of	$36,439,200	$4,823	$8,467	$128	$630	$1,332
Ellisburg, Town of	$108,324,928	$7,324	$13,603	$0	$1,200	$2,043
Ellisburg, Village of	$108,332,317	$14,339	$22,511	$207,232	$2,670	$7,304
Evans Mills, Village of	$27,720,000	$3,993	$6,841	$103	$630	$1,332
Glen Park, Village of	$39,893,833	$5,273	$8,234	$103	$1,200	$1,837
Henderson, Town of	$101,032,825	$14,777	$23,427	$59,267	$7,200	$10,997
Herrings, Village of	$7,836,200	$1,039	$1,811	$0	$1,200	$634
Hounsfield, Town of	$121,667,825	$9,822	$15,899	$10,004	$2,820	$7,139
Le Ray, Town of	$1,200,762,681	$91,331	$145,230	$46,014	$1,200	$67,260
Lorraine, Town of	$27,760,825	$7,667	$12,211	$1,411	$1,200	$1,203
Lyme, Town of	$106,348,242	$20,667	$32,420	$10,339	$10,200	$11,201
Mannsville, Village of	$19,187,004	$2,765	$4,400	$0	$0	$1,093
Orleans, Town of	$167,389,200	$20,378	$32,703	$60,004	$28,200	$17,353
Pamelia, Town of	$109,877,994	$13,939	$22,812	$10,827	$2,760	$12,379
Philadelphia, Town of	$74,876,870	$9,973	$15,940	$11,033	$200	$8,260
Philadelphia, Village of	$35,280,000	$4,813	$7,656	$0	$1,830	$1,940
Redfield, Town of	$59,493,978	$8,434	$13,206	$29,004	$940	$5,179
Rutland, Village of	$67,839,231	$9,038	$14,703	$11,027	$1,200	$1,890
Sackets Harbor, Village	$109,492,728	$6,063	$14,400	$1,200	$900	$1,728
Theresa, Town of	$89,373,331	$10,428	$16,200	$6,870	$3,120	$3,087
Theresa, Village of	$35,687,703	$4,200	$6,843	$870	$710	$1,892
Watertown, Town of	$673,344,591	$89,831	$146,200	$11,847	$17,200	$27,228
Watertown, City of	$1,204,843,892	$160,731	$261,613	$167,004	$612	$75,420
West Carthage, Village	$37,830,000	$5,020	$8,166	$0	$1,830	$4,430
Wilna, Town of	$70,663,376	$21,961	$34,760	$6,426	$2,670	$4,032
Worth, Town of	$9,276,330	$1,236	$2,011	$1,002	$60	$353
Jefferson County Total	*$6,958,202,372*	*$927,332*	*$1,454,830*	*$584,894*	*$186,360*	*$397,000*

Damage Estimates

- Ranking of Primary Hazards by Quantified Annual Damage:
  1. Winter storms ~ $1,454,000 per year
  2. Extreme wind ~ $927,000 per year
  3. Drought ~ $584,000 per year
  4. Earthquake ~ $397,000 per year
  5. Flood ~ $186,000 per year

Types of Mitigation Actions to Consider for Various Hazards

- RAID Chapter 6 - READ BEFORE NEXT MEETING
  - To be also distributed separately from the RAID
- Types of actions to address specific hazards
- Tips sheet – towards the end of the RAID
- FEMA job aids – final sections of the RAID

Types of Mitigation Actions to Consider for Various Hazards

- To be used to initiate discussion and evaluation of potential mitigation actions
- Municipalities will need to identify a "punch list" of actions for their own jurisdiction at the next meeting

To-Do List For Local Jurisdictions: Now to Draft Plan Completion

COMMENTS ON THE RAID
ARE DUE
NO LATER THAN
NOVEMBER 11TH

To-Do List For Local Jurisdictions: Now to Draft Plan Completion

JEFFERSON COUNTY MULTI-JURISDICTIONAL HAZARD MITIGATION PLANNING PROJECT

Month	Task Type	Task Name	Details	Date Due
ONGOING	OUTREACH	Outreach Log	Reach out to the public and other stakeholders in your municipality regarding the plan. Read Guidance Memo #1 for information on how to do this. Keep track of your activities on the Outreach Log, which is the last page of Guidance Memo #1. Turn in the Outreach Log to URS on 11/11/09.	11/11/09
July 2009	Questionnaire	Hazard Identification Questionnaire	Submit your completed questionnaire to URS	07/24/09
	Info Request	Wish List	Submit readily available information/data/documents to URS	08/08/09
August 2009	Questionnaire	Land Uses and Development Trends Questionnaire	Submit your completed questionnaire to URS	08/23/09
September 2009	Questionnaire	Capability Assessment Questionnaire	Submit your completed questionnaire to URS	09/07/09
October 2009	Guidance Memo	Guidance Memo #1	Submit your feedback to JCOPEM as requested in the memo. Note: lack of response indicates no preferences regarding this plan element	10/11/09
	Guidance Memo	Guidance Memo #2	Submit your feedback to JCOPEM as requested in the memo. Note: lack of response indicates no preferences regarding this plan element	10/11/09
	Guidance Memo	Guidance Memo #3	Submit your feedback to JCOPEM as requested in the memo. Note: lack of response indicates no preferences regarding this plan element	10/11/09
November 2009	Guidance Memo	Outreach Log	Submit your completed Outreach Log to URS (it is the last page of Guidance Memo #1)	11/11/09
	Worksheet	Mitigation Options Survey	Mitigation Options Survey - responses due from CPG to URS	11/20/09
	Worksheet	Prioritization Worksheet	Prioritization Worksheet - responses due from CPG to URS	11/20/09
	Worksheet	Implementation Strategy Worksheet	Implementation Strategy Worksheet - responses due from CPG to URS	11/20/09
	Worksheet	NFIP Compliance Actions Worksheet	NFIP Worksheet - responses due from CPG to URS	11/20/09

Questions and Answers

Jefferson County Multi-Jurisdictional
Hazard Mitigation Plan
Mitigation Strategy Working Session
November 10, 2009
6:30 pm
Jefferson County Office of Fire and Emergency Management
Metro-Jeff Public Safety Building, 753 Waterman Drive, Watertown

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Agenda

- Welcome & Opening Remarks……*Joseph Plummer, JCOFEM*
- Reminders…… *Richard Franks, URS*
- Any Public Comments?.....*All*
- **Mitigation Strategy Working Session ……....*Richard Franks, URS***
  - ***Evaluation and Prioritization of Mitigation Actions***
  - ***Developing Project Implementation Strategies***
  - ***Actions for Continued Compliance with the NFIP***
- To-Do Actions for Jurisdictions……. …….....*Richard Franks, URS*
- Questions & Answers…….……..…..…..…..…..*All*
- Adjourn……..... *Joseph Plummer, JCOFEM*

Jefferson County Multi-Jurisdictional Hazard Mitigation Plan
Mitigation Strategy Working Session – November 10, 2009 (6:30 pm)
Jefferson County Office of Fire and Emergency Management
Metro-Jeff Public Safety Building, 753 Waterman Drive, Watertown

Last Name	First Name	Representing	Email Address	Phone
Lawrence	Jim	Jefferson Co. Hwy	jlawrence@co.jefferson.ny.us	315-786-3600
Varno	Betsy	Jeff Co Planning		
Plumme	Joe	Jeff Co EMO	joseph@Co.Jefferson.ny.us	315-786-2654
Canfield	Don	Jefferson Co. Planning		
Lampman	Fred	Jefferson Co. EMO	flampman@co.jefferson.ny.us	(315) 786-2654
Reynolds	Gerald	T/o THERESA	HYWAY441 2004@YAHOO.Com	315-628-5566
Pledger	Dana	Village of Clayton		315-686-3631
DRAKE	JAIME	VILLAGE OF THERESA	JAIME.DRAKE@US.ARMY.MIL	315-681-8628
Boulton	Robert	T/o CLAYTON	townbarn@townofclayton.com	315-686-5122
Pecor	Candie	T/o Clayton	"	"
Foster	Robert	Village of Deferiet	robertyfoster@hotmail.com	315 493 2707
Bigness	Mike	V/of Deferiet		315 493 2707
FRANKS	MICHAEL	UNS	michael_franks@uns.army.mil	973 785 0700 x449

Jefferson County

Multi-Jurisdictional
Hazard Mitigation Planning Project

Mitigation Strategy Working Session
November 10, 2009
6:30 pm

Today's Agenda

- Welcome and Opening Remarks
- Reminders
- Any public comments?
- Mitigation Strategy Working Session
  - Completion of worksheets to evaluate and prioritize actions and develop implementation strategies
- Next Steps
- Questions and Discussion

Reminders

- Please remember to sign in
- Please submit your Outreach Log by November 20th – please record all activities intended to alert and engage the public

Reminders

- It is IMPERATIVE that participating jurisdictions submit any outstanding forms/questionnaires by November 20th
- Previous questionnaires will still be accepted (LUDT, CA, Hazard ID) up to November 20th

Comments so far from the Public and/or Other Stakeholders??

- Please tell us what and from whom.
- We will incorporate into appropriate section of the plan.
- Please get back to us no later November 20th.

Worksheet Completion

- The Worksheets:
  1. Mitigation Options Survey
  2. Evaluation and Prioritization of Actions
  3. Documenting an Implementation Strategy
  4. NFIP Worksheet

Worksheet Completion

- Mitigation actions worksheets initially distributed with regular weekly emails, and mentioned at the RAID Q&A Session on October 14th
- RAID includes initial actions list, tip sheet, other reference material for selection of mitigation actions
- Return worksheets no later than November 20th

Worksheet Completion

IMPORTANT NOTE:

If you do not complete and return the worksheets on time, FEMA will not see your municipality as having sufficiently participated and the plan will not be approved for your jurisdiction

Worksheet Completion

FEMA Requirements – apply to EACH municipality on an individual basis:

- Identify and analyze a comprehensive range of projects for each hazard
- Select projects that address reducing the effects of hazards on both new and existing buildings and infrastructure
- Identify, evaluate and prioritize actions related to continued compliance with the NFIP

Worksheet Completion

FEMA Requirements (cont'd):

- Document the process and criteria used for prioritizing the projects
- Identify how each project will be implemented and administered, who will be responsible, resources for completion, targeted time frame?

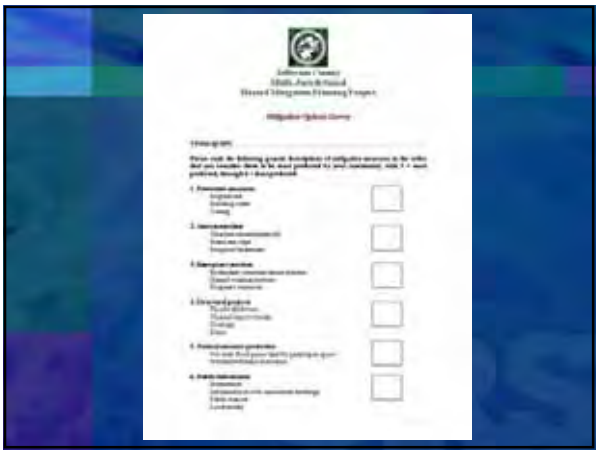
Worksheet Completion

FEMA Requirements (cont'd):

- For each project, the estimated cost and documentation of cost-benefit review
- Identifiable action items for each participating jurisdiction

1. Mitigation Options Survey

- Ranking 6 categories of actions to reflect each municipality's overall local preferences
  - Preventive Measures
  - Asset Protection
  - Emergency Services
  - Structural Projects
  - Natural Resources Protection
  - Public Information



The Role of a Local Jurisdiction

Your list of mitigation projects

- Projects at sites that the municipality owns
- Projects at sites owned by someone else

The Role of a Local Jurisdiction

- If municipality has ownership, then your action is to undertake the project.
- If the owner is anyone else, then your action can be to: advise the owner of the problem, work with them to identify a solution, and submit a grant application on their behalf to obtain funding to complete the project.

The Role of a Local Jurisdiction – An Example

- The Project: Acquire 5 residential structures that have repeatedly flooded in the past.
- Your municipality's "action" is NOT to acquire the houses (unless your local budget has a lot of available funds).
- Your municipality's "action" is to meet with the homeowner to advise them of the risks they face and the benefits of acquisition, and apply to FEMA on their behalf for mitigation project grant funding.

2. Evaluation and Prioritization of Actions

- FEMA's "S T A P L E E"
- Qualitative and subjective level of analysis of overall benefits and costs in lieu of formal benefit-cost analysis
- Acceptable for the planning phase – more formal analysis only required later when making actual grant applications

2. Evaluation and Prioritization of Actions

Socially acceptable

Technically feasible

Administratively possible

Politically favored

Legally possible

Economically viable

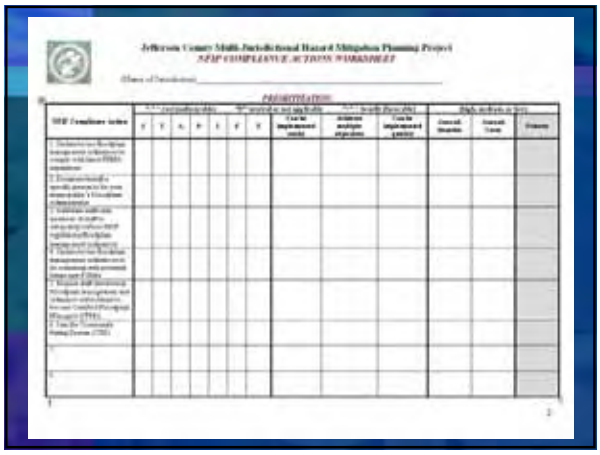
Environmental impact

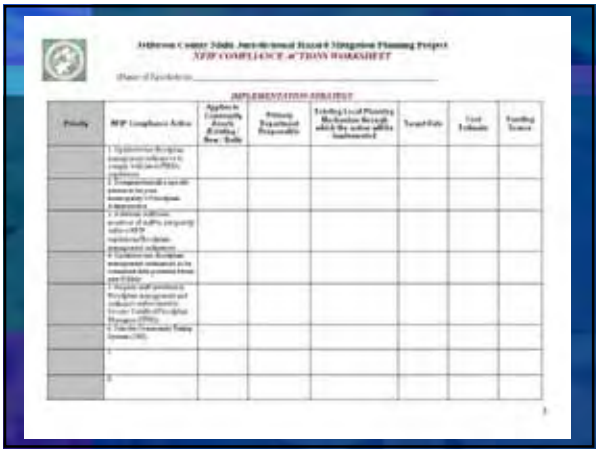
3. Implementation Strategy Development

- What hazards will the project address?
- Will the project affect existing assets, future assets, or both?
- Who will take the lead?
- What authority does the municipality have to do the project?
- When will the project be completed?
- How much will the project cost? ($, or H/M/L)
- Where will the funds come from to do the work?

4. NFIP Compliance Actions Worksheet

- All municipalities in Jefferson County (except for the Town of Lorraine and the Village of Mannsville) participate in FEMA's NFIP, therefore:
- Everyone's mitigation strategy (except for the Town of Lorraine and the Village of Mannsville) must identify, evaluate and prioritize actions related to continued compliance with the NFIP
- Lorraine and Mannsville are encouraged to consider joining the NFIP as a mitigation action and evaluate this action using the other worksheets





To submit your worksheets:

- Richard Franks
  - richard_franks@urscorp.com
  - fax: 973 812 0985
    URS Corporation
    201 Willowbrook Blvd, 3rd Floor
    Wayne, NJ 07470-7005
- Joe Plummer
  - josephp@co.jefferson.ny.us
  - fax: 315 785 3301
    Office of Fire and Emergency Management
    753 Waterman Drive
    Watertown, NY 13601

Next Steps

- Submit comments on the RAID by November 11th
- If you are not turning in your forms today, please email or fax to URS or JCOFEM no later than November 20th
- Draft Plan targeted for completion by December 11th
- Concurrent review by CPG and NYSEMO → FEMA
- CPG Comments by January 29, 2010

Questions????

Jefferson County Multi-Jurisdictional Hazard Mitigation Plan
Presentation of the Draft Plan – February 16, 2010 (5:30 pm)
Jefferson County Legislative Chambers
185 Arsenal Street, Watertown, NY

Last Name	First Name	Representing	Email Address	Phone
Adsit	Jennie	Jeff Co. Legislator		315-788-2189
Madsen	Nancy	Watertown Daily Times	nmadsen@wdt.net	315-661-2358
Plummer	Joseph	Jeff Co Fire/Emo	Josephp@Co.Jefferson.ny.us	315-786-2654
Lamoreaux	Fred	Jeff Co Fire/Emo	Flamoreaux@Co.Jefferson.ny.us	315-786-2654
RAYMOND	RON	NYS EMERGENCY MANAGEMENT	RONALD.RAYMOND@SEMO.STATE.NY.US	315-458-8907
BEHLING	MICHAEL	JEFF. CO. LEGISLATOR	mbehlingatwcny.rr.com	315-232-4804
THOMAS	Robert	Jeff Co. Legislator	Debbie and Bob @Twcny.rr.com	315-788-3149
Kasken	Michael	Jeff Co Leg.	mikkp@co.jefferson.ny.us	315-785-3075
STCROIX	JAMES	Jeff Co. Leg.		315-782-5707
Robertfenner	Robert	Jeff Co Leg.	bobbob111@Yahoo	315-783-6794
REED	PHILIP	JEFF CO LEG.	PHILREED@TWCNY.RR.com	315-686-4623
Docteur	Michael	Jefferson Co. Legislator	mjdocteur@yahoo.com	315-783-0559
BLANKENBUSH	KEN	Jeff. Co. Legislator	KENFROMBEL@gmail.com	315-783-7854
Ormsby	Barry	Jeff Co. Legislator	barryormsby@aol.com	315-778-6195
HOEHMANN	ROBERT	JEFF. CO. "	ROBERTH@CO.JEFFERSON.NY.US	315-785-3075

Jefferson County Multi-Jurisdictional Hazard Mitigation Plan
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Jefferson County Legislative Chambers
185 Arsenal Street, Watertown, NY

Last Name	First Name	Representing	Email Address	Phone
Canfield	Don	Planning Dept	doug@co.jefferson.ny.us	(315) 785-3144
GIBAS	KATIE	News10now	katie.gibas@news10now.com	315 634 2338
Lawrence	Jim	Jefferson Co. Hwy	jlawrence@co.jefferson.ny.us	315 788-3600
Stinson	Gary	Police	garystin@frontiernet.net	315-778-1559
BAKER	TERRY	US CENSUS BUREAU	lcom.lco.2143@census2010.gov	315-779-6502
FRANKS	RICHARD	URS	richard_franks@URScorp.com	973 785 0700

Jefferson County Multi-Jurisdictional Natural Hazard Mitigation Plan

Presentation of the Draft Plan
February 16th, 2010

Agenda:

- Welcome & Opening Remarks: Joseph Plummer, JCOFEM
- Purpose of the Plan
- The Plan Development Process
- The Roles of the Various Parties Involved
- The Risk Assessment
- The Mitigation Strategy
- Plan Status, Next Steps
- Questions and Discussion
- Closing Remarks, Adjourn

Consultants

URS

Anna Foley, Project Manager
973-785-0700 ext. 339
anna_foley@urscorp.com

Richard Franks, Deputy Project Manager
973-785-0700 ext. 449
richard_franks@urscorp.com

Our Commitment:
A FEMA-approved Plan for
Jefferson County and participating municipalities

Mitigation and Mitigation Planning

- Hazard Mitigation is any sustained action taken to reduce or eliminate long-term risk to life and property from a hazard event.
- Hazard Mitigation Planning is a process for State, local, and Indian Tribal governments to identify policies, activities, and tools to implement mitigation actions.
- The Hazard Mitigation Plan is the final document that records all aspects of the process and provides a manual/reference for mitigation activities in the next five years (and beyond).

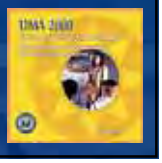
Purpose of the Plan: Why Develop a Hazard Mitigation Plan?

- Study natural hazards, evaluate their effects, and identify hazard mitigation measures that will reduce risks.
- Mitigation planning leads to judicious selection of risk reduction actions and established funding priorities.
- Implementation of mitigation actions is intended to reduce the costs of a future disaster.

Purpose of the Plan: Why Develop a Hazard Mitigation Plan?

Disaster Mitigation Act of 2000

- FEMA-approved plan is required for all jurisdictions wishing to apply for FEMA grants for hazard mitigation projects.
- Plan preparation is funded by a FEMA grant: no out-of-pocket cost to County/municipalities
- No active penalty for non-participation
- No effect on eligibility for post disaster assistance/recovery funds



Purpose of the Plan: What is a Multi-Jurisdictional Plan?

- Communities join together to participate in a single local mitigation plan development process.
- Common:
  - Planning Process
  - Hazards
  - Goals
  - Plan Maintenance Procedures
- Unique:
  - Risks
  - Mitigation Actions
  - Participation
  - Plan Adoption
- Each jurisdiction identifies its own set of mitigation actions for the plan
- No competition between municipalities

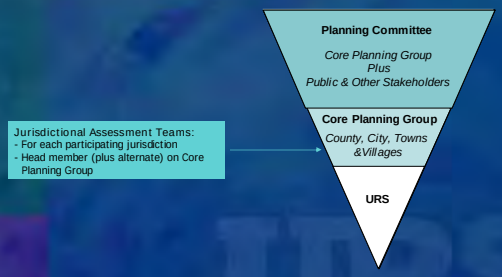
Plan Timeline to Date

- Initiation: March 31, 2009
- Kickoff with municipalities: July 9, 2009
- Risk Assessment Interim Deliverable: September 27, 2009
- Risk Assessment Meeting: October 14, 2009
- Mitigation Strategy Working Session: November 10, 2009
- Draft Plan complete: December 11, 2009
- NYSEMO Review complete: January 7, 2010

The Plan Development Process: Key Steps

- Researching a full range of natural hazard events to determine which are the most prevalent;
- Identifying the location, extent of hazard areas, and the probability of occurrence;
- Identifying assets located within hazard areas;
- Estimating potential damage/losses;
- Evaluating and prioritizing mitigation goals and actions to reduce or avoid long-term vulnerabilities to the prevalent hazards.

Organizational Structure of the Planning Group



Planning Group Roles: Jefferson County (OFEM)

- Lead Agency
  - Procure grant funding
  - Hire Contractor
  - Administer contract
  - Disseminate information and encourage participation
  - Arrange meetings
  - Host Plan web page
  - Submit questionnaires/wish list items
  - Identify County-specific mitigation actions
  - Formally adopt final plan by resolution

Planning Group Roles: Municipalities

- Participate in the plan by:
  - Attend meetings
  - Submit questionnaires/worksheets/wish list items
  - Review draft plan sections
  - Identify jurisdiction-specific mitigation action items
  - Publicize the plan locally
  - Formally adopt the plan by resolution

Planning Group Roles: Other Stakeholders and Public

- Other stakeholders: institutions, non-profits, large local businesses/employers, regional planning associations, neighboring jurisdictions, utility providers, environmental groups, etc.

Ask questions, provide input, and voice concerns

- Comment on the risk assessment:
  - Historic hazard events
  - Specific hazard impacts
- Contribute to the development of the mitigation strategy:
  - Provide general or specific suggestions
  - Supply pertinent data or supporting information

Planning Group Roles: Contractor (URS)

- Walk the County and participating municipalities through the plan process
- Provide guidance, advice, and information
- Provide material and suggestions for web page
- Provide mitigation action evaluation/prioritization tools
- Make presentations at meetings
- Compile and author draft and final Plan
- Provide sample adoption resolution
- Maintain dialogue with County and municipalities

Municipal Participation

- 21 out of 43 notified the County of intent to participate
- 22 Participated to some degree
- 7 (plus the County) participated fully
  - Town of Clayton
  - Village of Clayton
  - Village of Deferiet
  - Village of Glen Park
  - Town of Henderson
  - Town of Lorraine
  - City of Watertown

Key Steps: Hazard Identification

Evaluation of a full range of natural hazards

Summary Results of the Hazard Identification and Evaluation Process

ATMOSPHERIC	**GEOLOGIC**
☐ Avalanche	☑ Earthquake
☑ Extreme Temperatures	☐ Expansive Soils
☑ Extreme Wind	☑ Landslide
☐ Hailstorm	☐ Land Subsidence
☐ Hurricane and Tropical Storm	☐ Tsunami
☑ Lightning	☐ Volcano
☐ Nor'easter	
☑ Tornado	**OTHER**
☑ Winter Storm	☑ Wildfire
HYDROLOGIC	
☑ Coastal Erosion	
☑ Dam Failure	
☑ Drought	
☑ Flood	
☑ Ice Jams	
☐ Storm Surge	
☐ Wave Action	

☑ = Hazard considered significant enough for further evaluation through the multi-jurisdictional hazard risk assessment.

23 natural hazards evaluated
13 considered significant enough for further evaluation through risk assessment

Key Steps: Hazard Profiles

- Description of hazard
- Location of hazard area
- Extent (magnitude or severity)
- Previous occurrences
- Probability/likelihood of future occurrences

Key Steps: Hazard Profiles

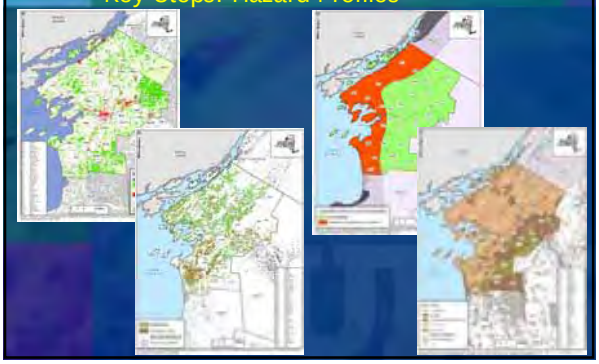
- County-wide hazards: uniform risk of occurrence
  - Extreme Temperatures
  - Extreme Wind
  - Winter Storms
  - Lightning
  - Tornado

Key Steps: Hazard Profiles

- Location-Specific hazards: delineable hazard areas
  - Flood
  - Earthquake
  - Coastal Erosion
  - Earthquake
  - Dam Failure
  - Tornado
  - Drought
  - Wildfire

Key Steps: Hazard Profiles

Key Steps: Hazard Profiles



Key Steps: Asset Identification

- Quantifies what is at risk
- Five key types of assets inventoried and plotted in delineable hazard areas:
  - Improved property
  - Emergency facilities
  - Infrastructure and Utilities
  - Historic & cultural resources
  - Population

- 176 emergency / infrastructure assets located in delineable hazard areas

Key Steps: Damage Estimation

- Estimate potential losses (dollars/ qualitative) to identify centers where the cost of potential damage is the highest (*estimates have significant limitations*):
- Winter storms ~ $1,454,000 per year
- Extreme wind ~ $927,000 per year
- Drought ~ $584,000 per year
- Earthquake ~ $397,000 per year
- Flood ~ $186,000 per year
- Others not currently/easily quantifiable, assumed negligible

Key Steps: Land Use and Development

- Existing Land Uses and Future Development Trends in Hazard Areas
  - Where is new development planned?
  - How much of this is in hazard areas?
  - Are there codes/regulations in place to provide a certain degree of protection from the most frequent events?

Key Steps: Capabilities and Resources

- Plans, codes, and ordinances currently in place
- Can contribute to, or be utilized for, hazard mitigation
- Identify gaps at Local Municipalities, County level
- Federal Technical Assistance and Funding sources

Key Steps: Mitigation Strategy

- Document goals
- Consider wide range of actions
- Select appropriate actions
- Evaluate and prioritize selected actions
- Basic benefit/cost exercise on seven criteria
- Identify responsible party, potential funding sources, and time frame
- Actions to continue/enhance compliance with NFIP

Key Steps: Mitigation Strategy

- Types of actions considered: generic categories
  - Preventive/Regulatory
  - Asset Protection
  - Structural
  - Natural Resource Protection
  - Public Information
  - Emergency Services
- Initial list of 81 suggested actions under 15 goals (covering all profiled hazards) to launch discussion

Key Steps: Mitigation Strategy

- 48 Actions Identified, evaluated and prioritized:
  - Jefferson County 16
  - Town of Clayton 5
  - Village of Clayton 4
  - Village of Deferiet 5
  - Village of Glen Park 5
  - Town of Henderson 4
  - Town of Lorraine 4
  - City of Watertown 5

Not including NFIP compliance actions

Key Steps: Mitigation Strategy

- Hazards most commonly addressed:
  - Flooding
  - Winter Storms
  - Extreme Winds
- Other hazards featured:
  - Coastal erosion, lightning, ice jams, landslide
- Also multi-hazard actions

Mitigation Strategy Examples

- Specific Hazard Actions
  - Protect wastewater treatment plant from flood
  - New storm drainage system
  - Culvert replacements
  - Tree removal and trimming
  - Lightning protection to communication facilities
  - Hillside stabilization adjacent to highways

Mitigation Strategy Examples

- Multi-Hazard Actions
  - Enhanced GIS for hazard mapping
  - Public emergency notification/reverse 911
  - Disaster management software
  - Public awareness and information programs
  - Programmable portable warning signs
  - Storage facility for portable critical infrastructure

Key Steps Plan Integration and Update

Integration of mitigation plan into:

- Job descriptions
- Other local plans
- Permitting vehicles

Plan Maintenance

- Final Plan is a "living document"
- DMA 2000 requires updates, 5 year cycle
- Regular monitoring and review of progress

Plan Status, Next Steps

- Draft Plan completed December 11, 2009
- Review comments from NYSEMO January 7, 2010
- Draft Plan submitted to FEMA, 45-day target for review
- Comments on draft are still welcome
- FEMA review: Required / Recommended Revisions
- Draft Plan will be "Approvable Pending Adoption"
  - Approvable (or not) on a jurisdictional level
- Formal adoption by resolution
  - County and all participating municipalities
- Maintenance and update cycle

FEMA Grant Programs Tied To Having an Approved Plan In Place

Participating Jurisdictions will be eligible to apply for mitigation projects under these FEMA programs:

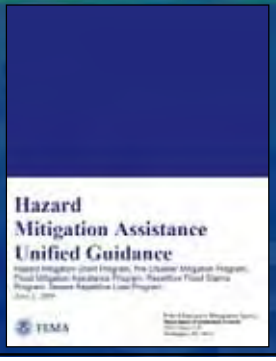
- Hazard Mitigation Grant Program (HMGP)
- Pre-Disaster Mitigation (PDM)
- Flood Mitigation Assistance (FMA)
- Severe Repetitive Loss (SRL)

"Unified Hazard Mitigation Assistance" or "Unified HMA"

Applications not restricted to actions/projects identified in the Plan

Hazard Mitigation Assistance Guidance

http://www.fema.gov/library/viewRecord.do?id=3649



Questions and Discussion

http://www.co.jefferson.ny.us/jefflive.nsf/Hazard%20Select%20Links

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APPENDIX I –

PRESS COVERAGE

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Jefferson County drafting disaster-mitigation plan

11/3/2009

By DAVID C. SHAMPINE
TIMES STAFF WRITER

Jefferson County officials are getting ready for a natural disaster — not that they expect something to strike soon.

"We need to identify mitigation projects so that we can fix something before it becomes a problem," said Joseph D. Plummer, director of county fire and emergency management.

A committee consisting of Mr. Plummer and personnel from the county administrator's office and highway and planning departments will wrap up four months of work to draft a "hazard mitigation plan" for the state and the Federal Emergency Management Agency. County data must be submitted by Nov. 20 to a consultant, URS of Wayne, N.J., which then will create the plan before passing it on to the state.

The effort complies with the federal Disaster Mitigation Act of 2000, which requires all states and local governments to come up with plans to identify and rectify potential problems that could occur when a natural disaster strikes. Under the law, local municipalities will be eligible for money through a federally approved plan.

Snow was an obvious item for the list, Mr. Plummer said. Among other hazards examined are flooding, lightning strikes, earthquakes and extremes in ice, temperatures and wind. A land-use trend sheet outlines residential and commercial development.

Regions that fail to file a plan waive eligibility for mitigation funds, he said. The law provides that individual municipalities must file a plan, or they may participate in a "multi-jurisdictional" plan, which is what Jefferson County is putting together.

All towns and villages were invited to tie in to the county plan, Mr. Plummer said, but not all have responded. He said participants include the towns of Adams, Alexandria, Brownville, Champion, Clayton, Henderson, Hounsfield, LeRay, Lorraine, Orleans, Pamelia, Philadelphia, Theresa, and the villages of Antwerp, Clayton, Deferiet, Dexter, Glen Park, Philadelphia, Sackets Harbor and Theresa. The city of Watertown is also taking part.

The plan will cover more than 600 pages, and is funded by a $75,000 grant from FEMA, with $25,000 invested by the county, Mr. Plummer said.

http://watertown.ynn.com/content/top_stories/496383/hazard-mitigation-plan-one-step-closer-to-reality/ (02/16/10)

JEFFERSON COUNTY, N.Y. -- It's taken nearly a year, but Jefferson County is one step closer to having a FEMA-approved hazard mitigation plan.

Emergency management officials have identified natural hazards in the county and developed a plan to help reduce their negative effects. Now, they've submitted the plan to FEMA for approval. And if FEMA confirms the plan, the county will be eligible to receive grant money to help build and repair infrastructure that can help prevent natural disasters.

"It just saves lives. If you have a road that's closed and an ambulance or fire truck can't get to them, someone could die from that. It's protecting lives there, and it's protecting property when rivers flood, if you have landslides," said Joe Plummer, Jefferson County Fire & Emergency Management Director.

County officials anticipate they will hear from FEMA by April 1st.


Hazard mitigation plan one step closer to reality - News10Now.com - Mozilla Firefox
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Updated 02/16/2010 09:46 PM
Wednesday, February 17, 2010
Hazard mitigation plan one step closer to reality
By: Katie Gibas
NEWS 10 NOW
Joe Plummer
Fire & Emergency Management Director
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APPENDIX J –

ADDITIONAL INFORMATION

This appendix includes various mapping needed to address FEMA Region 2's minimum requirements for a hazard mitigation plan (as of May 2010).

100-Yr Residential Property Exposure Mapping from the NY State Hazard Mitigation Plan

Exposure Mapping (see subsequent pages of this appendix): The New York State Hazard Mitigation Plan (January 2008) contains detailed tables of residential property values located in the high risk (1% annual chance) floodplain, as defined by FEMA Q3 data, using a methodology for which 100% of the value of residential property was deemed to be in the floodplain if the parcel centroid was located within the floodplain boundary, and 0% was deemed to be in the floodplain if the parcel centroid was located outside of the floodplain boundary. FEMA has recommended that this data should be directly incorporated into the Plan. After consideration of the reviewer's recommendation, the 100 year floodplain exposure information from the State Plan was not incorporated into the main text directly, because it was deemed more prudent to conduct a similar analysis using more recent data and an alternative methodology. There were three main factors contributing to this decision. First, the GIS parcel/assessed value data provided by the County for this plan, along with the latest equalization rates provided by the New York State Office of Real Property Services, provides more recent property values. Second, the most recent parcel/assessed value data available for the County planning project has been used to quantify exposure to other delineable hazards, therefore consistent use of this data in the flood hazard profile, as well, allows for more meaningful comparisons between profiled hazards. Finally, the County Plan's approach involves an analysis of improvements within the 100 year floodplain using an alternate methodology for which a percentage of improved property within the floodplain was calculated as a percentage of parcel area covered by the floodplain (i.e., if the floodplain was found to cover 20% of the parcel area, then it was estimated that 20% of the value of all improved property on the parcel was also exposed to the flood hazard – differing from the State Plan which used older data and a methodology which assumed an "all or nothing" approach to exposure). This was done to account for uncertainties in the location of improvements in relation to the parcel centroids. Despite the different methodologies, the total value of residential property in the 100-year floodplain calculated for this plan varies from that calculated for the State Plan by only 2% ($270,505,719 versus $265,006,519) – *though it should be noted that ten municipalities were not analyzed in the State Plan due to stated data availability issues from the New York State Real Property System or FEMA Q3*. Considering that the two analyses used different approaches and possibly different assessed values and equalization rates, the overall results are fairly consistent, as the table on the next page shows.

Implications to the Participating Jurisdictions: While Participating jurisdictions have used the exposure tables presented in Appendix A in their evaluation of risks and in their consideration of future projects, and while the dollar values in this Appendix J represents data which is superseded by other more recent data used for this planning project, in conjunction with an alternate methodology to calculate exposure, it does provide a handy visual when used to supplement information already included in the Main Text Section 3 and Appendix A.

Comparison of Exposed Improved Property Values (100-year Floodplain): Jefferson County Plan versus NY State Hazard Mitigation Plan		
	Jefferson County Plan	**NYSEMO**
Municipality	**Estimated Residential 100-year Exposure** (Market Value, calculated using Year 2008 Equalization Rates and estimating exposure as a percentage of parcel area covered by the floodplain)	**Estimated Residential 100-year Exposure** (Market Value, calculated using Year 2006 Equalization Rates and estimating exposure as 100% where centroid is in floodplain and 0% where centroid is outside of floodplain)
Adams, Town of	*$1,878,439*	*$1,753,530*
Adams, Village of	*$922,017*	*$604,117*
Alexandria, Town of	*$56,110, 659*	*$61,526,973*
Alexandria Bay, Village of	*$4,483,936*	*$1,068,966*
Antwerp, Town of	*$949,896*	*$1,151,831*
Antwerp, Village of	*$9,527*	*
Black River, Village of	*$146,141*	*
Brownville, Town of	*$10,025,588*	*$18,768,330*
Brownville, Village of	*$51,920*	*
Cape Vincent, Town of	*$34,686,128*	*$46,203,565*
Cape Vincent, Village of	*$2,239,627*	*$1,084,713*
Carthage, Village of	*$9,563,717*	*$5,179,758*
Champion, Town of	*$2,887,256*	*$1,130,500*
Chaumont, Village of	*$675,004*	*$457,500*
Clayton, Town of	*$32,113,701*	*$26,386,150*
Clayton, Village of	*$5,536,556*	*$3,546,876*
Deferiet, Village of	*$0*	*
Dexter, Village of	*$189,213*	*
Ellisburg, Town of	*$10,222,689*	*$6,078,001*
Ellisburg, Village of	*$385,131*	*$82,235*
Evans Mills, Village of	*$664,258*	*$533,700*
Glen Park, Village of	*$0*	*
Henderson, Town of	*$17,556,073*	*$15,424,486*
Herrings, Village of	*$251,388*	*$171,927*
Hounsfield, Town of	*$6,404,703*	*$5,825,242*
Le Ray, Town of	*$3,590,865*	*$1,765,800*
Lorraine, Town of	*$0*	*
Lyme, Town of	*$28,386,983*	*$26,845,680*
Mannsville, Village of	*$0*	*
Orleans, Town of	*$11,516,587*	*$16,277,900*
Pamelia, Town of	*$1,471,677*	*$1,521,892*
Philadelphia, Town of	*$600,498*	*$32,308*
Philadelphia, Village of	*$1,883,552*	*$1,712,771*
Rodman, Town of	*$843,400*	*$983,547*
Rutland, Village of	*$2,823,975*	*$3,047,778*
Sackets Harbor, Village of	*$1,643,910*	*
Theresa, Town of	*$8,752,416*	*$8,267,702*
Theresa, Village of	*$434,986*	*$180,406*
Watertown, Town of	*$1,554,209*	*$1,439,041*
Watertown, City of	*$6,244,462*	*$4,119,800*
West Carthage, Village of	*$143,533*	*$41,900*
Wilna, Town of	*$2,661,371*	*$1,791,594*
Worth, Town of	*$0*	*
Totals	*$270,505,719*	*$265,006,519*

** = Not Analyzed by NYSEMO due to stated data availability issues from the New York State Real Property System or FEMA Q3*

Jefferson County, NY Residential Property Exposure in 100-Year Floodplains

This map shows the location and combined value of property in a 100-year flood zone based on a GIS overlay of NYS Real Property System (RPS) parcel center points with the FEMA Q3 Digital Flood Map. A point density mapping technique has been applied to help visualize property exposure "hot spots" as the individual parcel center points are too numerous to be properly displayed at this map scale. The estimated dollar value of each property has been spread over a surface 1KM in diameter and summed with values from overlapping parcel surfaces. The legend scheme reflects the associated per acre dollar value of the resulting surface.

MUNICIPALITIES	Res Prop#	Residential Prop Value
ADAMS, TOWN OF	18	$1,753,530
ADAMS, VILLAGE OF	10	$604,117
ALEXANDRIA BAY, VILLAGE OF	4	$1,068,966
ALEXANDRIA, TOWN OF	359	$61,526,973
ANTWERP, TOWN OF	21	$1,151,831
ANTWERP, VILLAGE OF	*	*
BLACK RIVER, VILLAGE OF	*	*
BROWNVILLE, TOWN OF	191	$18,768,330
BROWNVILLE, VILLAGE OF	*	*
CAPE VINCENT, TOWN OF	352	$46,203,568
CAPE VINCENT, VILLAGE OF	4	$1,084,713
CARTHAGE, VILLAGE OF	93	$5,179,758
CHAMPION, TOWN OF	13	$1,130,500
CHAUMONT, VILLAGE OF	5	$457,500
CLAYTON, TOWN OF	140	$26,366,150
CLAYTON, VILLAGE OF	12	$3,548,676
DEFERIET, VILLAGE OF	*	*
DEXTER, VILLAGE OF	*	*
ELLISBURG, TOWN OF	60	$6,078,001
ELLISBURG, VILLAGE OF	1	$82,235
EVANS MILLS, VILLAGE OF	8	$533,700
GLEN PARK, VILLAGE OF	*	*
HENDERSON, TOWN OF	95	$15,424,486
HERRINGS, VILLAGE OF	3	$171,927
HOUNSFIELD, TOWN OF	57	$5,825,242
LE RAY, TOWN OF	17	$1,765,800
LORRAINE, TOWN OF	*	*
LYME, TOWN OF	307	$26,845,689
MANNSVILLE, VILLAGE OF	*	*
ORLEANS, TOWN OF	90	$16,277,900
PAMELIA, TOWN OF	17	$1,521,892
PHILADELPHIA, TOWN OF	1	$32,308
PHILADELPHIA, VILLAGE OF	24	$1,712,771
RODMAN, TOWN OF	13	$983,547
RUTLAND, TOWN OF	33	$3,047,778
SACKETS HARBOR, VILLAGE OF	*	*
THERESA, TOWN OF	141	$8,267,702
THERESA, VILLAGE OF	3	$180,406
WATERTOWN, CITY OF	87	$4,119,800
WATERTOWN, TOWN OF	15	$1,439,041
WEST CARTHAGE, VILLAGE OF	1	$41,900
WILNA, TOWN OF	31	$1,791,594
WORTH, TOWN OF	*	*
JEFFERSON COUNTY	2,246	265,006,519

Rivers
Water Bodies
Municipal Boundaries
Watershed
Watersheds vary in color. The names are in italics.

NYSEMO GIS
December 2007

0 2.5 5 10 Miles

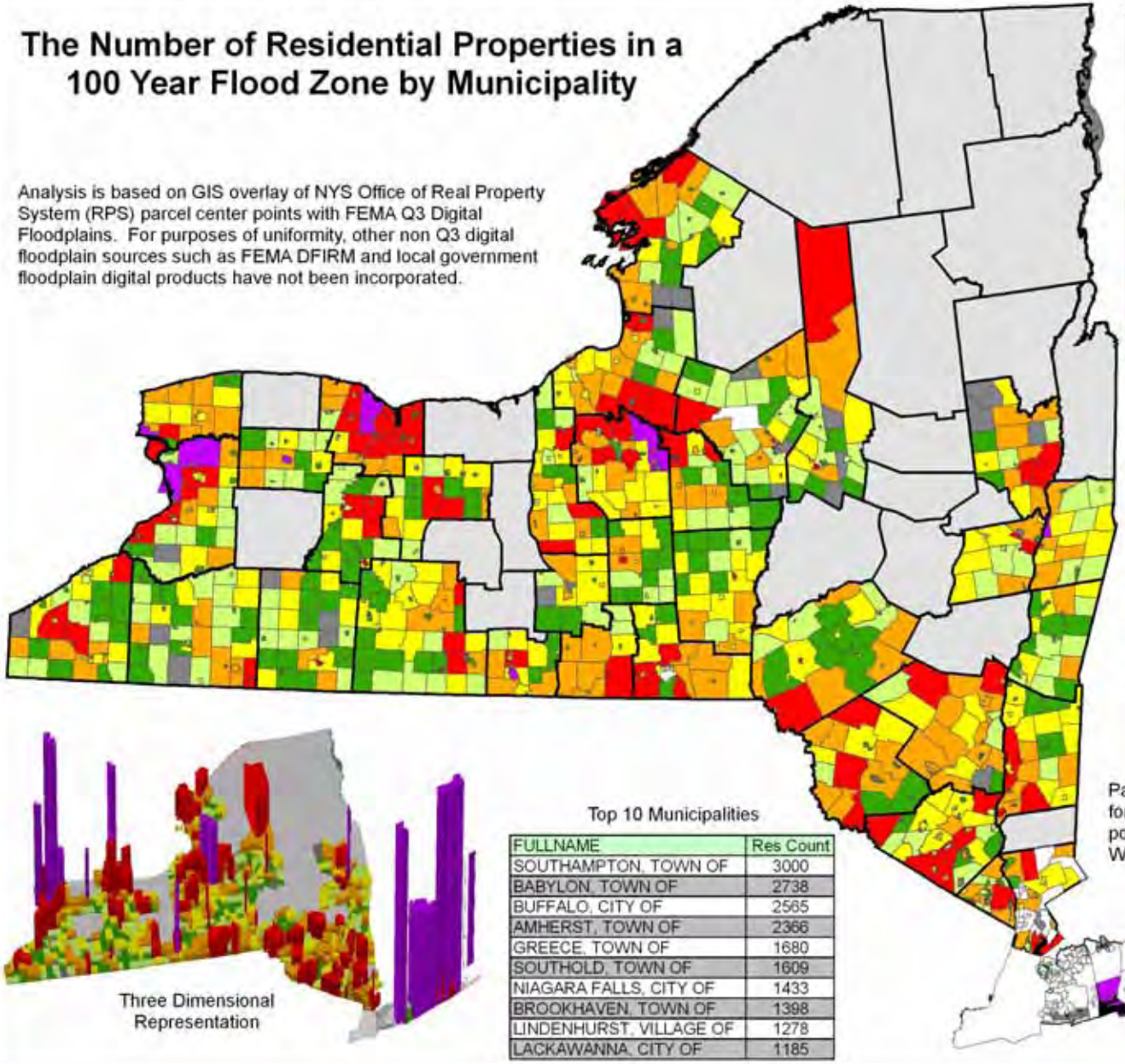
* Municipality not analyzed due to availability of RPS or Q3 data.

Property Exposure

- $0.01 - $100
- $100 - $300
- $300 - $600
- $600 - $1,000
- $1,000 - $5,000
- $5,000 - $10,000
- $10,000 - $25,000
- $25,000 or greater

The Number of Residential Properties in a 100 Year Flood Zone by Municipality

Analysis is based on GIS overlay of NYS Office of Real Property System (RPS) parcel center points with FEMA Q3 Digital Floodplains. For purposes of uniformity, other non Q3 digital floodplain sources such as FEMA DFIRM and local government floodplain digital products have not been incorporated.



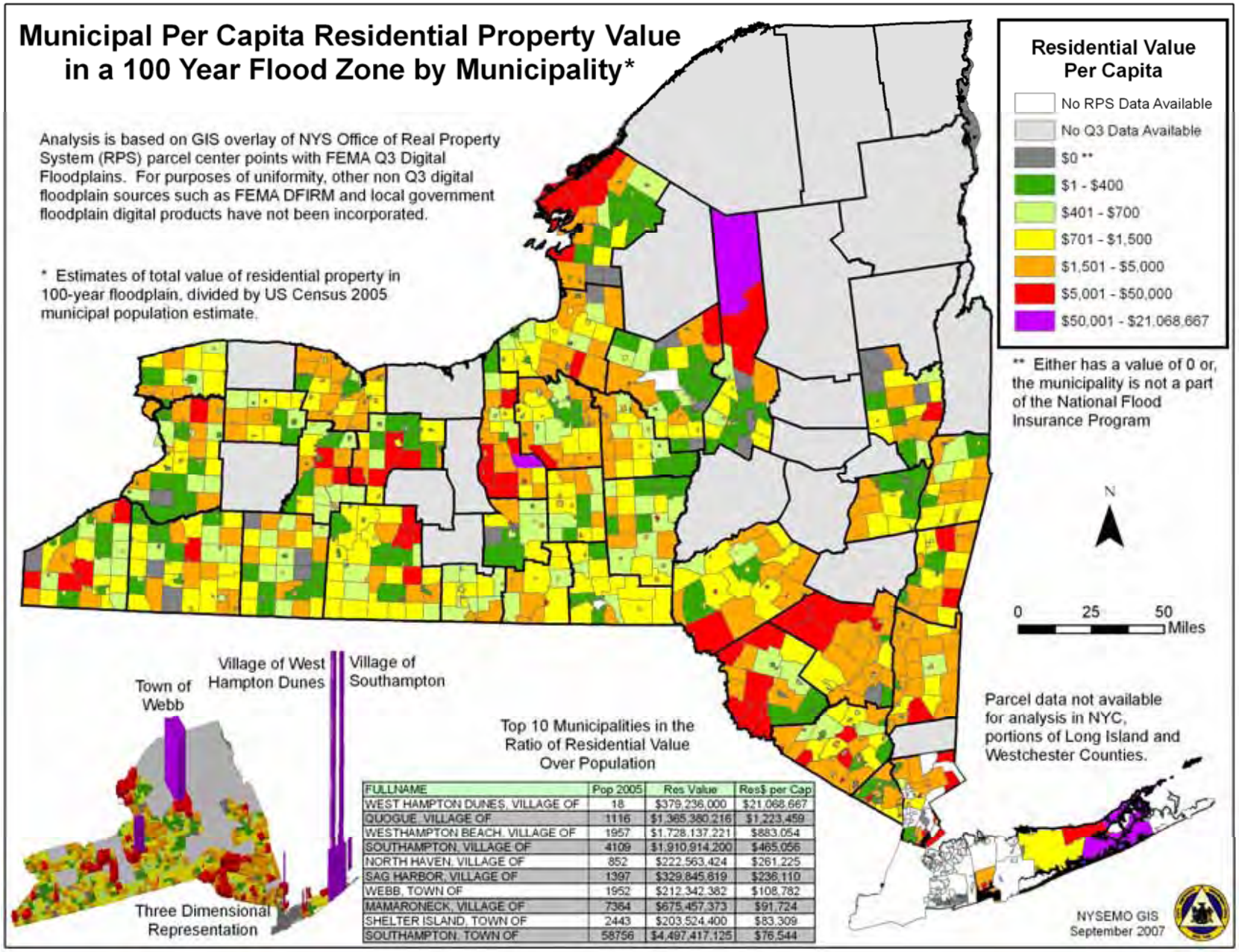
Three Dimensional Representation

Top 10 Municipalities

FULLNAME	Res Count
SOUTHAMPTON, TOWN OF	3000
BABYLON, TOWN OF	2738
BUFFALO, CITY OF	2565
AMHERST, TOWN OF	2366
GREECE, TOWN OF	1680
SOUTHOLD, TOWN OF	1609
NIAGARA FALLS, CITY OF	1433
BROOKHAVEN, TOWN OF	1398
LINDENHURST, VILLAGE OF	1278
LACKAWANNA, CITY OF	1185

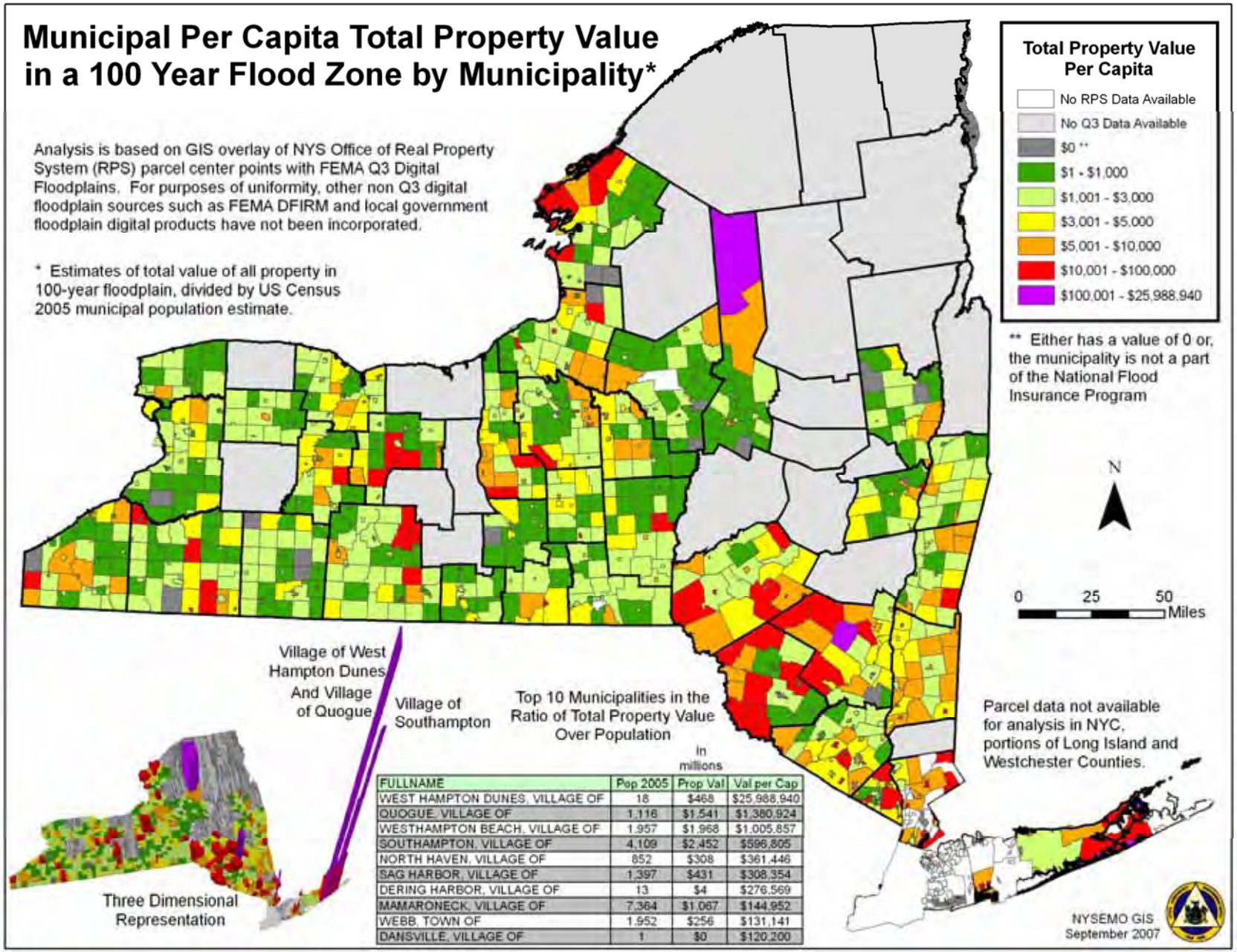
NYSEMO GIS
September 2007

Municipal Per Capita Residential Property Value in a 100 Year Flood Zone by Municipality*



FULLNAME	Pop 2005	Res Value	Res$ per Cap
WEST HAMPTON DUNES, VILLAGE OF	18	$379,236,000	$21,068,667
QUOGUE, VILLAGE OF	1116	$1,365,380,216	$1,223,459
WESTHAMPTON BEACH, VILLAGE OF	1957	$1,728,137,221	$883,054
SOUTHAMPTON, VILLAGE OF	4109	$1,910,914,200	$465,056
NORTH HAVEN, VILLAGE OF	852	$222,563,424	$261,225
SAG HARBOR, VILLAGE OF	1397	$329,845,619	$236,110
WEBB, TOWN OF	1952	$212,342,382	$108,782
MAMARONECK, VILLAGE OF	7364	$675,457,373	$91,724
SHELTER ISLAND, TOWN OF	2443	$203,524,400	$83,309
SOUTHAMPTON, TOWN OF	58756	$4,497,417,125	$76,544

Municipal Per Capita Total Property Value in a 100 Year Flood Zone by Municipality*

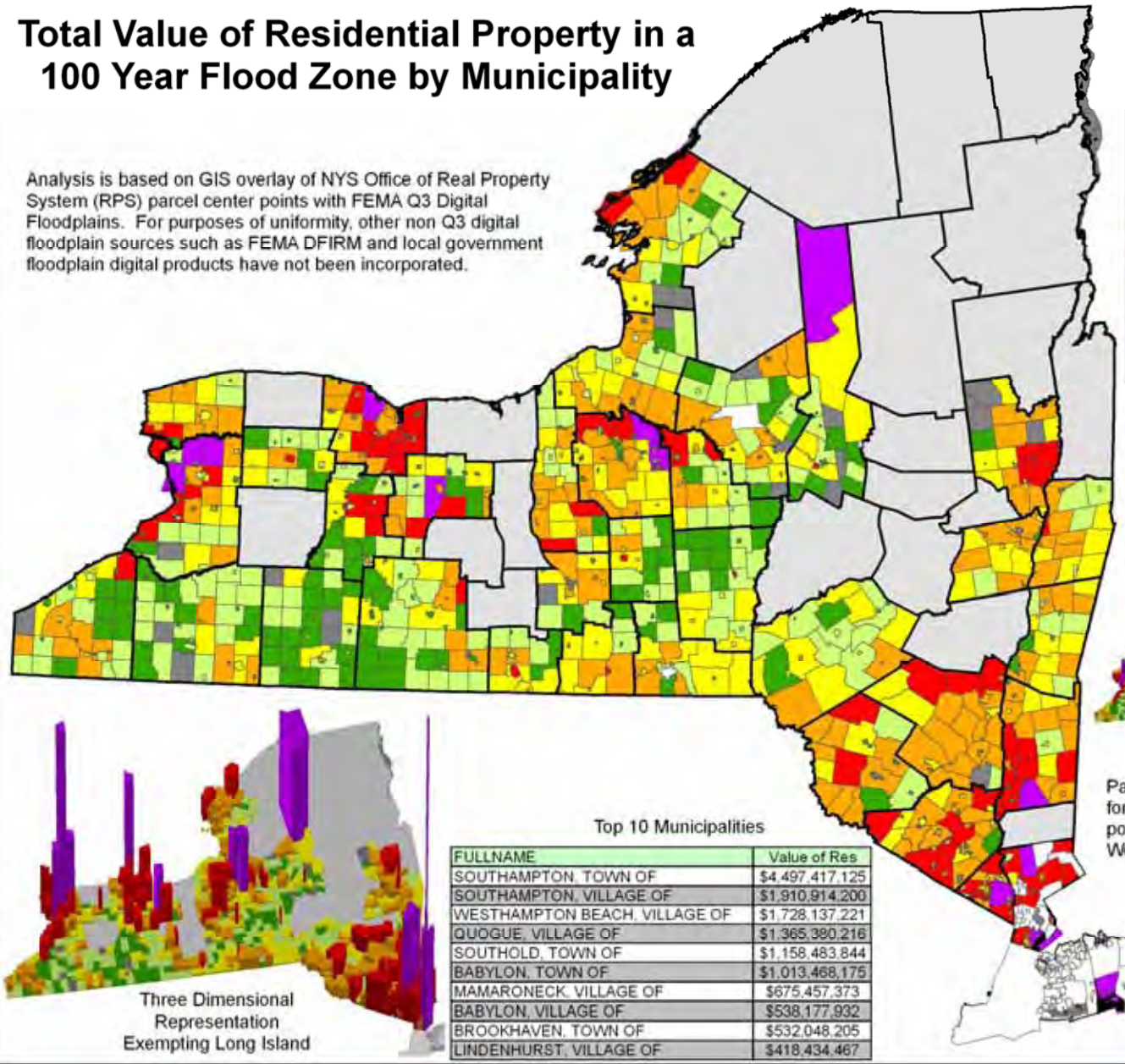


In millions

FULLNAME	Pop 2005	Prop Val	Val per Cap
WEST HAMPTON DUNES, VILLAGE OF	18	$468	$25,988,940
QUOGUE, VILLAGE OF	1,116	$1,541	$1,380,924
WESTHAMPTON BEACH, VILLAGE OF	1,957	$1,968	$1,005,857
SOUTHAMPTON, VILLAGE OF	4,109	$2,452	$596,805
NORTH HAVEN, VILLAGE OF	852	$308	$361,446
SAG HARBOR, VILLAGE OF	1,397	$431	$308,354
DERING HARBOR, VILLAGE OF	13	$4	$276,569
MAMARONECK, VILLAGE OF	7,364	$1,067	$144,952
WEBB, TOWN OF	1,952	$256	$131,141
DANSVILLE, VILLAGE OF	1	$0	$120,200

Total Value of Residential Property in a 100 Year Flood Zone by Municipality

Analysis is based on GIS overlay of NYS Office of Real Property System (RPS) parcel center points with FEMA Q3 Digital Floodplains. For purposes of uniformity, other non Q3 digital floodplain sources such as FEMA DFIRM and local government floodplain digital products have not been incorporated.



Total Value of Properties Millions of Dollars

- No RPS Data Available
- No Q3 Data Available
- 0 *
- $1 - $1 mil
- $1.1 - $3
- $3.1 - $8
- $8.1 - $30
- $30.1 - $100
- $100.1 - $4,497.4

* Either has a value of 0 or, the municipality is not a part of the National Flood Insurance Program

Three Dimensional Representation

Parcel data not available for analysis in NYC, portions of Long Island and Westchester Counties.

Three Dimensional Representation Exempting Long Island

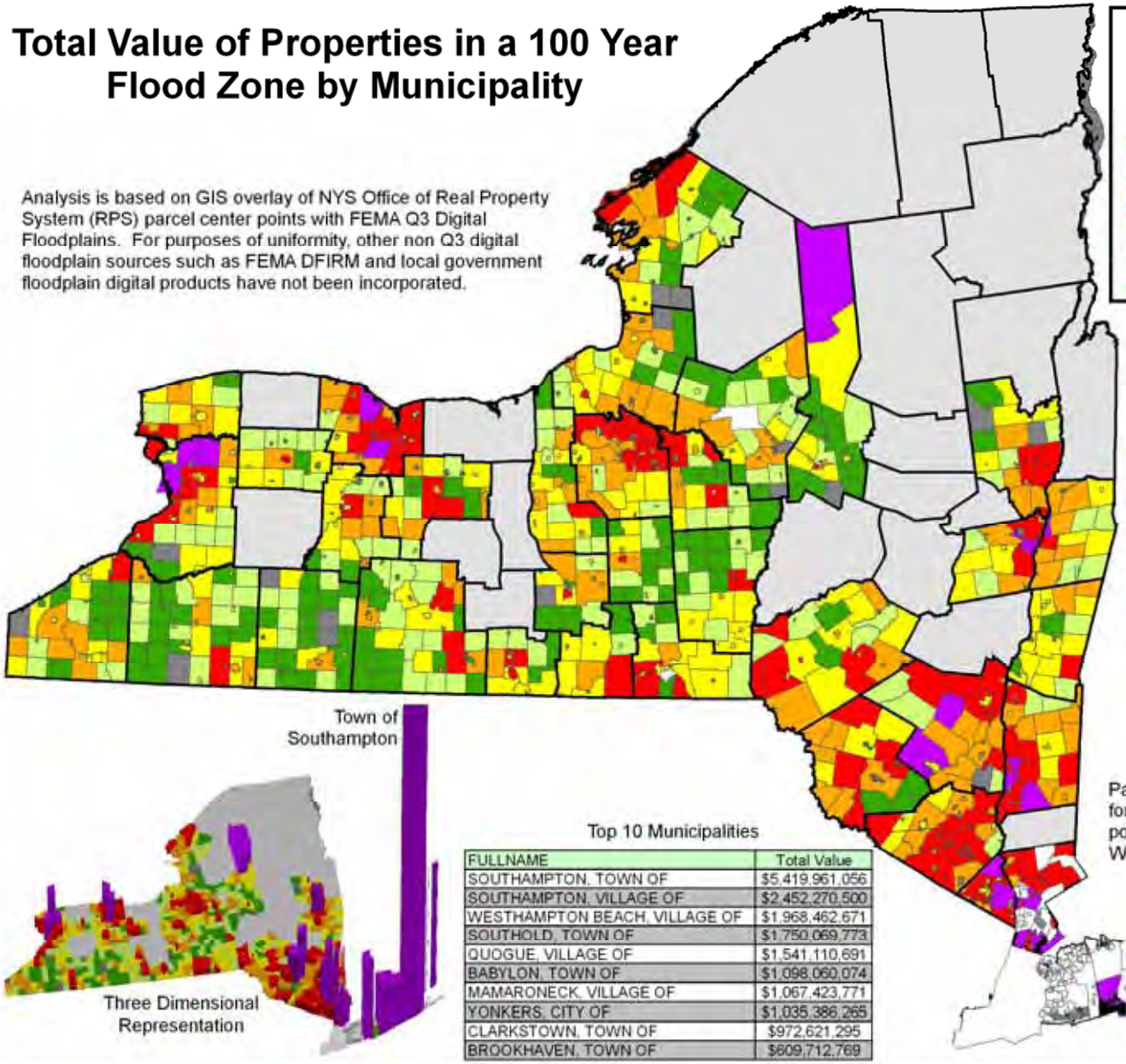
Top 10 Municipalities

FULLNAME	Value of Res
SOUTHAMPTON, TOWN OF	$4,497,417,125
SOUTHAMPTON, VILLAGE OF	$1,910,914,200
WESTHAMPTON BEACH, VILLAGE OF	$1,728,137,221
QUOGUE, VILLAGE OF	$1,365,380,216
SOUTHOLD, TOWN OF	$1,158,483,844
BABYLON, TOWN OF	$1,013,468,175
MAMARONECK, VILLAGE OF	$675,457,373
BABYLON, VILLAGE OF	$538,177,932
BROOKHAVEN, TOWN OF	$532,048,205
LINDENHURST, VILLAGE OF	$418,434,467

NYSEMO GIS
September 2007

Total Value of Properties in a 100 Year Flood Zone by Municipality

Analysis is based on GIS overlay of NYS Office of Real Property System (RPS) parcel center points with FEMA Q3 Digital Floodplains. For purposes of uniformity, other non Q3 digital floodplain sources such as FEMA DFIRM and local government floodplain digital products have not been incorporated.



Top 10 Municipalities

FULLNAME	Total Value
SOUTHAMPTON, TOWN OF	$5,419,961,056
SOUTHAMPTON, VILLAGE OF	$2,452,270,500
WESTHAMPTON BEACH, VILLAGE OF	$1,968,462,671
SOUTHOLD, TOWN OF	$1,750,069,773
QUOGUE, VILLAGE OF	$1,541,110,691
BABYLON, TOWN OF	$1,098,060,074
MAMARONECK, VILLAGE OF	$1,067,423,771
YONKERS, CITY OF	$1,035,386,265
CLARKSTOWN, TOWN OF	$972,621,295
BROOKHAVEN, TOWN OF	$609,712,769